

The background is a solid purple color. It features an abstract graphic design consisting of numerous thin, curved lines that flow from the top left towards the bottom right, creating a sense of movement. In the top right corner, there is a series of concentric circles in a teal color.

# Student Engagement Techniques



# STUDENT ENGAGEMENT TECHNIQUES



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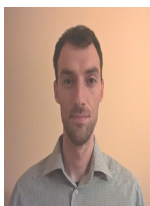
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## HOW TO USE THE BOOK

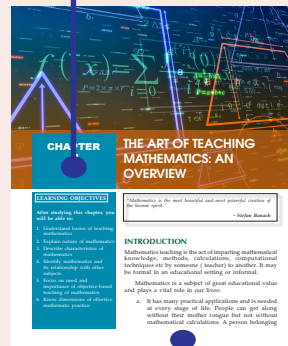
This book has been divided into many chapters. Chapter gives the motivation for this book and the use of templates. The text is presented in the simplest language. Each paragraph has been arranged under a suitable heading for easy retention of concept. Keywords are the words that academics use to reveal the internal structure of an author's reasoning. Review questions at the end of each chapter ask students to review or explain the concepts. References provides the reader an additional source through which he/she can obtain more information regarding the topic.

## LEARNING OBJECTIVES

See what you are going to cover and what you should already know at the start of each chapter

## ABOUT THIS CHAPTER

An introduction is a beginning of section which states the purpose and goals of the topics which are discussed in the chapter. It also starts the topics in brief.



the expertise, value and uniqueness of the product or service you have developed. Finding a good business name is more difficult than ever. Many of the best names have already been trademarked. But with advertising costs and competition on the rise, a good name is crucial to creating a memorable business image. In short, the name you choose can make or break your business.



There's a lot of controversy over what makes a good business name. Some experts believe that the best names are abstract, a blank slate upon which to create an image. Others think that names should be informative so customers know immediately what your business is. Some believe that coined names (names that come from made-up words) are more memorable than names that use real words. Others think most coined names are forgettable. In reality, any name can be effective if it's backed by the appropriate marketing strategy.

Given all the considerations that go into a good company name, should not you consult an expert, especially if you are in a field in which your company name will be visible and may influence the success of your business? And is not it easier to enlist the help of a naming professional?

Yes, just as an accountant will do a better job with your taxes and an ad agency will do a better job with your ad campaign, a naming firm will be more adept at naming your firm than you will. Naming firms have elaborate systems for creating new names, and they know their way around the trademark laws. They have the expertise to advise you against bad name choices and explain why others are good. A name consultant will take this perplexing task off your hands—and do a fabulous

Start by deciding what you want your name to communicate. To be most effective, your company name should reinforce the key elements of your business. Your work in developing a niche and a mission statement will help you pinpoint the elements

## REMEMBER

This revitalizes a must read information of the topic.

## KEYWORDS

This section contains some important definitions that are discussed in the chapter. A keyword is an index entry that identifies a specific record or document. It also gives the extra information to the reader and an easy way to remember the word definition.



Figure 6. (a) Barbell and (b) collar

## DID YOU KNOW?

This section equip readers the interesting facts and figures of the topic.

## EXAMPLE

The book cabinets’ examples to illustrate specific ideas in each chapter.

reliable and therefore more acceptable way of measuring body composition. Nevertheless, it is DEXA and MRI – and not BIA – that are regarded as the reference method in body composition analysis.

Although the instruments are straightforward to use, careful attention to the method of use (as described by the manufacturer) should be given.

Simple devices to estimate body fat, often using BIA, are available to consumers as body fat scales. These instruments are generally regarded as being less accurate than those used clinically or in nutritional and medical practice. They tend to under-read body fat percentage.

Dehydration is a recognized factor affecting BIA measurements as it causes an increase in the body’s electrical resistance, so has been measured to cause a 5 kg underestimation of fat-free mass (i.e. an overestimation of body fat).

Body fat measurements are lower when measurements are taken shortly after consumption of a meal, causing a variation between highest and lowest readings of body fat percentage taken throughout the day of up to 4.2% of body fat.

Moderate exercise before BIA measurements lead to an overestimation of fat-free mass and an underestimation of body fat percentage due to reduced impedance.

Moderate intensity exercise for 90–120 minutes before BIA measurement decreases the 2 kg measurement of fat-free mass. In body fat measurement, moderate or high intensity exercise leads to a 1 kg underestimation of body fat.

BIA is considered reasonably accurate for measuring groups, of limited accuracy for tracking body composition in an individual over a period of time, but is not considered sufficiently precise for recording of single measurements of individuals.

Consumer grade devices for measuring BIA have not been found to be sufficiently accurate for single measurement use, and are better suited for use for monitoring trends in body composition over time for individuals. Two-electrode foot-to-foot measurement is less accurate than 4-electrode (foot, hands) and

a model stemming from the field of quality management, termed the Plan-Do-Check-Act (PDCA) cycle (see Figure 13) may be used to illustrate the importance of assessment.



Figure 13. PDCA cycle.

The Plan, Do, and Act portions of this cycle represent the traditional qualitative strengths of coaches and fitness professionals. The Plan portion entails the initial strategic analysis and goal setting procedure. Do is the execution of the plan, and Act is the summative response (i.e., evaluating or making sense of the available information) and adjustment to this implementation. The Check portion of the PDCA cycle represents formative feedback (i.e., bringing together or monitoring of the available information from knowledge-based quantitative data collection via appropriate assessments that inform the decision-making process. This cyclical approach with integrated qualitative (via observations) and quantitative (via data) components allows for the management of both individual client or athlete needs as well as reflection on the strategic approach. For example, through use of the PDCA cycle, coaches and fitness professionals might determine if specific adjustments need to be made on an individual basis from a single cycle on, or as a result of several cycles, if a change to the process employed by the training staff should be considered.

Assessments should allow for a properly informed decision-making process. The results of well-designed and appropriately selected assessments can be used by the coaching or training staff and other stakeholders to design and modify training

## ROLE MODEL

A biography of someone who has/had acquired remarkable success in their respective field as Role Models are important because they give us the ability to imagine our future selves.

## CASE STUDY

This reveals what students need to create and provide an opportunity for the development of key skills such as communication, group working and problem solving.

### ROLE MODEL

#### EVGENIYA KANAeva: RUSSIAN RHYTHMIC GYMNAST

Evgeniya Olegovna Kanaeva is a Russian retired individual rhythmic gymnast, known for her consistency, elegant routines and high level of technical difficulty. She is the only individual rhythmic gymnast in history to win two Olympic all-around gold medals, winning at the 2008 Summer Olympics, where she finished with 375 points ahead of silver medalist Irina Zhukova, and at the 2012 Summer Olympics, where she also became the oldest gymnast to win the Olympic gold. On 4 July 2013, Kanaeva received the International Fair Play Award for “Sport and Life”.

Kanaeva holds the record for most World titles with seventeen and thirteen European titles. Kanaeva shares the record for most individual world all-around titles with Maria Petrova, Maria Gogova and fellow Russian gymnasts Yana Kudryavtseva and Diana Averina, and Kanaeva is the one of only three gymnasts to have won all three titles without being tied, impossible due to the tie breaking system even though she never was tied for a title.

At the 2009 World Championship in Mie, Japan, Kanaeva became the first rhythmic gymnast to win all six titles. She repeated the feat at the 2011 World Championship in Montpellier, France, equalling her own record.

Kanaeva is the only gymnast to receive a perfect score under the all-around judging system, having done so twice in the 2011 Grand Prix Final in Brno and in the 2012 Grand Prix in Voronezh.

In 2009, Kanaeva was awarded the title Merited Master of Sports in Russia. After the 2012 Summer Olympics, on 15 August at the Grand Kremlin Palace, Kanaeva, along with fellow Olympic gold medalists, was awarded the Medal for the Fatherland IV Degree. Russian President Vladimir Putin presented the honors.



### CASE STUDY

#### EFFECT OF THERAGUN ON THE IMPROVEMENT OF BACK FLEXIBILITY

Muscle tightness may be connected to postural instability. Both can contribute to various musculoskeletal conditions. Reduced extensibility resultant from increased hamstring stiffness could be a probable causative factor to low back injuries. Considering that forward bending is one of the mainly common movements in daily activities, shortened hamstrings may increase the risk of injury to the spine from mechanical stresses. Flexibility dysfunction is a extensive problem faced by common as well as sportspersons, especially in case of hamstring group of muscle. Vibration therapy improves muscular strength, power improvement and kinesthetic awareness.

#### History

We describe a 20-year-old male patient. He is a dentist. His height was 162 centimeters, weight 65 kilograms and body mass index (BMI) was 24.8. The patient was seen by a female physiotherapist and enrolled for daily treatment. He complained of back pain that got aggravated with forwarding bending activity and prolonged sitting. He also complained of difficulty in horse riding. He belonged to a high socioeconomic class and fair family and social support. He had no history of trauma.

#### Physical Examination

His Back movements were restricted. There were a bilateral Hamstring tightness and reduced back flexibility.

#### Procedure

Ethical approval was granted from the Institutional Ethical Committee and the Patient gave informed written consent. His demographic data, physical examination and the intensity of pain was done with use of numeric Pain rating Scale score was noted. Flexibility measurement was done with the use of sit and reach test and hamstrings tightness measurement was done with the use of a 90-90 straight leg raising test. Activity difficulty was measure by the use of the patient-specific functional scale.

## MULTIPLE CHOICE QUESTIONS

This is given to the students for progress check at the end of each chapter.

### MULTIPLE CHOICE QUESTIONS

1. A full domain name is a sequence of labels separated by \_\_\_\_\_.
  - a. semicolons
  - b. dots
  - c. colons
  - d. none of the above
2. A \_\_\_\_\_ server loads all information from the primary server.
  - a. primary
  - b. secondary
  - c. none of the above
3. The first level in the generic domain section allows \_\_\_\_\_ possible labels.
  - a. 10
  - b. 12
  - c. 16
  - d. none of the above
4. If a label is not terminated by a null string, it is called a \_\_\_\_\_.
  - a. PQDN
  - b. PQDN
  - c. SQDN
  - d. none of the above
5. What a server is responsible for or has authority over is called a \_\_\_\_\_.
  - a. domain
  - b. label
  - c. zone
  - d. none of the above
6. DNS can use the services of \_\_\_\_\_ using the well-known port 53.
  - a. UDP
  - b. TCP
  - c. either (a) or (b)
  - d. none of the above

## REVIEW QUESTIONS

This section is to analyze the knowledge and ability of the reader.

## REFERENCES

References refer those books which discuss the topics given in the chapters in almost same manner.

### REVIEW QUESTIONS

1. What is the importance of teaching mathematics?
2. What does it mean to teach and learn mathematics?
3. What is effective teaching of mathematics?
4. What are the objectives of learning mathematics?
5. What are the objectives of teaching mathematics in primary?

#### Answer to Multiple Choice Questions

1. (a) 2. (c) 3. (b) 4. (a) 5. (c)

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# PREFACE

The concept of student engagement is multidimensional, meaning that there are different types of engagement. Behavioral engagement refers to students' academic involvement and participation in learning activities. It includes things such as effort, persistence, attention, asking questions, participation, following rules, and the absence of disruptive behaviors. Student engagement is a significant challenge for educators who are teaching students remotely. Getting students to engage in learning, not to mention show up for class, is something teachers are working hard to improve. Student engagement is vital to meaningful education and retention of knowledge. As we move into the final stretch of one of the most challenging school years in our history, teachers and students might be noticing a decline in stamina. No matter the learning context (remote, in-person, or hybrid) keeping students engaged in learning at this point in the year is a common challenge. Although numerous teaching obstacles remain, there are several small but significant things that schools and teachers can do to boost and maintain student engagement. Research has demonstrated that engaging students in the learning process increases their attention and focus, motivates them to practice higher-level critical thinking skills, and promotes meaningful learning experiences.

## **Organization of the Book**

Comprised of seven chapters, this book will take you through a deeper dive into what student engagement really is and why it is so important. Then we discuss some practical approaches for keeping students interested and involved in lessons, activities, and discussions.

**Chapter 1** presents a conceptual framework for understanding student engagement. Students who are highly engaged and are effective learners are most likely to be proficient in mathematics and students who hold positive dispositions towards schools and learning, who attend school regularly and who have positive self-beliefs about mathematics.

**Chapter 2** highlights on tips and strategies for fostering motivation. The tips and strategies come primarily from the good practice literature and are organized according to this conceptual framework: fostering motivation, promoting active learning and ensuring students are appropriately challenged.

**Chapter 3** focuses on knowledge, skills, recall, and understanding. The student engagement techniques (SETs) focus on engaging students as they learn the facts, principles, and ideas that constitute the foundational knowledge of the subject they are studying.

**Chapter 4** highlights on analysis of critical thinking. Critical thinking has been the subject of much debate and thought since the time of early Greek philosophers such as Plato and Socrates and has continued to be a subject of discussion into the modern age.

**Chapter 5** focuses on synthesis and creative thinking. The student engagement techniques (SETs) in this chapter engage students by challenging their creativity and ability to synthesize and by asking them, in one way or another, to use what they know or have done as the basis for generating something new and original.

**Chapter 6** deals with problem solving. Problem solving in psychology refers to the process of finding solutions to problems encountered in life. Solutions to these problems are usually situation or context-specific.

**Chapter 7** highlights values, beliefs and attitudes. Attitudes and values are a key component of the learning techniques, which helps students navigate towards well-being and the future we want.





# CHAPTER 1

## A CONCEPTUAL FRAMEWORK FOR UNDERSTANDING STUDENT ENGAGEMENT

### LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Discuss the basic concept of student engagement
2. Explain the engagement and motivation
3. Focus on classroom management and communication

*"Professional development is a collective resource, not a personal prerogative. Peer engagement forges powerful links between teacher learning and student growth."*

– Laura Lipton

### INTRODUCTION

Students who are highly engaged and are effective learners are most likely to be proficient in mathematics and students who hold positive dispositions towards schools and learning, who attend school regularly and who have positive self-beliefs about mathematics. "There is a back and forth process as children are going through school in which they develop social skills and motivation; that begets academic achievement and academic achievement begets more motivation and social skills. Engagement and learning go hand-in-hand."

It is generally agreed that student engagement is important, but actually answering ‘what is student engagement?’ can be difficult. After all, many would argue that there is a difference between a student being emotionally engaged and cognitively engaged. Of course, if we accept this as being true, it throws up further questions, like ‘how many types of engagement are there?’ and ‘which of these different dimensions of engagement need to be met before we agree that a student is fully engaged?’

Although it usually refers to engagement with learning activities or courses as a whole, it can also refer to engagement with the design of the curriculum, or with decision making. Additionally, many modern definitions also place an emphasis on participation in the overall academic environment, including social aspects and extracurricular activities. Traditionally, student engagement has been measured on a self-reported basis, meaning students provide their own feedback on lessons, courses, or teachers, and their level of engagement is then deduced from this. Often, this self-reporting will take the form of a student survey or questionnaire. One way that technology can be introduced, in order to gain student feedback in the moment, is through audience response systems. Moreover, with the rise of the Internet of Things (IoT) and modern education technology, a wider range of devices in the classroom can collect and share data. This offers the potential for facial expression recognition and machine learning technology to be used in order to measure student engagement and compare findings with other classes or courses.

## 1.1 BASIC CONCEPT OF STUDENT ENGAGEMENT

Student engagement refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education. Generally speaking, the concept of “student engagement” is predicated on the belief that learning improves when students are inquisitive, interested, or inspired, and that learning tends to suffer when students are bored, dispassionate, disaffected, or otherwise “disengaged.” Stronger student engagement or improved student engagement are common instructional objectives expressed by educators.

In many contexts, however, student engagement may also refer to the ways in which school leaders, educators, and other adults might “engage” students more fully in the governance and decision-making processes in school, in the design of programs and learning opportunities, or in the civic life of their community. For example, many schools survey students to determine their views on any number of issues, and then use the survey findings to modify policies or programs in ways that honor or respond to student perspectives and concerns. Students may also create their own questions, survey their peers, and then present the results to school leaders or the school board to advocate for changes in programs or policies. Some schools have created alternative

forms of student governance, “student advisory committees,” student appointments to the school board, and other formal and informal ways for students to contribute to the governance of a school or advise superintendents, principals, and local policy makers. These broader forms of “student engagement” can take a wide variety of forms—far too many to extensively catalog here. Yet a few illustrative examples include school-supported volunteer programs and community-service requirements (engaging students in public service and learning through public service), student organizing (engaging students in advocacy, community organizing, and constructive protest), and any number of potential student-led groups, forums, presentations, and events (engaging students in community leadership, public speaking, and other activities that contribute to “positive youth development”).

In education, the term student engagement has grown in popularity in recent decades, most likely resulting from an increased understanding of the role that certain intellectual, emotional, behavioral, physical, and social factors play in the learning process and social development. For example, a wide variety of research studies on learning have revealed connections between so-called “non-cognitive factors” or “non-cognitive skills” (e.g., motivation, interest, curiosity, responsibility, determination, perseverance, attitude, work habits, self-regulation, social skills, etc.) and “cognitive” learning results (e.g., improved academic performance, test scores, information recall, skill acquisition, etc.). The concept of student engagement typically arises when educators discuss or prioritize educational strategies and teaching techniques that address the developmental, intellectual, emotional, behavioral, physical, and social factors that either enhance or undermine learning for students.

It should be noted that educators may hold different views on student engagement, and it may be defined or interpreted differently from place to place. For example, in one school observable behaviors such as attending class, listening attentively, participating in discussions, turning in work on time, and following rules and directions may be perceived as forms of “engagement,” while in another school the concept of “engagement” may be largely understood in terms of internal states such as enthusiasm, curiosity, optimism, motivation, or interest.

While the concept of student engagement seems straightforward, it can take fairly complex forms in practice. The following examples illustrate a few ways in which student engagement may be discussed or addressed in schools:

- ***Intellectual engagement:*** To increase student engagement in a course or subject, teachers may create lessons, assignments, or projects that appeal to student interests or that stimulate their curiosity. For example, teachers may give students more choice over the topics they are asked to write about (so students can choose a topic that specifically interests them) or they may let students choose the way they will investigate a topic or demonstrate what they have learned (some students may choose to write a paper, others may produce

short video or audio documentary, and still others may create a multimedia presentation). Teachers may also introduce a unit of study with a problem or question that students need to solve.



*The students might be asked to investigate the causes of a local environmental problem, determine the species of an unknown animal from a few short descriptions of its physical characteristics and behaviors, or build a robot that can accomplish a specific task. In these cases, sparking student curiosity can increase “engagement” in the learning process.*

- **Emotional engagement:** Educators may use a wide variety of strategies to promote positive emotions in students that will facilitate the learning process, minimize negative behaviors, or keep students from dropping out. For example, classrooms and other **learning environments** may be redesigned to make them more conducive to learning, teachers may make a point of monitoring student moods and asking them how they are feeling, or school programs may provide counseling, peer mentoring, or other services that generally seek to give students the support they need to succeed academically and feel positive, optimistic, or excited about school and learning. Strategies such as **advisories**, for example, are intended to build stronger relationships between students and adults in a school. The basic theory is that students will be more likely to succeed if at least one adult in the school is meeting with a student regularly, inquiring about academic and non-academic issues, giving her advice, and taking an interest in her out-of-school life, personal passions, future aspirations, and distinct learning challenges and needs.
- **Behavioral engagement:** Teachers may establish classroom routines, use consistent cues, or assign students roles that foster behaviors more conducive to learning. For example, elementary school teachers may use cues or gestures that help young students refocus on a lesson if they get distracted or boisterous. The teacher may clap three times or raise a hand, for example, which signals to students that it’s time to stop talking, return to their





seats, or begin a new activity. Teachers may also establish consistent routines that help students stay on task or remain engaged during a class. For example, the class may regularly break up into small groups or move their seats into a circle for a group discussion, or the teacher may ask students on a rotating basis to lead certain activities. By introducing variation into a classroom routine, teachers can reduce the monotony and potential disengagement that may occur when students sit in the same seat, doing similar tasks, for extended periods of time. Research on **brain-based learning** has also provided evidence that variation, novelty, and physical activity can stimulate and improve learning.

- **Physical engagement:** Teachers may use physical activities or routines to stimulate learning or interest. For example, “kinesthetic learning” refers to the use of physical motions and activities during the learning process. Instead of asking students to answer questions aloud, a teacher might ask students to walk up to the chalkboard and answer the question verbally while also writing the answer on the board (in this case, the theory is that students are more likely to remember information when they are using multiple parts of the brain at the same time—i.e., the various parts dedicated to speaking, writing, physical activity, etc.). Teachers may also introduce short periods of physical activity or quick exercises, particularly during the elementary years, to reduce antsy, fidgety, or distracted behaviors. In addition, more schools throughout the United States are addressing the physical needs of students by, for example, offering all students free breakfasts (because disengagement in learning and poor academic performance have been linked to hunger and malnutrition) or starting school later at a later time (because adolescent sleep patterns and needs differ from those of adults, and adolescents may be better able to learn later in the morning).
- **Social engagement:** Teachers may use a variety of strategies to stimulate engagement through social interactions. For example, students may be paired or grouped to work collaboratively on projects, or teachers may create academic contests that students compete in—e.g., a friendly competition in which teams of students build robots to complete a specific task in the shortest amount of time. Academic and **co-curricular** activities such as debate teams, robotics clubs, and science fairs also bring together **learning experiences** and social interactions. In addition, strategies such as **demonstrations of learning** or **capstone projects** may require students to give public presentations of their work, often to panels of experts from the local community, while strategies such as **community-based learning** or service learning (learning through volunteerism) can introduce civic and social issues into the learning process. In these cases, learning about societal problems, or participating actively in social causes, can improve engagement.



- **Cultural engagement:** Schools may take active steps to make students from diverse cultural backgrounds—particularly recently arrived immigrant or refugee students and their families—feel welcomed, accepted, safe, and valued. For example, administrators, teachers, and school staff may provide special orientation sessions for their new-American populations or offer translation services and informational materials translated into multiple languages. Students, families, and local cultural leaders from diverse backgrounds may be asked to speak about their experiences to students and school staff, and teachers may intentionally modify lessons to incorporate the history, literature, arts, and perspectives of the student ethnicities and nationalities represented in their classes. School activities may also incorporate multicultural songs, dances, and performances, while posters, flags, and other educational materials featured throughout the school may reflect the cultural diversity of the students and **school community**. The general goal of such strategies would be to reduce the feelings of confusion, alienation, disconnection, or exclusion that some students and families may experience, and thereby increase their engagement in academics and school activities.

### 1.1.1 What does students Engagement mean?

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Student engagement occurs when «students make a psychological investment in learning. They try hard to learn what school offers. They take pride not simply in earning the formal indicators of success (grades), but in understanding the material and incorporating or internalizing it in their lives.» Since the U.S. college dropout rate for first-time-in college degree-seeking students is nearly 50%. It is increasingly seen as an indicator of successful classroom instruction, and as a valued outcome of school reform. The phrase was identified in 1996 as “the latest buzzword in education circles.» Students are engaged when they are involved in their work, persist despite challenges and obstacles, and take visible delight in accomplishing their work. Student engagement also refers to a «student»s willingness, need, desire and compulsion to participate in, and be successful in, the learning process promoting higher level thinking for enduring understanding.» Student engagement is also a usefully ambiguous term for the complexity of «engagement» beyond the fragmented domains of cognition, behaviour, emotion or affect, and in doing so encompass the historically situated individual within their contextual variables (such as personal and familial circumstances) that at every moment influence how engaged an individual (or group) is in their learning.

Most of us chose our field of scholarly endeavor because somewhere along the line we developed a passion for it. Part of the attraction of a career in academia is the opportunity to share our enthusiasm with others and possibly even recruit new disciples to the discipline. It is therefore very disheartening to look out into a classroom and see disengaged students who make little effort to hide their apathy. They stare

at us vacantly or perhaps even hostilely when we attempt to pull them into class discussion, and then bolt for the door like freed prisoners the moment it seems safe to do so. Equally distressing are students who are obsessively focused on their grade but seem to care little about the learning the grades are supposed to represent. Why do some students bother to register for the course if they are not interested in learning what we are teaching? Why do some students go to such great efforts to cheat when they'd learn so much if they invested even half the effort in studying? Why is it sometimes so hard to get students to think . . . to care . . . to engage? These and similarly troubling questions are part of a national—even international—dialogue on student engagement.

The elements of the dialogue vary, largely because higher education today is astonishingly diverse. Although attention on student engagement at the moment seems to be focused on classes with hundreds of students, **engagement** can also be a challenge in courses with an average class size of twelve. While some teachers are looking for ways to challenge their students' higher-order thinking, others struggle to get students to show up— and then to take the earbuds out of their ears so that they can focus sufficiently to develop basic academic success skills. Today, teachers must find ways to engage students not only in traditional face-to-face courses but also in courses taught partially or wholly online.

### Keyword

An **engagement** or betrothal is the period of time between a marriage proposal and the marriage itself.

## 1.1.2 Definitions of Student Engagement

Student engagement is frequently used to, “depict students’ willingness to participate in routine school activities, such as attending class, submitting required work, and following teachers’ directions in class.” However, the term is also increasingly used to describe meaningful student involvement throughout the learning environment, including students participating in curriculum design, classroom management and school building climate. It is also often used to refer as much to student involvement in extra-curricular activities in the campus life of a school/college/university which are thought to have educational benefits as it is to student focus on their curricular studies.





In a number of studies student engagement has been identified as a desirable trait in schools; however, there is little consensus among students and educators as to how to define it. Often, student engagement is defined according to one of the most popular measures of student engagement – the National Survey of Student Engagement (NSSE). Other studies have shown that student engagement overlaps with, but is not the same as, student motivation. Because of the lack of consensus on what student engagement is (and what it is not), researchers have begun to offer suggestions for moving the educational literature towards a unified conceptualization of student engagement. These researchers generally adopt a combination of psychological and socio-cultural perspectives to represent student engagement as three dimensions including affect, behavior, and cognition. Using these perspectives, some researchers have further borrowed from work psychology research to suggest that the ‘engaged’ part of student engagement means that student harness themselves to their role, and thus show a high level of activation or energy.

Student engagement is used to discuss students’ attitudes towards school, while student *disengagement* identifies withdrawing from school in any significant way.

### Requirements

Student engagement requires that teachers actively seek to create the conditions that foster this reaction. The first step to whole-school improvement in the area of student engagement is for the entire building faculty to share a definition of student engagement. Other steps include clear articulation of learning criteria with clear, immediate, and constructive feedback; show students the skills they need to be successful are within their grasp by clearly and systematically demonstrating these skills, and; demonstrate engagement in learning as a valuable aspect of their personalities.

Relationships between students and adults in schools, and among students themselves, are a critical factor of student engagement. This is especially true among students considered to be at-risk and without other positive adult interaction. There are several strategies for developing these relationships, including acknowledging student voice, increasing intergenerational equity and sustaining youth-adult partnerships throughout the learning environment. There have been multiple formats identified for this type of engagement. The National Survey of Student Engagement identifies dozens of everyday indicators of student engagement throughout colleges and universities.

### Indicators

The term “student engagement” has been used to depict students’ willingness to participate in routine school activities, such as attending classes, submitting required work, and following teachers’ directions in class. That includes participating in the activities offered as part of the school program and student participation in school

reform activities. Engaged students show sustained behavioral involvement in learning activities accompanied by a positive emotional tone. They select tasks at the border of their competencies, initiate action when given the opportunity, and exert intense effort and concentration in the implementation of learning tasks; they show generally positive emotions during ongoing action, including enthusiasm, optimism, curiosity, and interest.

Another study identified five indicators for student engagement in college. They included the level of academic challenge, active and collaborative learning, student-faculty interaction, enriching education experiences and a supportive learning environment. Indicators of the absence of student engagement include unexcused absences from classes, cheating on tests, and damaging school property.

Engagement is more than what students listen and do. A high level of engagement results in better learning, and the learner will be emotionally connected, feel satisfied with the course and the institution. Proposes a frame work in terms of Emotional, Behavioral & Cognitive. highlighted that the engagement is related with the Mastery of academic work. described the process of student engagement. The author stated that the student engagement stimulates the curiosity. Identified four dimensions including academic, Affective, Behavioral, & Cognitive

The opposite of engagement is disaffection. Disaffected students are passive, do not try hard, and give up easily in the face of challenges... [they can] be bored, depressed, anxious, or even angry about their presence in the classroom; they can be withdrawn from learning opportunities or even rebellious towards teachers and classmates.

### 1.1.3 Factors Influencing Student Engagement

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Many factors contribute to a student's engagement at school, ranging from the student's internal experiences to the student's interactions with their environment.

#### *Internal Factors*

Studies have concluded that there are three main factors that contribute to the student's internal process of engaging, the first of which is behavioral engagement. Behavioral engagement defines how the student appears to be engaging with learning, such as participating and persevering. The second internal factor is cognitive engagement, which concerns the student's mental processes of paying attention and pushing themselves past their expectations. The last factor deals with the student's positive or negative experience of learning, and is called emotional-affective engagement. These internal engagement factors are not stable, and can shift over time or change as the student moves in and out of the school environment, classroom environment, and different learning tasks.

## *External Factors*

There are a vast amount of external factors that influence a child's experience with engaging in learning, such as the family, school, peers, sociocultural factors, and environmental stressors.

### *Family*

Family shapes a child's experience with learning and engaging through the home environment such as family values, and the family's access to opportunities. Parenting styles and the parents' expectations for the child's success influence how much parents are involved with their child's learning, which studies have shown to be positively connected to student engagement. A family's income also has an effect on a child's engagement, because families with a higher socioeconomic status (SES) have been shown to expose their children to more intellectually enriching activities and know how to intervene in the school system to promote their child's education.

### *School*

There are numerous ways that school influences student engagement, including structural characteristics like class size and interactional processes like teacher's instructional and emotional support. Studies show that instructional quality, such as rigorous and challenging learning activities that can be applied to the outside world, as well as teacher expectations can enhance or hurt a child's engagement. The school environment is also important to student engagement, as one study reported that racial discrimination in schools negatively affected students of color's engagement and performance.

### *Peers*

Peers have a strong influence on adolescent engagement, with research showing that adolescents will match their engagement level to that of their peer group, and conversely choose a peer group that matches their own engagement level. During this time, peers are an important part of a student's self-identity, with a strong connection to a peer group relating to higher levels of engagement. Peers also influence younger children as they learn to navigate how to socialize and socially conform.

### *Sociocultural Factors*

A student's social identity (i.e. race-ethnicity and social class) contributes heavily to a child's engagement. Social positions influence access to resources and opportunities, exposure to stressors, and parental investment. It is vital to consider sociocultural

factors when observing the engagement behavior of youths of color, because they experience intergenerational oppression, discrimination, and socioeconomic inequality.

### *Environmental Stressors*

Environmental stressors, predicted by both race-ethnicity and SES, play a large role in student engagement. Children from poor or low socioeconomic households may experience a disruption in family functioning due to economic hardships and financial strains, and children from low SES neighborhoods and communities of color (specifically black, Native American, and Latino) experience more stressors due to their surroundings. Neighborhoods closely mirror the resources given to the schools in the area, and schools in low SES areas are underfunded and lack supplies, leading to an inequality gap in the education these children receive.

Environmental stressors also include the prejudice, racism, and discrimination a student of color is subject to. A child's race determines the stereotypes they will face in and out of school, and research has shown that perceptions of discrimination and stereotype threat play a large role in the development of engagement amongst children of color.

### *Intersection of External Factors*

The factors mentioned above do not occur in isolation to one another - they are interconnected and shape student engagement. For example, research has shown a connection between school systems and race-ethnicity in that black male students and Latino male students are suspended at a rate far higher than their white male peers. Observing the intersection between the factors (and the privileges and oppression inherent in each factor), help to create a deeper understanding of an individual student's engagement.

## **1.1.4 Measuring Student Engagement**

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Assessing student engagement is seen as an essential step towards a school becoming a successful proponent. Critical educators have raised concerns that definitions and assessments of student engagement are often exclusive to the values represented by dominant groups within the learning environment where the analysis is conducted.

There are several methods to measure student engagement. They include self-reporting, such as surveys, questionnaires, checklists and rating scales. Technologies such as audience response systems, can be used to aid this process. Researchers also use direct observations, work sample analyses, and focused case studies.

### *Measuring student engagement in online settings*

In addition to the traditional methods of collecting data of student engagement such as surveys and questionnaires, using digital footprints of student activities in e-learning environments has recently gained traction. A massive amount of data about student interactions with Learning management system exists in educational databases, so there is an excellent opportunity to use these datasets to understand student engagement in online learning using learning analytics methods.

### *Measuring student engagement among student-athletes*

Student athletes create one of the dominant groups in most learning environments in the United States of America. Most high schools and universities in the U.S. maintain a large student athlete population. Measuring how and why student athletes at colleges/universities engage with their surrounding academic and professional communities helps educational institutions better understand how they can help student athletes “make the most of the rich academic environment.”

### *Measurement Through Comparison*

The body of literature concerning college student athletes and how they spend their time has increased in recent years. Many educators and scholars have inquired whether participating in college athletics enhances or detracts from a student athlete’s college experience and whether participation in a sport negatively or positively affects other areas of a student-athlete’s college life. When analyzing the career of any college student or student athlete, researchers often measure personal development to determine whether the student is happy and having a fulfilling college experience. For a student-athlete, personal development, a necessary ingredient to leading a successful life, includes participation in activities outside the sphere of one’s sport and interaction with non-athletes.

### *Student athletes and non-student athletes*

Many scholars approach research concerning student athletes by comparing student athletes to non-athletes. “A Comparison of Athletes and Nonathletes at Highly Selective Colleges: Academic Performance and Personal Development”, which look at the behavior of students and student athletes, results have shown that student athletes perceive themselves as less intelligent, but more sociable than non-athletes. Surveys asking student athletes about their engagement with other groups on campus have found that the majority of student athletes engages in extracurricular activities and spends more than half of its time interacting with non-athletes. A trend in results developed as well; freshman student athletes proved to be more socially outgoing

than senior student-athletes who admitted to spending more time with teammates. Some literature that attempts to explain student athlete involvement in extracurricular activities looks at factors such as the profile of the sport, the educational, social, economic and cultural background of athletes and characteristics of the institution, which may or may not support and foster student-athletes' involvement in groups and clubs outside of their team. In determining levels of student engagement among college student athletes, methods of comparison between student athletes and non-athletes, females and males, NCAA divisions and revenue generating and non-revenue generating sports have proven helpful. Some researchers believe that differences in how non-athletes and student athletes perceive themselves may determine their level of involvement on college/university campuses. Research has shown that «high-commitment athletes were distinguished from non-athletes by their lower perception of themselves throughout college as smart, intellectual, and artistic/creative, and a higher **perception** of themselves as socially skilled, outgoing, confident and good leaders.” Despite the contrasts in where non-athletes and student athletes believe their strengths lie, “high-commitment athletes were as likely as non-athletes to report every year that they had grown as a person, pursued new activities and interests, gotten to know people from different backgrounds, and found a place at the college/university.”

### Keyword

**Perception** is the organization, identification, and interpretation of sensory information in order to represent and understand the presented information or environment.

### *Comparisons by gender*

Many studies have shown that “on average, student athletes are as engaged in most educationally purposeful activities as their peers.» However, other comparisons have been made among student athletes in order to better understand which kind of student athlete pursues greater educational engagement. For example, when «compared with male non-athletes, male student athletes are as challenged academically, interact with faculty as frequently, and participate as often in active and collaborative learning activities,” however, “female student athletes” when compared to female non-athletes “are more likely to interact with faculty and participate in active and collaborative learning activities.” The size of the institution has also been studied as a possible factor in determining a student athlete’s engagement. Some researchers argue that “more selective, smaller schools





with low student-faculty ratios have higher levels of engagement, as well as schools classified as baccalaureate institutions.”

### *Comparisons by division*

Within the NCAA, colleges and universities are placed in one of three classifications: Division I, Division II and Division III. Research suggests that student athletes from each division differ in their behavior and levels of engagement. For instance, «for both men and women, students at Division III schools report higher levels of academic challenge...» and «interact with faculty more than students at Division I and Division II schools.» Such findings have caused some to conclude that student athletes at “small residential liberal arts colleges (most of which are Division III schools)” are more engaged than student athletes in Division I and Division II institutions. Variations in the levels of student-athlete engagement among institutions from different divisions may be explained by stated philosophies of each division. Institutions that compete at the Division III level “offer athletics because of its inherent educational value” and view athletics as an extension of the school’s “educational mission.” Member institutions of Division II broaden the focus of Division III members and place an equal amount of emphasis on academic, athletic and social success. According to the NCAA Division II Philosophy Statement, “the Division II approach provides growth opportunities through academic achievement, learning in high-level athletics competition and development of positive societal attitudes in service to community.” The stated philosophy of Division I institutions places less emphasis on the personal, social and intellectual growth of their student-athletes and states that its “ultimate goal is for student-athletes to graduate” because “a college degree gives student-athletes more options in life.”

### **1.1.5 Increasing Student Engagement**

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Several methods have been demonstrated to promote higher levels of student engagement. Instructors can enhance student engagement by encouraging students to become more active participants in their education through setting and achieving goals and by providing collaborative opportunities for educational research, planning, teaching, evaluation, and decision-making. Providing teachers with training on how to promote student autonomy was beneficial in enhancing student engagement by providing students with a more autonomous environment, rather than a controlling environment. Another method of promoting student engagement is through the use of learning communities, a technique that has a group of students taking the same classes together. By being part of a group taking the same classes, students show an increase in academic performance and collaborative skills. Increasing student engagement is especially important at the university level in increasing student persistence. It may also increase students’ mastery of challenging material.



## Learning Communities

One method that has been gaining popularity in university teaching is the creation or encouragement of learning communities. Learning communities are widely recognized as an effective form of student engagement and consist of groups of students that form with the intention of increasing learning through shared experience.

The defined four different types of learning communities:

- Curricular communities which consist of students co-enrolled in multiple courses in the same field of study.
- Classroom learning communities that focus on group learning activities in the classroom.
- Residential learning communities that are formed off-campus that provide out of the classroom learning and discussion opportunities.
- Student-type learning communities that are created for special groups of students.

Within learning communities, students are able to interact with peers who share similar interests and stimulate conversation about the topic. Such conversations are beneficial because they expose the members of the community to new ideas and methods. Students that are a part of such communities are therefore able to generate and construct their knowledge and understanding through inquisitive conversations with peers, as opposed to being given information by the instructor. This type of engagement in the field leads to a deep understanding of the material and gives the student a personal connection to the topic.

Organizing classrooms into learning communities allows instructors to constantly gather evidence of student learning to inform and improve their professional practice. They use common assessments and make results from those assessments easily accessible and openly shared among members of the team in order to build on individual and team strengths and to identify and address areas of concern. Results are then used to identify students who are experiencing difficulty and need additional time and support for learning as well as students who are highly proficient and require enrichment and extension. Learning community programs also improve students' interpersonal dialogue, collaboration, and experiential learning within the context of diversity, these programs address a decreasing sense of community and connection and allow students to relate their college-level learning to larger personal and global questions.

## Connected Learning

The connected learning educational approach is based on evidence that suggests that the most resilient, adaptive, and effective learning involves individual interest as well

as social support to overcome adversity and provide recognition. According to research conducted by the Digital Media and Learning Research Hub, connected learning “advocates for broadened access to learning that is socially embedded, interest-driven, and oriented toward educational, economic, or political opportunity.” Connected learning environments are learning communities where the walls that separate student learning in and out of school are taken down, opportunities outside of traditional school organizational systems are created, and curricula and instruction is better aligned with student interests.

Connected learning results when a pupil is able to pursue a passion or interest of theirs with the support of peers and caring adults and links their learning and interests to academic achievement, career success, and/or civic engagement. The critical components that encompass connected learning environments include: 1) greater depth and breadth of interests, 2) peer, adult, and institutional learning supports, and 3) greater academic orientation.

The connected learning approach calls for a central focus to include the linking of deep “vertical” expertise with horizontal expertise and creating connections to other cultural domains and practices, and also expects an outcome of the learning approach to be to deepen and expand each student’s areas of interests and expertise. A successful connected learning environment can deepen and expand each student’s interests, expertise, and knowledge by challenging them to learn and explore content outside of their “islands of expertise,” and emphasizing the importance of dialogue and connection practices.

Connected learning environments allow students to be embedded in social networks and communities of different interests and expertise that they can call upon for help, feedback, and mentorship. Connected learning environments are characterized by their “low barriers to entry and a multiplicity of roles, ways of participating, and improving and gaining expertise.” The goal of connected learning is to integrate the peer culture, academics, and interests in the way that each individual student is best reached.

### *Displaying work in the community*

Student engagement represents two critical features of collegiate quality. The first is the amount of time and effort students put into their studies and other educationally purposeful activities. The second is how the institution deploys its resources and organizes the curriculum and other learning opportunities to get students to participate in activities that decades of research studies show are linked to student learning.

## *School climate*

The J. Erik Jonsson Community School (3 year-old-5th grade) in Dallas, TX has a simple formula for success: “Powerful Pedagogy + trusting relationships = student engagement” (Journal of Staff Development, 2008). The majority of research is done in early education (Pre-School-5th), but this sentiment rings equally true in higher education. Accomplishing that end is nearly impossible in introductory, general education classes with class enrolments reaching up to 300 students at some schools but relationship-building is a skill that is under-appreciated in the “college experience”. In Australia many schools offer an integrated program developed by Hands On Learning Australia which provides a type of micro-climate for students experiencing disengagement to develop trusting relationships in the context of practical, construction based, tasks.

### **1.1.6 Toward a Classroom-Based Model for Understanding Student Engagement**

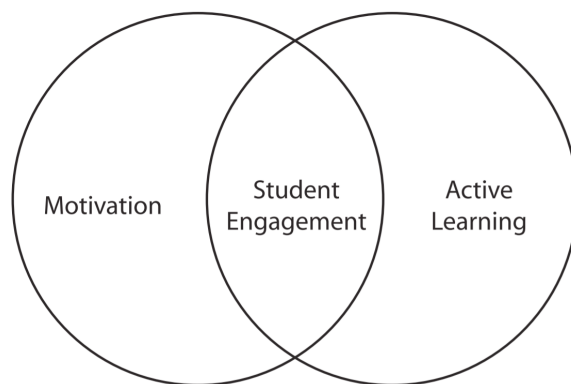
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College teachers tend to describe student engagement in one of two ways. The first is with statements like “Engaged students really care about what they’re learning; they want to learn” or “When students are engaged, they exceed expectations and go beyond what is required” or “The words that describe student engagement to me are passion and excitement”. These phrases reflect a view of engagement rooted in motivation. The etymological roots of the word engagement offer clues to this perspective. “Engage” comes from Middle English and its multiple meanings include pledging one’s life and honor and charming or fascinating someone so that he or she becomes an ally. Both meanings resonate with teachers’ motivation-based view of student engagement: we want students to share our enthusiasm for our academic discipline and find our courses so compelling that they willingly, in fact enthusiastically, devote their hearts and minds to the learning process.

The second way many college teachers describe student engagement is with statements like “Engaged students are trying to make meaning of what they are learning” or “Engaged students are involved in the academic task at hand and are using higher-order thinking skills such as analysing information or solving problems”. These teachers are relating engagement to active learning. They recognize that learning is a dynamic process that consists of making sense and meaning out of new information by connecting it to what is already known. They define active learning as “doing what we think and thinking about what we are doing.” “to really understand an idea a student must be able to carry out a variety of performances involving the idea. Students know about chemistry by reading and listening to lectures, but to really understand chemistry, students need to engage in the tasks that chemists perform.” He adds that some teaching approaches (such as problem-based learning, collaborative learning, and undergraduate research) are “pedagogies of engagement” because they require

students to be actively learning as they “do” the tasks of the discipline. The points out that the NSSE, “which assesses the extent to which these pedagogies are used, has become one de facto operational definition of engagement”.

Whether teachers think primarily of the motivational or active learning elements of student engagement, they are quick to point out that both are required. A classroom filled with enthusiastic, motivated students is great, but it is educationally meaningless if the enthusiasm does not result in learning. Conversely, students who are actively learning but doing so reluctantly and resentfully are not engaged. Student engagement is the product of motivation and active learning. It is a product rather than a sum because it will not occur if either element is missing. It does not result from one or the other alone, but rather is generated in the space that resides in the overlap of motivation and active learning, as illustrated in Figure 1.



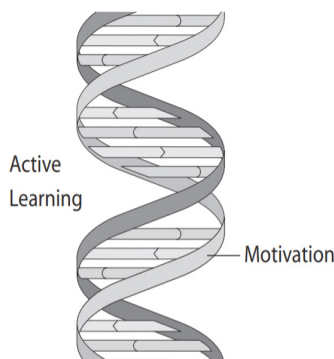
**Figure 1.** Venn Diagram Model of Student Engagement

While combined motivation and active learning promote basic student engagement, some teachers are pushing for more: they want students to be truly transformed by their educational experiences. Although any learning, by definition, results in some level of change, transformative learning is deep and thorough change. The defines transformative learning as “a process by which previously uncritically assimilated assumptions, beliefs, values, and perspectives are questioned and thereby become more open, permeable, and better justified”. It requires learners “to examine problematic frames of reference to make them more inclusive, discriminating, open, reflective, and able to change,” and it can be “provoked by a single event or it can take place gradually and cumulatively over time”. Transformative learning occurs when students are challenged intensely, creating the kind of growth described by Perry’s upper levels of intellectual and ethical development. In Perry’s observations, most freshmen enter college as dualists, believing that there are clear, objective, right-or-wrong answers. One of the goals of a college education is to help students move beyond dualistic thinking to more complex stages as they learn to deal with uncertainty and relativism.

As experiences challenge their thinking, students begin to see that truth is contextual and relative, and since there is not a single correct answer, everyone has a right to his or her own opinion. Eventually students recognize that there may be multiple answers to a question but not all answers are equal, and specific criteria such as empirical evidence and logical consistency can help them evaluate the usefulness and validity of knowledge claims.

In Perry's fourth and final stage, students come to recognize that they must make individual choices that require both objective analysis and personal values. As students' thinking matures to this level of sophistication, it is truly transformative. Interestingly, observes that students often resist teachers' attempts to promote transformative learning precisely because it "necessarily threatens the student's current identity and world view" and cites a study by Trosset at an elite liberal arts college that revealed that the majority of students did not want to participate in a discussion until they felt well prepared to defend their already firmly held views. Some teachers consider transformative learning to be an element of engaged learning, but it may not be so much a required element as much as the result of sustained engagement or engagement that has achieved a higher level of personal intensity.

Motivation and active learning work together synergistically, and as they interact, they contribute incrementally to increase engagement. Rather than a Venn diagram where engagement is the overlap of active learning and motivation, thereby limiting the influence of each, engagement may be better described as a double helix in which active learning and motivation are spirals working together synergistically, building in intensity, and creating a fluid and dynamic phenomenon that is greater than the sum of their individual effects.



**Figure 2.** Double Helix Model of Student Engagement

Thus engagement occurs on a continuum: it starts at the intersection of motivation and active learning, but these two work synergistically and build in intensity. At the

far end of the continuum are the transformative, peak experiences that constitute the treasured milestones of an education. As attractive and appealing as these experiences are, they are not sustainable on a constant basis—they'd be too exhausting. As college teachers, we can strive to increase experiences of deep engagement, reduce the incidence of indifference and apathy that characterize lack of engagement, and attend to the many ways we can adapt our teaching methods to enhance engaged learning throughout the range in between.

Within the context of a college classroom, I propose this definition: Student engagement is a process and a product that is experienced on a continuum and results from the synergistic interaction between motivation and active learning. Understanding basic principles drawn from the research and theory on motivation and active learning can offer insights into how to promote student engagement. Let us therefore begin by exploring the first element in our double helix model: student motivation.

## 1.2 ENGAGEMENT AND MOTIVATION

Motivation is a theoretical construct to explain the reason or reasons we engage in a particular behavior. It is the feeling of interest or enthusiasm that makes somebody want to do something. In the classroom, we want students to want to learn. The proposes that motivation to learn is an acquired competence developed through an individual's cumulative experience with learning situations. It is a web of connected insights, skills, values, and dispositions that is developed over time. Some students come to our institutions and our classes with a high motivation to learn. Others are more motivated by the economic opportunities associated with the professions and careers they hope to have once they graduate. Regardless of a student's general disposition, motivation can be activated or suppressed in specific situations. Even a student who is generally motivated to learn may be less enthusiastic in a course that she feels coerced to take because it is a required element of the general education pattern. Conversely, a student who seems generally unmotivated to learn may become quite enthusiastic about the learning in a specific course.

Brophy defines motivation in the classroom as “the level of enthusiasm and the degree to which students invest attention and effort in learning”. This definition implies an internal state, a concept that differs considerably from the external manipulation of rewards and punishment that was emphasized in early, behaviorist studies of motivation. In the behaviorist approach, motivation was studied as a response to incentives and rewards, factors that are largely dictated from sources external to the learner. The behaviorist model suggests that teachers can develop motivated students by reinforcing the desired learning behavior that constitutes excellent work (attentiveness in class, careful and thorough work on assignments, thoughtful and frequent contributions to discussion), thereby encouraging students to continue these behaviors. If students are





not able to engage in these behaviors immediately, they will gradually improve if the correct behaviors are reinforced and incompatible behaviors are extinguished through nonreinforcement or, if necessary, suppressed through punishment.

Cognitive models of motivation started replacing behaviorist models in the 1960s, emphasizing learners' subjective experiences. Reinforcement was still important, but its effects were mediated through learners' cognitions. Among the cognitive models, needs models developed first. These models, such as Maslow's Hierarchy of Needs, propose that behavior is a response to felt needs, implying that basic physiological needs (such as sleep) must be met before higher-level needs (such as a sense of belonging) can be met. In terms of the classroom, this means that before students can focus on college-level learning, lower-level needs must first be met. In other words, students who are hungry because they're rushing between classes and haven't eaten or are tired because they worked late at their part-time job or studied all night for an exam will be distracted by their fundamental needs for food or sleep and not be able to concentrate on the coursework. Or as another example, the basic need for safety will discourage students from participating in a discussion and saying what they truly think or feel if they are anxious about rejection from their peers or criticism by their professor.

Both behaviorist and needs theories depict motivation as reactive to pressures, either from extrinsic rewards or internal needs. Theorists gradually began to acknowledge that humans are not always just pushed or pulled but are sometimes more proactive in their behavior; this led to "goals" models. Goal theories suggest students are motivated, for example, by performance goals (preserving self-perception or public reputation as capable individuals), learning goals (trying to learn whatever the instructor's task is designed to teach them), and even work-avoidant goals (refusing to accept the challenges inherent in the task and instead focusing on spending as little time and effort as possible in completing it). Studies by goal theorists and other motivational researchers contributed a great deal of information about the situational characteristics that predict students' tendencies to adopt different goals in achievement situations.

To apply goals theory to the college classroom, teachers try to (a) establish supportive relationships and cooperative/collaborative learning arrangements that encourage students to adopt learning goals instead of performance goals and (b) minimize the sorts of pressures that dispose students toward performance goals or work-avoidant goals. When these conditions are created in a classroom, "students are able to focus their energies on learning without becoming distracted by fear of embarrassment or failure, or by resentment of tasks that they view as pointless or inappropriate".

### 1.2.1 Motivating Students

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Students arrive in a classroom with the full-range of motivations – and sometimes with what we see as a remarkable lack of motivation. Motivating students is one of

the most challenging things as educators, and some of us want to throw up our hands in frustration or proclaim that there is little we can do to motivate students to learn.

It is true that students carry with them many past experiences that contribute to their motivation in the classrooms. However, teachers can make a difference, for better or for worse, in motivating students to learn.

### *Motivation Theories*

There are a number of different motivational theories that one can use to establish a working framework upon which to build an understanding of motivation. The simplest theories in science are also the most elegant. An early theory of motivation is Maslow's Hierarchy of Needs. In Maslow's pyramid, we are motivated to fulfill basic biological needs such as hunger, thirst and safety, first. Social needs of belongingness and esteem must be met next, before we are motivated to fulfill self-actualization and spiritual needs.

#### **Remember**

A popular framework for examining motivation is to divide motivation into two components, intrinsic (internal) and extrinsic (external) motivation.

### *Extrinsic Motivation*

Extrinsic motivation is what we are most familiar with in education; it is motivation to act that comes from the external environment, outside of the person. When we are motivated extrinsically, we act with the anticipation of rewards – grades, praise, money, time off from work, or some other incentive. For instance, teachers motivate students to come to class regularly and join in discussions through the use of participation grades.

When used wisely and thoughtfully, extrinsic motivation can be quite helpful in furthering student learning. We can use extrinsic motivation to our advantage as educators if we know what motivates students, but we need to do so carefully.

So, if we know that grades are important, we can use tests and papers to motivate students to build the skills and knowledge we expect them to have. For instance, if students can succeed simply by memorizing, then they will memorize. However, if tests and papers require analysis and integration of ideas, then students will learn these higher-order skills.



## *Intrinsic Motivation*

If extrinsic motivation comes from without, then intrinsic motivation comes from within. Intrinsically motivated learners want to learn because they are curious, they want to improve, they seek knowledge, and learning gives them satisfaction.

This form of motivation nurtures and encourages the habit of lifelong learning. As students leave school, external motivators for learning, such as grades and praise, are replaced by long-term goals and less immediate rewards. Intrinsic motivation encourages us to continue learning regardless of what rewards come our way.



Interest ties intrinsic and extrinsic motivation together. Often, personal interest and intrinsic motivation are seen as synonymous or interchangeable. Less obvious is the close relationship between situational interest and extrinsic motivation. There are a number of interactions between individual and situational interest, and these interactions can be used by the teacher to develop personal interest around academic lessons and tasks.

Throughout the late twentieth century several motivational theories were developed. In this millennium, those theories have been unified by the underlying theme of emotion. Four theories prominent in current educational psychology include: self-efficacy theory, attribution theory, self-worth theory, and achievement goal theory. These theories unify under the premise that student behaviors, in part, are guided by emotional responses to tasks. Those responses dictate subsequent motivational behavior. When examined from this light, specific patterns of behavior emerge.

Cognition, motivation and emotion are three distinct classes of mental operations and are fundamentally linked. There are specific regions of the higher brain for cognitive, motivational and emotional processing, and these regions integrate with each other. Lower centers of the brain specific to motivational and emotional processing have projections throughout the cerebral cortex. A high degree of feedback exists between higher and lower brain centers for motivation and emotion.

The identification of a specific higher region of the brain for motivation implies that motivation can be learned, just like problem solving, language, or other higher brain functions. The involvement of lower brain centers in motivation and emotion emphasizes the importance of motivational and emotional stimuli, and the importance of minimizing stress and anxiety, in learning. Extensive feedback from higher to lower brain centers implies that motivational behaviors can be consciously controlled, much like emotions.

### 1.2.2 Classroom Motivation

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Situational interest contributes to the development of individual interest. Stimulating deep interest involves both affective and cognitive processes. For example, feelings of enjoyment combined with a perception of importance. Situational interest can impact the cognitive and affective domains to stimulate personal interest and intrinsic motivation. Appealing to each student's individual interest to enhance motivation in the classroom is problematic. However, we can create situational interest and use that to engage and ultimately develop personal interest among students.

Teachers are the difference in motivated versus unmotivated classrooms. Teachers with motivated, engaged classrooms have different characteristics and exhibit different behaviors than those teachers with classrooms in which the motivation and engagement of students is low.



Motivating teachers create a positive, upbeat, compassionate classroom where the emphasis is on learning. Lessons are well-planned, meaningful, interesting, and allow for student autonomy and cooperation. High, positive expectations are projected by motivating teachers with solid support through scaffolding to help students reach goals. Classroom procedures are well-developed in motivating classrooms and effective teachers

actively teach these procedures so students fully understand them. Self-regulation is clearly evident in motivated classrooms. Motivating teachers emphasize that students are to take charge of themselves, and carry out routines and tasks without teacher oversight. Finally, motivating teachers model for students: techniques, subject material, positive learning behavior, and interpersonal relationships.

Reading motivation is of critical importance for academic achievement. We can stimulate reading motivation among students in the classroom. The teacher is the key factor once again. Value reading and be enthusiastic about reading. Fill the classroom with books at different reading levels. Choose books that are coherent, relevant and vivid. Provide choice and social opportunities to enhance students' interaction with reading material. Connect the reading material with hands-on activities. Use extrinsic rewards that are strongly related to reading and reading behavior.

Math motivation is also important for academic achievement, and the teacher is important as a math model. Create a comfortable classroom that supports healthy risk-taking to reduce anxiety. Provide meaningful mathematics tasks that are appropriately challenging. Provide choices and allow for cooperative learning opportunities. Engage in mathematical conversations and emphasize conceptual understanding. Allow for mistakes and use them as learning opportunities. Importantly, give frequent, substantive feedback.

### Remember

The reward must be tangible and time-sensitive. Remember that the effective use of verbal praise is a powerful extrinsic motivator.



Intrinsic and extrinsic motivations are both involved in motivation for learning. Effective use of extrinsic rewards can



develop intrinsic motivation to learn. Extrinsic rewards are useful when students' initial interest is low. Extrinsic rewards must place value on learning and be based upon specific learning goals.

Teacher motivation is a key element in student motivation. Unmotivated teachers can undermine student motivation. Research studies demonstrate that children enter first grade highly motivated, and slowly lose the sense of motivation up until middle school years, when those motivational behaviors become cemented. Stress, a sense of self-efficacy and emotion are three vital players in the motivational states of teachers.

### 1.2.3 Strategies for Motivating Students

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One of the most difficult aspects of becoming a teacher is learning how to motivate your students. It is also one of the most important. Students who are not motivated will not learn effectively. They will not retain information, they will not participate and some of them may even become disruptive. A student may be unmotivated for a variety of reasons: They may feel that they have no interest in the subject, find the teacher's methods un-engaging or be distracted by external forces. It may even come to light that a student who appeared unmotivated actually has difficulty learning and is in need of special attention.

While motivating students can be a difficult task, the rewards are more than worth it. Motivated students are more excited to learn and participate. Simply put: Teaching a class full of motivated students is enjoyable for teacher and student alike. Some students are self-motivated, with a natural love of learning. But even with the students who do not have this natural drive, a great teacher can make learning fun and inspire them to reach their full potential. Here are some strategies to get your students excited about learning:

#### Connecting With Students

Connecting with students is essential to motivating them. There are three significant stages in connecting with students. They must occur one stage at a time, in the order shown here, if mutual learning and teaching are to take place.

*First stage—connecting emotionally.* Of the three relationship essentials, emotional bonding is by far the strongest in motivating the defiant and disruptive student. Students respond positively to acts of genuine kindness and sincerity, which often result in greater academic production. Gentle words of welcome and concern move the teacher-student relationship toward connection.





*Second stage—understanding psychological barriers.* Understanding the student's background, family, individualized education program (IEP), and interests is necessary to help motivate learning. Students are all independent agents who come with their own life experiences. Getting to the core of those experiences demonstrates care and compassion for the student. Once teachers understand why their students behave the way they do, they have a greater chance of aligning instructional theory and curriculum design for each student.

*Third stage—modifying behavior.* It will be necessary from time to time to redirect student behavior for the purpose of refocusing on classroom goals and objectives. Once the teacher and student have passed through the first two stages above, this process is made easier.

### *Differences in Values*

Many teachers expect students to understand the classroom and school standards from the onset, which is a critical error. Moral expectations of the home and school can be vastly different. Teachers must be willing to accept that there can be a great difference between the two and be willing to address those differences in order to stimulate student motivation to learn.

There was a time in history when it was fairly safe to assume that most students came from homes with similar sets of values, values based on societal standards and traditions.

Today's society is composed of a myriad of different values, and this makes the management of youngsters a challenging endeavor. Predicting family support is difficult; therefore, it is necessary for the teacher to establish classroom expectations and be prepared to follow through with reinforcement of those expectations.

## *Offer Rewards*

Everyone likes getting rewards, and offering your students the chance to earn them is an excellent source of motivation. Consider the personalities and needs of your students to determine appropriate rewards for your class.



Some schools and districts have sought to motivate students to work harder by providing them with money or other rewards. Examples include programs that give cash to students for earning good grades, reading books, attending after-school study sessions, demonstrating good attendance and behavior, or attaining a passing score or higher score on an important exam. Examples of non-cash rewards include giving cellphones and phone minutes to students for good behavior, test scores, attendance, or homework completion; giving pizza coupons to students who make good grades; or awarding students who make the honor roll with certificates they can use for special privileges like an early release from school. This concept of providing rewards as motivation is controversial, and the results of these programs are mixed, or in some cases unevaluated.

## *Modifying Student Behavior*

What a student needs is an education. What a student wants is to take control of that education. Putting students in control of their learning is the best motivator. It is when a student attempts to take control of the instruction that problems begin. In situations like this, it is a good practice to keep your back to the wall and always face the class; if necessary, invite disruptive students to your desk.

Somewhere along life's journey, disruptive students have been taught that interrupting adults is the norm and adults are to acknowledge their requests whenever they make them. Thirty students all wanting the teacher's attention turns into chaos; therefore, students need parameters for their behavior and a process to obtain information they truly need. Students may need a lesson on identifying the difference between a need and a want. When personal needs are met, wants may be addressed.

## *Teach Students What Is Expected*

All individuals are moral agents, and all have their own standards of right and wrong; for students, these typically are initially the standards they have learned at home. Once they are in school, however, classroom, school, and district rules serve as the moral compass by which each student must abide. It is the teacher's responsibility to enforce the code of conduct. Students who have been taught the code can be easily redirected to the acceptable path.

They, or someone else, might want the teacher to think they are not able to follow school expectations. However, to make such an assumption is to set them up for failure. When the **teacher** constantly demands the right and challenges the wrong, students are easier to manage, and instructional time is increased.

### **Keyword**

**Teacher** is a person who helps students to acquire knowledge, competence or virtue.

## *Shift Directions to Retrieve Drifting Students*

Students and teachers often approach the classroom with different expectations. Essentially, they are traveling parallel paths heading toward their educational goals. However, they are not always traveling at the same rate, and sometimes their paths diverge. Therefore, teachers must make efforts to connect with the students. When a student moves away from the educational goals of the curriculum and the teacher's direction, it becomes paramount for the teacher to shift direction in an attempt to come alongside the drifting student. As the teacher continues to make these adjustments to the student's behavior, the chances for personal connection and academic motivation improve. One degree in a shift of two parallel paths will ultimately lead to a connection.

## *Teachers Cannot Save Every Child*

This is one of the toughest admissions a teacher has to make; however, knowing you cannot save every child is a liberating realization. Some students are naturally defiant and disruptive by choice or influence. Working through this reality is hardest for young teachers who want to and believe they can save every child. This is simply not the case. Countless hours have been spent trying to reach the callused child, hours that could have



been better spent assisting those who show signs of progress. Only through experience will a teacher realize when it is time to divert attention toward the students who are willing and able to learn.

### 1.2.4 Effective Teaching Strategies for Motivating Students

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In most classrooms you will have students who will say they do not wish to be there and do not want to learn. While this frustrates teachers at times, in reality, the teacher creates the learning environment and can do much to motivate her students to succeed. By implementing effective teaching strategies, teachers can influence and motivate their students.

#### *Be Accessible*

Teachers have the potential of being the most influential person in the classroom. In order to influence your students, be accessible where they feel free to engage you on any topic. Students who walk in the classroom without desiring to know what you are going to say and do are your least motivated students. Be interested in their lives. If they know you care, they will start to care, too, about what happens in the classroom. While you are teaching, call them by name, keep your lesson content relevant to their lives as much as possible. Keeping examples in your lessons as close to real life as possible will motivate your students to listen and participate. Being accessible motivates your students to initiate more questions and be more open in what they have to say about class.

#### *Be Communicative*

Effective teaching strategies that result in motivating students are praising and rewarding students for participating. Communicate your expectations to your students and how you think they can succeed. If your students know you believe they can master the material you are teaching, they will start to believe it, too. Positive feedback, especially when they do not expect it, will serve to let them know you notice them and their work, which will motivate them to do even better.

#### *Be Challenging*

Students who feel like their expected classwork is far too below their capabilities or far too above their capabilities likely are not your motivated students. Strive to be challenging by giving class assignments that are just a bit above your student's current ability. They need to stretch and attempt hard topics and assignments in class, but be careful you pick just the right level of work. Use differentiated instruction or teaching

strategies that are different for different students' needs since not every student is at the same level. Be enthusiastic about the topic you have to teach, and you may even motivate your students to make a career out of what they learned in your class.

### 1.2.5 Engagement and Active Learning

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Although the terms teaching and learning are typically paired, those of us who teach know that students don't always learn. When you complained about this early in my teaching career, a colleague chided me: "Saying 'you taught students something, they just didn't learn it' is akin to saying 'you sold them the car, they just didn't buy it.'" Learning can—and often does—occur without teaching, but teaching cannot occur without learning; teaching without learning is just talking. Since helping students learn is our primary goal as teachers, how do we best accomplish that? The simplest answer may be to set up conditions that promote active learning. "Active learning" is an umbrella term that now refers to several models of instruction, including cooperative and collaborative learning, discovery learning, experiential learning, problem-based learning, and inquiry-based learning. Active learning puts into practice over a half-century of research that demonstrates that to truly learn, we need to make an idea, a concept, or a solution our own by working it into our personal knowledge and experience.

It is easy to confuse active learning with physical activity, thinking that, for example, simply breaking a class into small groups so that more students have a chance to participate will result in student engagement. This belief is reinforced by NSSE and CCSSE survey questions that ask students to report how often they've participated in group activities, with the assumption that the larger the number, the more engaged that institution's students are. Although pedagogies such as cooperative/collaborative learning are more likely to encourage engagement than others, it is not safe to conclude that if students are talking to each other, they are learning. It is equally risky to conclude that students are learning when they are listening to other students talking.

Active learning means that the mind is actively engaged. Its defining characteristics are that students are dynamic participants in their learning and that they are reflecting on and monitoring both the processes and the results of their learning. A chess player may sit for hours without talking or moving, but his or her mind is actively engaged in studying the layout of the pieces and strategizing the next move. Highly skilled listeners who are involved in a lecture by self-questioning, analyzing, and incorporating new information into their existing knowledge are learning more actively than students who are participating in a small group discussion that is off-task, redundant, or superfluous. This definition of active learning, where students make information or a concept their own by connecting it to their existing knowledge and experience, is critical to student engagement. An engaged student actively examines, questions, and



relates new ideas to old, thereby achieving the kind of deep learning that lasts. Active learning is fundamental to and underlies all aspects of student engagement.

### 1.2.6 Promoting between Motivation and Active Learning

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In our model of student engagement, motivation and active learning are twin helices that work together synergistically. How can we promote this synergy? you propose that three classroom conditions function somewhat like steps or rungs between the two sides of the double helix spiral. These conditions integrate elements of both motivation and active learning and thus contribute to the synergy that promotes increased levels of engagement.

#### *Teachers Can Promote Synergy by Creating a Sense of Classroom Community*

If we had only our own observations of the ubiquitous use of cell phones on campus, we'd probably conclude that staying connected to other people is important to today's students. But this desire to be part of a social community is also reported in the research. In *Millennials Go to College*, generation analysts Howe and Strauss identify Team-Orientation—with its tight peer bonds and expectations to stay in constant contact with large circles of friends and acquaintances—as one of the seven core traits that define the current generation attending college. In the video *A Vision of Students Today*, student participants in the digital ethnography project at Kansas State University report that they average two hours a day on the cell phone and will read 1,281 Facebook profiles over the course of a year. Exploiting this predilection for social connections, college marketing departments publish “viewbooks” filled with photos of students in groups talking amiably together. Used as recruitment tools, the books send a visual message to prospective freshmen that they will find a vibrant campus community at that institution.

Recognizing the importance of campus community is not new. Residence halls, student clubs, campus activities, and sororities and fraternities are all extracurricular ways that institutions foster a sense of social community. Across the curriculum, educators hope students will work diligently to become part of a community of scholars. In between the extracurricular social community and the earned membership into the scholarly community, which is typically signified by graduation, is the curriculum—the courses where students have traditionally been expected to do their work individually and independently. Students sit in rows facing the professor and are urged to refrain from talking to each other because that is disruptive and distracting. Fortunately, this model is now changing, with many educators proposing that optimal, engaged classroom environments are those in which the teacher and students perceive themselves as members of a learning community.



Although there is debate in the literature over the definition of learning communities (with “purposeful pairing of courses” a common definition), for our discussion of student engagement in a single classroom, we use Cross’s definition: “groups of people engaged in intellectual interaction for the purpose of learning”. The term learning community seems appropriate for two reasons. First, it places the emphasis on learning. Second, the term suggests that this learning occurs within a community—a group of people working together with shared interests, common goals, and responsibilities toward one another and the group as a whole. In a learning community, the overarching goal is learning, but this learning is best achieved in environments where students feel a sense of belonging and where they feel comfortable responding to questions even when they are unsure of the answer and seeking help from the teacher or from their peers when they don’t understand. Building learning communities that help students feel connected to rather than isolated or alienated from the teacher and their classmates addresses a basic, motivational human need to be part of a social community.

Participating in the collaborative activities that are a fundamental component of a learning community also promotes active learning. Active learning means students are building their own minds through an active, involved process in which they make an idea, a concept, or a problem solution their own by assimilating it into their own understandings. In the traditional model, teachers stand at the front of the room and teach by “telling” students what they have learned with the expectation that they will transfer this knowledge into students’ heads efficiently and accurately. In the active learning model, teachers create conditions in which students do the work,

actively making connections and organizing learning into meaningful concepts. The advantages of cooperative and collaborative learning for actively engaging students are clear when compared with more traditional methods—such as lecture and large-group discussions—in which only a few students typically can, or do, participate. The effectiveness of promoting the interaction that characterizes a learning community is well documented. The first synthesis of the research on college’s effect on students concluded that a large part of students’ gains in factual knowledge and a range of general cognitive and intellectual skills is determined by the extent of students’ interaction with faculty members and student peers in and out of the classroom. In their follow-up work synthesizing research conducted in the 1990s. The “broad spectrum” of research on group work as a pedagogical approach suggests that “collaborative learning approaches can significantly enhance learning”. They describe a study that used data from over one thousand students in fifty-seven classes and found that the greater the emphasis on collaborative learning and the lower the emphasis on grades, the more likely students were to use the higher-order learning strategies of elaboration, comprehension monitoring, and critical thinking.



## 1.3 CLASSROOM MANAGEMENT AND COMMUNICATION

### Did You Know?

Since the 1980s, hundreds of studies have found that when teachers use strategies designed to capture students' attention and actively involve them in the learning process, student achievement soars.

Effective classroom management is necessary for all teachers and facilitators. Classroom management involves all aspects of what is going on in the classroom while a lesson is being taught. Not only does classroom management include how the teacher or facilitator delivers the curriculum, but also how the students interact with the teacher and with others in the classroom, and extends into the classroom environment in which students learn as well. Students cannot learn in chaos.

Classroom management includes elements of classroom discipline, but focuses more on creating a peaceful learning environment that is comfortable, organized, engaging, and respectful for both the teacher and the students. Having effective classroom management strategies should be the goal of everyone.

### 1.3.1 Classroom Management and Curriculum Fidelity

Classroom management strategies need to be planned, be thoughtful, and in line with curriculum fidelity. It is important to prioritize curriculum fidelity when selecting classroom management strategies. While some classroom management strategies focus more on setting clear rules and some focus more on transitions, the strategies should not change how the lesson is taught. Classroom management strategies should add organization for the students and classroom, but not change the content of the lessons or the fidelity of the curriculum. It is important for all providers to deliver the curriculum with the highest degree of fidelity as possible.

### 1.3.2 Developing a Classroom Management Plan

A classroom management plan is where clear rules are set, class norms are developed, expectations are stated, and consequences are defined. The classroom management plan does not have to be lengthy, complex, or intricate. A simple set of rules or class norms and consequences hand-written on a piece of flip chart paper is all you need to create your plan. The classroom management plan, also referred to as a classroom management

contract, is a contract you create with your students focusing on providing for their needs in the classroom and a commitment to help students learn without interference and disturbances. Once the classroom rules or norms are developed, the contract is presented to the class and is the document that defines the classroom norms. The contract should be followed at all times and requires teachers and facilitators to hold students and themselves accountable at all times. This applies to both the teacher or facilitator or the classroom teacher. While we rely on the classroom teacher for handling most discipline issues, it is often our responsibility to keep students on task and deal with smaller classroom management issues.

It is important for students to know what is acceptable and unacceptable in the classroom as well as what the expectations are. By allowing students input on developing the classroom management plan, they are invested in following the rules, but should they break a rule, they know what the consequences are. Some important points to keep in mind when creating a classroom management plan or classroom management contract with students:

- Involve students in all aspects of creating the classroom management plan.
- *Create no more than five rules or class norms* – Keep things as simple as possible. If you create too many rules students will feel overwhelmed by the classroom management plan. Look for rules that cover behaviors that could interfere with the learning and engagement of your students. Creating a classroom management plan should be a short, rather quick activity meant to set the tone for the rest of your time together. Always state rules or classroom norms positively and be as brief and to the point as possible. Rules that work well in most situations would be:
  - Respect yourself, your classmates, and your teachers.
  - Raise your hand before speaking or leaving your seat.
  - Keep your hands, feet, and materials to yourself.
  - Listen, follow directions, and ask questions when needed.
  - Be positive.
- Work with the classroom teacher ahead of time to know what some appropriate consequences might be if a student breaks a rule. You do not want to create a rule that is not enforceable or does not match the teacher's classroom management plan. Students often times come up with very harsh consequences, so having the conversation with the classroom teacher ahead of time might give you some ideas to suggest to students if needed. The classroom teacher may have some very valuable insight into what might help keep students on track or what is currently working well in the classroom. Their goal is to

### Keyword

**Strategy** is a general plan to achieve one or more long-term or overall goals under conditions of uncertainty.

work with students to create consequences that can be carried out and offer valuable life lessons. Here again, you want to keep the consequences short. Usually you can have a three step consequence plan allowing for a more severe consequence each time a rule is broken. As a rule of thumb it is always good to have students receive a warning the first time they break a rule. A warning works well as a first consequence because it does not take up a lot of class time, does not involve conflict, is stress-free for the teacher and student, and is not personal. Even if students do not suggest a warning as a first time rule violation, the teacher should try to establish a warning as the first consequence.

- Block off a portion of the flip chart paper so students can sign on the sheet that includes the rules/classroom norms and consequences. Take the flip chart paper down after every lesson and post it up at the beginning of every lesson and in a brief overview at the beginning of each lesson review the rules.
- Remember to include both the class rules or class norms and the consequences. Neither listing the rules alone or the consequences alone does much to change the classroom environment. Students need to know what the rules are and be aware of what will happen when a rule is broken. By including the consequences on the flip chart it allows students to know what will happen if a rule is broken, and that the consequences are the same for everyone. It makes the rules predictable and your responses predictable, which can help establish trust in the classroom. Students do not have to wonder what will happen, they know what will happen and that it will be the same for all students, every day.

### 1.3.3 Classroom Management Strategies

Classroom management strategies focus on implementing strategies emphasizing how students should behave in the classroom, the expectations in the classroom, and how to make the classroom as structured and predictable as possible to avoid disruptive behaviors. Class-wide strategies are implemented with all students within the class and address the needs of most students in terms of behavior, while individualized **strategies**



might be needed for a small number of students who will not respond appropriately to class-wide strategies.

As discussed above, a classroom management plan will help a provider establish clear rules, set class norms, and define consequences, while classroom management strategies work to keep the students engaged, connected, and keep students on-task as much as possible and therefore less likely to be disruptive or exhibit challenging behaviors during class time. While providers can often piggy-back on the classroom management strategies of the classroom teacher, many times providers will need to have options of additional classroom management strategies to ensure class time is as productive as possible and runs as smoothly as possible.



Whether implementing class-wide or individualized classroom management strategies the provider sets the stage by being on-time, prepared, organized, and able to move the lesson along at an appropriate pace.

## *Class-wide Strategies*

### *Create a Classroom Management Plan*

Although creating a classroom management plan is a short activity it is crucial in establishing how the classroom will function. As mentioned above, the classroom management plan should be posted during every lesson, reviewed often, and referred to when challenging behaviors arise.

### *Understand the Power of Day 1*

Day 1 is the first day you are in the classroom with the students. Day 1 is the most important day you will spend with students because you set the tone for the classroom and the rules and class norms are established. Work to create a classroom that is warm,



inviting, and inclusive. Show enthusiasm for the lessons you are teaching and show students you are excited about being able to spend time with them. We want students to leave the classroom after Day 1 and look forward to the next lesson and the time they will spend in the classroom while you are facilitating.

### *Access a Seating Chart Ahead of Time*

Young people want to be addressed by name. If at all possible access a seating chart ahead of time so you can make name tents for each student to grab on their way into class and take to their desks or arrange with the classroom teacher a time before your lesson starts for students to create their own name tents on a piece of paper. These name tents should be used each time you have class and will not only assist in you learning the students names, but will eliminate the need to reference a seating chart and take time and attention away from the students. The simple act of looking down at a seating chart and searching for a student's name is plenty of time for students to start to disengage.

### *Greet Students as They Enter the Classroom*

Even in the beginning when you are not certain of student's names, it is important for students to feel a sense of belonging and to know you are excited about being at school and are happy they are a part of the class. Simple phrases like, "I am glad you are here today" or "welcome to class" can help students feel connected and engaged. Also, to show students you enjoyed your time with them and look forward to seeing them again, always say good bye and reference when you will see them again for the next lesson.





### *Create an Agenda for Each Day*

Start each lesson on time and quickly review what is listed on the agenda for the lesson. Check off agenda items as they are completed to build on a sense of accomplishment and to help students know what is coming up next. This helps students understand there is a routine followed during your class time and a predictability of what is coming up next.

### *Be Genuine and Sincere with Praise*

While praise is very important and is often times a great prompt to the class acknowledging appropriate behavior, empty praise or praising for small tasks or less than adequate work can actually cause students to disengage and lose interest in your feedback. Be thoughtful in what you say to students and work to find ways to offer genuine praise and feedback. Always try to focus genuine praise on the work and behavior of a student and not the student themselves.

### *Balance Teaching and Facilitating*

While maintaining fidelity to the curriculum, look for ways to balance teaching and facilitating. Teaching is typically the class listening to the information being shared by a teacher or facilitator, while facilitating involves sharing knowledge and including the audience in the lesson. Look for opportunities to have students actively respond and participate. Offer opportunities for students to read aloud, write on the board/smart board, answer questions out loud, and assist you during the lesson. Depending on the student's learning style they may learn best when reading, listening, writing information down, or maybe even moving around the classroom a bit. While you cannot accommodate each student's learning style each time, you can make an effort to allow students opportunities to actively respond.

### *Circulate the Room*

Facilitators should circulate the room as a way to keep students engaged and attentive. Not only do students have to pay attention and follow where you are, but it allows you the opportunity to check to make sure students are on-task.

### *Find a Seating Arrangement Conducive to Learning*

While during some lesson activities you may have students working in groups with desks connected, typically when student's desks are arranged in rows students tend to stay on-task, focus, listen, and complete more work. During activities promoting or encouraging student engagement a u-shape or circle might be effective, but overall

other arrangements may help with managing disruptive behaviors. Check in with the classroom teacher ahead of time because the teacher may already have a seating assignment that works and has certain students in certain seats. As a rule of thumb it is best to avoid any seating arrangements which cause your back to be to the class or even part of the classroom for any length of time. If there is the need to write materials on the board it is a good idea to delegate different students to write on the board for you while you facilitate class instead of turning around and writing on the board.



### *Be Effective When Giving Instructions*

It is important when giving instructions to provide information in a way that is clear and concise. Once you have gained the student's attention it is important to:

- Wait until students are seated and not moving around the room.
- Give one instruction at a time.
- Use a clear firm voice and repeat each instruction.
- Wait for student compliance.
- Provide an opportunity for students to acknowledge understanding of the instruction given. This can be by done asking for thumbs up or thumbs down and answering questions or concerns of the students with their thumbs down.
- If a class is struggling with following verbal directions you might want to write out ahead of time and post directions for an activity. Having a posted copy of the instructions allows students to refer to this information if they are confused or have questions or concerns.

### *Avoid Answering Too Many Questions and Stalling the Lesson*

Always have a way students can get questions answered, even when there is not time in class. You can provide a “parking lot” flip chart sheet that is posted in a certain location in the classroom during each lesson and post-it sheets with pens near the paper and students can write questions and post them to the sheet to be answered next class period. Also a question box can be located in the classroom each class period and have index cards and pens so students can write and submit questions. Finally, as a way to minimize interruptions and keep students and lessons on track, you can decrease pause time between student responses and move on to the next question or task.

### *Handle Disagreements with Respect*

Let students know throughout your lessons information may be presented that a student might disagree with. Create a classroom atmosphere where students know it is ok to disagree, but disagreements are always to be respectful.

### *Integrate Students’ Interests When Appropriate*

During activities, such as role plays, try to use language youth can connect with and names they connect with as part of their culture. It is important to remember the goals and messages of the role play must remain unchanged and prioritize curriculum fidelity.

### *Be Willing to Give a Little to Get a Lot*

Some days students enter the classroom and you can tell the energy level is high and it is going to be an enormous challenge to keep students focused and on-task. Whether it is the weather, a school holiday or break is coming up, or a student has a birthday, offering a small incentive might be just the key to get students to tune in and be alert. Incentives do not have to cost money, but can offer students an opportunity to interact with each other and relax. You can tell students if they work hard, stay focused and on-task for the 45 minute lesson they can have the last 2-3 minutes of class to talk to each other, stand up, and use up some of their energy. While you do not want to give up our facilitation time, many times offering an incentive can help your facilitation time go smoothly and instead of dealing with constant disruptions, you can focus on the lesson and make the most of your time in the classroom.

## **1.3.4 Responding to Challenging Behaviors**

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With the exception of encountering a student who is extremely belligerent or disruptive, most disruptions in the classroom will be mild and just disruptive enough to slow the lesson. Class-wide strategies alone are rarely sufficient in dealing with all classroom

behaviors. While the classroom teacher may know a little more about a student's situation, we typically come into the classroom as a guest and will not know or be aware of each student's skills or academic challenges. The classroom teacher will likely handle any major challenging behaviors from students, but often times the disruptive behavior can happen while we are facilitating a lesson, so being prepared and having some strategies to deal with challenging behavior can help us more effectively manage the classroom and keep the lesson on-track.



Some common challenging behaviors in classrooms range from students wanting to dominate discussions, students who call out answers or do not wait to be called on, to the students who hum, click pens, and cannot sit still. You might also encounter a student who asks too many questions, wants to know personal information about us, or who wants to debate any information presented. While all of these behaviors would be considered low level distractions or disruptions, we know they can have a high impact on the classroom learning environment. Along with implementing class-wide strategies, facilitators can implement any of the strategies below to help deal with disruptive students and challenging behaviors.

### *Use Proximity to Stop Disruptive Behavior*

Place yourself in close proximity to the student and conduct a few minutes of the lesson standing by them. You do not need to be overly obvious about moving toward the student, but many times having you near will subdue the disruptive behavior.

### *Stop and Wait*

On occasion you might need to simply stop the lesson, pause, make eye contact with the student and wait for the student to quiet down and focus. This can also cue the classroom teacher in on which student is being disruptive or that their assistance may be needed.

### *Location, Location, Location*

While many teachers have created elaborate seating charts to keep certain students away from each other or in the front of the room, if where the student is seated is causing some of the disruptive behavior, it might be worth consulting the classroom teacher about having the student moved to another seat. Often behaviors are not as disruptive to you or the class if the student can be seated in the back of the classroom and close to the classroom teacher. If you have an extremely disruptive student you might want to consider putting them in a seat closest to the classroom teacher's desk.

### *Use your Voice*

Students often match the volume of the teacher's voice in the classroom. If you want to gain a student's attention or the attention of the class, instead of increasing the volume of your voice try decreasing your volume. It is not productive and effective to try and talk over a student or the side conversations of students. Silence can be very effective and sometimes it is very appropriate so students have to focus and really listen to hear you.

### *Stay Cool*

Remember to stay calm and keep your composure when presented with challenging behaviors. You do not need to accept or tolerate the behavior, but you will lose credibility if you lower yourself to his/her level.

It is important to stay professional at all times and even when students are disruptive it is important to reach out to the classroom teacher for assistance, but to refrain from sharing frustrations, venting, and complaining. If you encounter a student who was consistently disruptive during class you can use the following steps to try and work with the student to correct behavior:

- Speak with the student after class. Never try to engage in a conversation about behavior during class or while other students are able to hear the conversation. Be as private as you can with the conversation, but have the discussion out in the open where other people are around, but not included in your conversation.
- Speak only for yourself and do not speak for the classroom teacher or the other students in the class. Make the conversation very centered on just you and the student.
- Try to understand and see things from the student's point of view.
- Help the student understand your point of view, but understand many adolescents are not able to see beyond that moment or understand how their behavior can affect others.



- While it is important to state what the disruptive behavior was, focus more on finding a solution so next class period the student knows how to handle the situation and knows what the expectation for behavior is.
- In the end you want the discussion with the student to be short, focused, and solution orientated. Lastly, persistent disruption by a student may ultimately mean the classroom teacher will have to remove the student from the room. While we value having each student in the classroom, at some point we must prioritize the needs of the class as a whole.

### 1.3.5 Thoughtful Transitions

Transitions within the classroom are often times unavoidable, but a common time for student disruptions and behaviors. Students deal with transitions at the start of the lesson or class period, when topics are changed, at the start and end of lesson activities, group activities, and at the wrap-up and conclusion of a lesson or class period. Time spent dealing with disruptions and behavior problems during transitions takes away from valuable lesson time. Effective transitions help minimize disruptions and problem **behaviors** and maximize the time spent in an ideal learning environment. Effective transitions help make the chore of moving from one task to another a more predictable and manageable event. A student's ability to stay engaged, focused, and on-task depends largely on how efficiently and effortlessly the facilitator moves from one activity to the next. Below is a list of some common ways to help students as they transition into your classroom at the start of your class, during an activity, or leaving your classroom.

#### Keyword

**Behavior** is the actions and mannerisms made by individuals, organisms, systems or artificial entities in conjunction with themselves or their environment, which includes the other systems or organisms around as well as the physical environment.

- Be on time and ready to start class on time. Nothing starts a class off in more chaos or confusion than when the teacher or facilitator is late or rushing in the door at the last minute. Give yourself enough time to arrive to the classroom early and get set up, post the classroom norms or contract, and set out your lesson plans so you can greet students as they enter the classroom.
- Be organized and prepared. Many of the model program lessons move quickly from activity to activity and if you are not prepared and organized ahead of time,





any time you take to look down at notes and review while class is going on is time for students to engage in disruptive behaviors. Try your best to keep students engaged at all times and leave little down time for students to have to entertain themselves or wait for you.

- Tell students how long they will have before class starts and how long they will have to complete a task. While students are working on a task give students a heads up and warning on how much longer they have to complete a task. It is hard for students to suddenly be done with a task or an activity, but if given notice that an activity will end in five minutes and then another two minute warning it allows students to prepare for the end of the activity and the transition ahead.
- Develop a routine with students at the start of class to get them on-task and focused. Many teachers create a short daily question students answer at the beginning of each class that allows students to express their opinion on a topic and relates to the day's lesson. You can create challenges with each question and limit the students to a 10 word answer or write down only five words that express how they feel about the topic. Students know to come in the room, grab the slip of paper from a designated spot in the classroom, sit down, write down their answer, and be prepared to hand the slip in shortly after the class time starts. This activity should not take away from class time, but rather keeps the students calm, focused, and ready when it is time to start class.
- Teachers or facilitators should circulate the classroom when students are engaged in completing activities or working in groups. This allows you to see the progress students have made, gauge if less or more time is needed, and answer questions students might have.
- Along with the classroom management plan or contract many teachers or facilitators bring a visual, such as a stop light, to each class period. The first day of class the facilitator helps the class understand certain parts of the class lesson and activities will have a different level of classroom volume and motion. When the stop light is on red, everyone is working quietly at their own desk and classroom motion is at a minimum. When the stop light is on yellow, people may be up and getting around with permission and the classroom volume might be louder because their might be students in groups or working in pairs. When the stop light is on green the class might be engaged in a game or activity where the classroom volume is louder and the classroom is very active.

### 1.3.6 Communication in a Classroom

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Classroom communication is the interactive language and responses between students and teachers. The importance of these skills cannot be down-played, and must be

emphasized even at the primary levels. Language and literacy outcomes for effective communication skills can also help teachers narrow down specific learning issues that must be addressed. As well, when educators target specific ways for students to interact and share their learning, achievement will increase.

### *Types of Communication in a Classroom*

Classroom communication exists in three categories: verbal, nonverbal and written. Verbal communication means anything that a teacher or student speaks aloud. Nonverbal communication refers to body language that people express. Written communication is writing directed at a specific audience, such as report card comments or student assignments. Teachers and students interact with one another in many different contexts, and use all three of these types of communication.

### *Teacher/Class Communication*

Teacher/class communication exists when a teacher communicates with his entire class. Verbal communication exists when a teacher tells students information they need to know. For example, if a teacher asks a student to “stop talking,” this is a direct form of verbal communication. There are ways for teachers to communicate nonverbally with their classes, such as through their posture, gesticulations and proximity to the students. Instead of telling a student to stop talking, a teacher could use nonverbal communication by moving toward the disruptive student’s desk. Not only does the disruptive student receive the message, but other students in the class who observe the intervention receive it as well. Written instructions for an assignment are given from the teacher for the whole class.



### *Teacher/Student Communication*

Teacher/student communication occurs when a teacher interacts directly with a particular student. Since a teacher interacts with her students mostly in front of the whole class, it can be difficult to distinguish teacher/student communication from teacher/class communication. Teacher/student communication requires that the teacher act one-on-one with a student, such as in a conference during class activities, before or after class or after school. This type of communication is effective for teachers who want to communicate a private message, such as a talk about constant inappropriate behavior or about taking more of a leadership role in class.

### *Student/Teacher Communication*

Student/teacher communication is also direct communication between a student and the teacher, but this time it is the student who initiates the conversation. Also, this can occur during whole-class participation. For example, a student who asks a teacher a question during class discussion engages in student/teacher communication because it is a single student communicating with a single teacher. The reason the reverse situation constitutes teacher/class communication and not teacher/student is that the teacher's actions and messages are directed toward the whole class while the student's questions here are only directed at the teacher. When students write emails to their teacher on graded assignments, this constitutes a written form of student/teacher communication.

### *Student/Student Communication*

Student/student communication occurs when two or more students interact with one another. Successful whole-class discussion stimulates student/student communication because students should talk to each other and not just to the teacher. Two students may disagree and talk back and forth to each other during such discussions. Student/student communication also occurs when students work in groups or pairs to complete assignments.

### *Student/Class Communication*

Student/class communication exists when a student or group of students direct their messages to the entire class. Whole-class discussion can also stimulate this type of communication. For example, if a student asks the class a question during a discussion, the student's message is directed at the entire class. Individual or group presentations also constitute student/class communication, and it is this type of communication about which students feel most nervous or self-conscious. Nonverbal communication often includes fidgeting or looking away.

## *Verbal & Non-Verbal Communications in the Classroom*

Strong communication skills are important to the management of your classroom. You should brush up on your verbal and non-verbal communication skills to effectively show your students what appropriate classroom behavior means. The majority of your communication with your students is nonverbal. Strong verbal communication is significant as well, while you should show your students the rules and classroom lessons they need to know.

### *Behavior Charts*

Behavior charts are an easy way to encourage appropriate classroom behavior because students can see how they are doing behavior-wise. A simple tracking method is to use numbers or colors to signify good and poor choices. For younger children, it will be especially easy for them to learn to associate the color red or the number 1 with poor behavior and the number 5 and color green with good behavior. When children are not following the rules, have them move their name or a clip down the chart, a concrete way to reinforce the classroom rules.

### *Body Language*

Body language is important to the way students read you. For example, frequently crossing your arms can put students on the defensive and make it look as if you are closing yourself off to communication. If you do not know what to do with your hands, try pressing your fingers against each other in front of your chest. Students are more likely to be receptive to your ideas if you have body language that is open to them. You also can utilize hand gestures to make a point. We all know what a finger to closed lips means or a wagging finger.



### *Eye Contact*

Eye contact is another way to improve your nonverbal communication skills. When you look around your classroom, you secure the trust of your students while also getting their attention. In addition, if a student is acting up you can try the five second stare. The student should get the idea that the behavior is inappropriate when she notices your stare.

### *Clapping*

Clapping is a quick way to get the attention of a classroom that is out of control. If you do not have time for a five second stare, loud claps should make your classroom stop acting out and pay attention. Simply clap your hands together several times loudly.

### *Time Out*

Do not hesitate to tell students that they are going to have time out if they continue to act unruly. State loudly and clearly that the actions they are taking are making you send them to time out during recess. Follow through with your punishment to demonstrate that the students cannot get away with poor behavior.

### *Smile*

Remember to smile when you are giving your students approval. If a student's behavior improves, say the word "yes" with a large smile on your face. You want your students to understand that you notice when they do something right, too.

### *Greetings*

Remember to say "Good Morning" and "Good Bye" to your students on a daily basis. It not only helps to set a good tone for the day but also helps students learn to mirror polite behavior. Try to greet students by name. Students who were personally greeted by their teachers also felt that those teachers cared about them personally. This belief helped motivate the students in the classroom.

### *Importance of Communicating in the Classroom*

When communication is effective, both the student and the teacher benefit. Communication makes learning easier, helps students achieve goals, increases opportunities for expanded learning, strengthens the connection between student and teacher, and creates an overall positive experience.

### *Self Esteem*

In general, people want to be heard. If a teacher shows interest in a student's opinions, that student will feel that their thoughts or ideas are appreciated. This increases self-esteem and confidence. A confident student is less likely to second guess his answers on tests, and a self-assured student is more likely to speak up in class. Class participation leads to increased learning for the entire class.

### *Class Performance*

Teachers who reward student communication and class participation will notice an improvement in overall class performance. A teacher can gauge the effectiveness of a lecture by student feedback. By asking questions, a teacher can determine if students were able to retain the imparted information. If there are a lack of responses from the class, it is likely that the students were unable to understand the lecture. This can lead to poor performance on exams.

### *Professional Growth*

A degree of communication is required in every profession, and communication skills are necessary at even the most preliminary stages of career growth.

### *Barriers to Effective Communication in the Classroom*

Teachers have an increasingly difficult job trying to communicate effectively to classrooms that are growing in size and may contain students who come from varied backgrounds. Some common barriers to effective communication in the classroom are listening barriers, perception barriers and oral barriers. Learning to recognize and overcome these barriers is essential in effective classroom communication.

### *Listening Barriers*

Effective listening is one of the most important factors in classroom communication. Take the time to listen to what the other person is saying. When someone is speaking, you should not be thinking of your next response. Negative emotions may occur when certain words or body language is used. A teacher must also take care to keep emotional reactions to a minimum and focus on what the speaker is saying. Outside noise such as telephones or construction noise can sometimes make listening difficult. This outside noise should be minimized in the classroom.





### *Perception Barriers*

Perception may be a barrier to effective communication in the classroom. Different people may receive and hear the same message but interpret it differently. Paying attention to detail is also important. Important aspects can be missed by not covering a subject in depth. A teacher should also learn to focus on both positive and negative aspects of a conversation. By having a distorted focus, a teacher may only focus on the negative aspects of a conversation.

### *Oral Barriers*

Communication barriers in the classroom may exist if oral communication is not clear. Communication only occurs when the listener hears and understands your message in the way you meant for it to be received. Some problems in oral communications include using words with ambiguous meanings. The teacher must make sure the students clearly understand the meanings of words. Another problem in oral communications is using generalizations and stereotypes. Classroom communication should be specific to the topic and without bias. A teacher must also take caution not to make a premature conclusion before she has all the facts about a topic or situation. Finally, a teacher must overcome any lack of self-confidence and deliver the message with assertiveness and clarity.



## SUMMARY

- Student engagement refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education.
- It should be noted that educators may hold different views on student engagement, and it may be defined or interpreted differently from place to place.
- Student engagement occurs when «students make a psychological investment in learning. They try hard to learn what school offers. They take pride not simply in earning the formal indicators of success (grades), but in understanding the material and incorporating or internalizing it in their lives.
- It is therefore very disheartening to look out into a classroom and see disengaged students who make little effort to hide their apathy.
- Student engagement is frequently used to, “depict students’ willingness to participate in routine school activities, such as attending class, submitting required work, and following teachers’ directions in class.”
- One method that has been gaining popularity in university teaching is the creation or encouragement of learning communities. Learning communities are widely recognized as an effective form of student engagement and consist of groups of students that form with the intention of increasing learning through shared experience.
- Student engagement represents two critical features of collegiate quality. The first is the amount of time and effort students put into their studies and other educationally purposeful activities.
- It is the feeling of interest or enthusiasm that makes somebody want to do something. In the classroom, we want students to want to learn. The proposes that motivation to learn is an acquired competence developed through an individual’s cumulative experience with learning situations.
- Situational interest contributes to the development of individual interest. Stimulating deep interest involves both affective and cognitive processes.
- Classroom management strategies focus on implementing strategies emphasizing how students should behave in the classroom, the expectations in the classroom, and how to make the classroom as structured and predictable as possible to avoid disruptive behaviors.



## MULTIPLE CHOICE QUESTIONS

1. Which of the four approaches to classroom order and discipline focuses almost exclusively on prevention of rather than reaction to behavior problems?
  - a. The humanistic tradition
  - b. The applied behavior analysis tradition
  - c. The classroom management tradition
  - d. The integrated approach to classroom management
2. Which of the following is of foremost importance in developing a culturally responsive classroom?
  - a. Lessons are built around the prior knowledge and experience of learners.
  - b. Lessons are built around learning style preferences and cognitive styles.
  - c. Lessons are built around a set of rules and consistent enforcement of them.
  - d. Lessons involve direct instruction followed by drill and practice.
3. Student engagement occurs when «students make a psychological investment in learning.
  - a. True
  - b. False
4. It should be noted that educators may hold different views on student engagement, and it may be defined or interpreted differently from place to place.
  - a. True
  - b. False
5. The proposes that motivation to learn is an acquired competence developed through an individual's cumulative experience with learning situations.
  - a. True
  - b. False

## REVIEW QUESTIONS

1. What does students engagement mean?
2. Definitions of student engagement.
3. How to measuring student engagement?
4. Focus on motivating student and classroom motivation.

5. discuss about engagement and active learning.
6. Explain the promoting between motivation and active learning.

*Answer to Multiple Choice Questions*

1. (c)
2. (a)
3. (a)
4. (a)
5. (a)


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## CHAPTER 2

## TIPS AND STRATEGIES

### LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Discuss the strategies for fostering motivation
2. Explain the strategies for promoting active learning
3. Discuss the strategies for ensuring students are appropriately challenged

*"Active learning is always involved with interaction between teachers and students and Socratic methods and that's gonna continue."*

– Joseph Stiglitz

### INTRODUCTION

Student engagement is an important piece of student success. The following strategies and tips can help increase student engagement levels in your classes. The three tips and strategies (T/S) that follow build upon Part One's conceptual framework of student engagement. This framework proposes that student engagement functions as a double helix in which active learning and motivation work together synergistically and creating a fluid and dynamic phenomenon that is greater than the sum of their individual effects. Engagement does not occur if either of the two elements is missing: a student is

not engaged if she is motivated but not learning, or if she is learning but doing so reluctantly. On a continuum from barely engaged to deeply engaged, students become more engaged as motivation and active learning build. Certain conditions promote synergy because they integrate elements of both. For example, students become more engaged when they feel that they are valued members of a learning community; when they are working at their optimal level of challenge, neither bored nor overwhelmed; and when they are learning holistically.

The tips and strategies come primarily from the good practice literature and are organized according to this conceptual framework: fostering motivation, promoting active learning and ensuring students are appropriately challenged.

## 2.1 STRATEGIES FOR FOSTERING MOTIVATION

Motivation is particularly helpful in encouraging persistence in applying effort to a learning task and testing new approaches. Although motivation is strongly influenced by student characteristics and varies across learning domains, the classroom environment also plays a vital role in influencing student motivation. Besides, there are many motivational strategies for students that teachers can use to encourage and motivate their students. But, to motivate students, teachers need to work on engaging the students in the classroom.

### 2.1.1 Expect Engagement

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Expect students in your course to be engaged in learning, and resist settling for less. If you have done everything you can to create classroom conditions that promote engagement and still see students who look bored or apathetic, talk to them privately. Tell them disengagement is not an option in your course, and invite them to suggest activities that will achieve course or unit learning goals that they'd find more engaging.

Even though a student who falls asleep in class may be truly exhausted from working all night or staying up late studying for an exam, sleeping students are not engaged students; a disengaged student undermines the morale of the entire class. Consider waking him up and suggesting he leave the room and walk around for a few minutes to get more oxygen into his system. Or move close to the sleeping student and talk to a student sitting nearby in a voice loud enough to wake up her neighbor. Think about dropping the attendance requirement and giving students the choice of learning from materials on reserve in the library, the media center, or online so that if they don't find the classroom situation engaging, they have another option.





### Keyword

**Educational research** refers to the systematic collection and analysis of data related to the field of education.

## 2.1.2 Develop and Display the Qualities of Engaging Teachers

Teacher personality and behavior have a powerful impact on whether students feel motivated in a course. Building upon studies by industrial and organizational psychologists, **educational researchers** have found that even students who are not intrinsically motivated by their studies will put forth reasonable effort if they like and admire their teacher, just as they may become apathetic or resistant if they view their teacher negatively.

This does not mean that you have to be false to your basic personality (“authenticity” appears in other lists of ideal teacher characteristics), but it does suggest that students will be more likely to engage in your class if you cultivate and display attributes of well-liked and respected teachers, such as energy, enthusiasm, passion, approachability, fairness, and optimism.

## 2.1.3 Use Behaviorist-Based Strategies to Reward Learning Rather Than Behavior

The principles of behaviorism permeate education. To motivate students to do excellent work, teachers reward desirable behaviors through praise, bonus points, and exemptions from work, and they try to extinguish undesirable behaviors through nonreinforcement or negative reinforcement such as chiding, bad grades, and penalty points. Although these approaches may provide quick fixes, from the standpoint of most motivational

theorists, they are control of behavior and not motivation of learning. Brophy provides a thoughtful discussion of the issues, but the essential criticisms are that (1) these approaches focus on extrinsic rewards rather than encouraging students to develop their own sense of reward from the intrinsic pleasure of learning; (2) they can become “bribes” for what students should be doing anyway; and (3) they promote situational compliance rather than helping students develop the attitudes, values, beliefs, and self-regulated learning strategies we want them to use as lifetime learners both in and out of formal educational contexts.



Awareness of the issues can help you use incentives and rewards in ways that put the emphasis on learning rather than on manipulation of behavior. For example, make explicit that it is the learning and what the learning leads to that is of value rather than participation in or completion of an activity; recognize the degree of individual improvement rather than making peer comparisons; and in grading, emphasize the quality of accomplishment rather than quantity of work.

### 2.1.4 Use Praise and Criticism Effectively

Complimenting comes naturally to most teachers who care about students and who are striving to create a positive, supportive classroom environment. Unfortunately, praise does not always have the effect we intend. Kohn points out that some students do not attach much value to a teacher’s praise and hence will not feel particularly rewarded when they receive it; others may feel insulted or demeaned if they feel they are being lauded for what they consider to be a minor accomplishment; and some students may find it embarrassing or irritating to be singled out in a way that draws their peers’ attention to a behavior that might be considered conformity or obsequiousness. His central objection is that praise is manipulation of behavior. “We all want to be appreciated, encouraged, and loved,” he comments.

Educators such as Kohn oppose praise on principle, viewing it as manipulative and contributing to a hierarchical relationship between learners and instructors. Following are suggestions for how to praise effectively in ways that are more empowering and respectful, drawing from Brophy.

- Praise in a timely manner with simplicity, sincerity, spontaneity, and other signs of authenticity. Don't dramatize, and use straightforward sentences ("I never thought of that before") instead of gushy exclamations ("Wow!") or rhetorical questions, which are essentially condescending ("Isn't that great!").
- Praise the attainment of specific criteria that is related to learning, such as noteworthy effort, care, perseverance, or demonstration of progress, and specify the skills or evidence of progress that you are praising: "This essay does not have a single spelling, grammar, or syntax error."
- In general, praise privately. Wlodkowski (2008), for example, cites Plaud and Markus, who observe that in collectivist cultures such as many Asian societies, adults may prefer to receive praise indirectly as a member of a social group, rather than directly as an individual. He also cites a study by Jones, Rozelle, & Chang that noted Chinese adults did not want to be used as "good examples for others."

He suggests that it is particularly appropriate and may even be necessary in situations where the learning process is costly or involves a threat to human safety; when performance is so poor that to emphasize success or improvement would be ridiculous or patronizing; when performance has significant errors and there are few remaining chances for improvement in the course; or when a learner directly requests criticism. Constructive criticism is most helpful and motivating if it is informational, based on performance criteria, behavior specific, corrective, prompt, given privately, and offered when there are opportunities for improvement.

### 2.1.5 Attend to Students' Basic Needs So That They Can Focus On the Higher-Level Needs Required For Learning

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Needs theories emerged as an alternative to behaviorist theories. Although they are now criticized for circular logic problems, Maslow's hierarchy of needs remains popular and influential. His model suggests that in the classroom, physiological needs (sleep, thirst), safety needs (freedom from danger, anxiety), and love needs (acceptance from teachers and peers) must be met before students can move on to the higher-level needs that we associate with engaged learning. This does not mean you need to be responsible for the care and feeding of your students, but it does suggest that if you teach classes in the early morning or right before lunch, you may be faced with students who are distracted and unable to focus simply because they are struggling with basic unmet needs. To adjust for this, consider incorporating activities that require social interaction



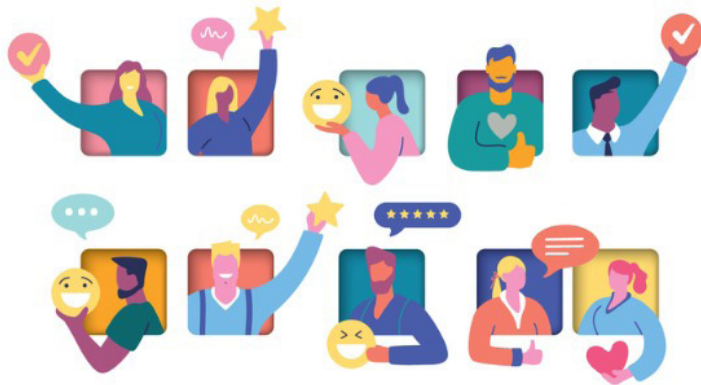
and physical movement in early morning classes. Especially important to the college classroom is being aware of students' psychological needs and taking care to ensure students feel safe to say/write what they truly think or feel without fear of ridicule or criticism by either you or their peers.

### Keyword

**Self-efficacy** refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments.

## 2.1.6 Promote Student Autonomy

Self-determination is the basic human need to have control over one's life. In the classroom, students are more motivated to engage in meaningful learning if they are acting of their own volition. The need for self-determination works hand in hand with helping students build **self-efficacy**: they are more likely to believe they are capable of achieving a particular goal if they feel they are in control of the actions required for success. Student engagement is a partnership that requires students to accept responsibility for their learning, but accepting responsibility can be difficult when, as Wlodkowski (2008) observes, "instructors usually establish requirements, issue assignments, give tests, generally set the standards for achievement, often control the learning environment, and sometimes require learner participation" which can lead "students to the conclusion that instructors are more responsible for their achievement than they are".



Following are some general strategies for promoting autonomy:

- Provide students with meaningful rationales that enable them to understand the purpose and personal importance of course activities.



- Acknowledge students' feelings when it is necessary to require them to do something they don't want to do.
- Give students choices among several learning activities that meet the same objective. 4. Allow students options in deciding how to implement classroom procedures.
- Allow students to decide when, where, and in what order to complete assignments.
- Encourage students to define, monitor, and achieve self-determined goals individually.
- Help students to use self-assessment procedures that monitor progress as well as identify personal strengths and potential barriers.
- Provide opportunities for students to assist in determining evaluation activities.
- Avoid making students right, wrong, good, or bad based on their choices but instead emphasize accountability.

### 2.1.7 Teach Things worth Learning

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It's not surprising that students are more likely to feel motivated in a class if they believe they are learning things worth learning. Although a central goal for many of us is helping students understand and remember the basic facts, principles, and concepts of the discipline, the sheer abundance of information and the rapidity with which information is changing makes "mastery" of information an impossible and perhaps unwise learning focus.

Wiggins and McTighe advise teachers to strive to help their students achieve understanding, as distinguished from simply knowing. "Enduring understanding" results from grappling with the big ideas and core processes at the heart of a discipline rather than memorizing and remembering lots of facts. In the handbook they developed to guide teachers implementing their model, they suggest using a framework of three concentric circles to prioritize content. In the large, outermost circle, identify the content that is worth being familiar with. In the medium-sized circle inside it, identify the more important knowledge and skills. In the center circle, identify the essential understandings that anchor the course. Use this framework to guide decisions regarding learning activities and assessment.

Fink proposes a new learning taxonomy to help teachers focus on the kind of deep, permanent learning that goes beyond information gathering. It consists of the following categories: foundational knowledge, application, integration, human dimension (learning about oneself and others), caring (developing new feelings, interests, and values), and learning how to learn. He suggests teachers identify significant learning goals derived from the taxonomy.



*In a microbiology course, a goal associated with the learning-how-to-learn category might be “A year after this course is over, I want and hope students will be able to identify important resources for their own subsequent learning”.*

Blumberg guides teachers through a process to implement Weimer’s learner-centered model. She explains that in a teacher-centered approach, a core dimension is to help students build a knowledge base— which usually involves students memorizing the content. In a learner centered approach, the teacher encourages students to transform and reflect on most of the content to make their own meaning of it. As an example, she suggests an instructor might ask students make a chart or graph to summarize some material in the text or to develop associations between what they read or hear in class and their own lives or real-world phenomena.

For those of us accustomed to teaching data-intensive courses, it is difficult to shift the emphasis from the learning of information to learning how to find and then use the information. Information recall is easier to teach, test, and maybe even to learn. Nevertheless, changing the focus of your course from content coverage (which is usually information-driven) to uncovering the content (which is usually process- and application-driven) is more relevant to the changed environment in which students must function both during and after college.



### 2.1.8 Integrate Goals, Activities, and Assessment

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When learning goals, activities and assessment are carefully chosen and integrated to help students achieve significant learning goals that reflect a broader conceptual framework, it is easier for students to see the purpose in what they are being asked to do. This, in turn, can foster motivation. Following are three models for this integration. Teachers are encouraged to go to the original sources, as they are richly nuanced with both theoretical and practical information.

#### *Wiggins and McTighe's Backward Design*

At the core of this model is a three-stage sequence. In the first stage, teachers determine what students should know, understand, and be able to do.

In the second stage, teachers determine what would constitute evidence that students have achieved the goals. To help teachers identify this, Wiggins and McTighe developed a six-facet taxonomy. If students have developed enduring understanding, they can (1) explain, (2) interpret, (3) apply, (4) demonstrate perspective, (5) empathize, and (6) demonstrate self-knowledge. They suggest using a continuum for evaluating evidence of each of the six facets. For example, the ability to explain can be evaluated on a continuum from “naive” to “sophisticated,” and the ability to apply on a continuum from “novice” to “masterful.”

The third stage, designing academic prompts, performance tasks, or projects occurs only after a teacher has determined the enduring-understanding goals and identified how one can assess the depth at which understanding has been achieved.

### 2.1.9 Craft Engaging Learning Tasks

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Even if we have identified powerful learning goals, we still need to figure out what to have students actually do. Each technique includes step-by-step procedures as well as examples, variations, and observations and advice. Although the SETs provide the organizing framework, teachers must still do the creative work of designing interesting prompts. See Table 1 for examples of prompt stems to help you design engaging tasks.

Table 1. Sample Task Prompts

Question Type	Purpose	Example
Exploratory	Probe facts and basic knowledge	What research evidence supports _____?
Challenge	Examine assumptions, conclusions, and interpretations	How else might we account for _____?
Relational	Ask for comparison of themes, ideas, or issues	How does _____ compare to _____?
Diagnostic	Probe motives or causes	Why did _____?
Action question	Call for a conclusion or action	In response to _____, what should _____ do?
Cause and effect	Ask for causal relationships between ideas, actions, or events	If _____ occurred, what would happen?
Extension	Expand the discussion	What are additional ways that _____?
Hypothetical	Pose a change in the facts or issues	Suppose _____ had been the case, would the outcome have been the same?
Priority	Seek to identify the most important issue	From all that we have discussed, what is the most important _____?
Summary	Elicit syntheses	What themes or lessons have emerged from _____?
Problem	Challenge students to find solutions to real or hypothetical situations	What if? (To be motivating, the problem should be one on which students can make some progress on finding a solution, and there should be more than one solution.)
Interpretation	Help students to uncover the underlying meaning of things	From whose viewpoint or perspective are we seeing, hearing, reading? What does this mean? or What may have been intended by _____?
Application	Probe for relationships and ask students to connect theory to practice	How does this apply to that? or Knowing this, how would you _____?
Evaluative	Require students to assess and make judgments	Which of these are better? Why does it matter? and So what?
Critical	Require students to examine the validity of statements, arguments, and conclusions and to analyze their thinking and challenge their own assumptions	How do we know? and What's the evidence? and How reliable is the evidence?

### 2.1.10 Incorporate Competition Appropriately

Today's students are accustomed to competition. They've competed in sports, video games, and science fairs and observed competition in contests and survivor-style television shows. Structuring competition or competitive elements in activities can add excitement, incentive, and just plain fun to classroom activities. Yet there is considerable debate about the value of competition in increasing motivation. Brophy summarizes the main reasons. First, competition is already built into grading systems, and because participation in classroom activities involves risking public failure, it may be counterproductive. Second, competition distracts students from using their own

progress as the benchmark for learning. Third, competition can feel coercive when it is mandatory and the games and rules are imposed by authority figures with high stakes attached to the outcomes. Fourth, competition is only effective if everyone has a good (or at least an equal) chance of winning; however, the range of individual abilities in class makes this virtually impossible if competition is among individuals. Fifth, competition creates losers as well as winners (and usually many more losers than winners), which invariably causes at least temporary embarrassment and, for those who lose consistently, may result in permanent losses in confidence, self-esteem, and enjoyment of school.

Brophy and Wlodkowski offer research-based suggestions for how to structure appropriate competition to take advantage of the benefits while ameliorating the detriments:

- Make participation in competition a choice;
- Have the competition team-based rather than individual;
- Establish conditions that ensure that everyone has a good (or at least an equal) chance to win (this is best achieved in teams that have been carefully balanced by individual ability); and
- Make conscious effort to ensure that the attention is focused on learning goals.

Brophy also notes that competition is more effective for stimulating intensity of effort than for inducing thoughtfulness or quality of performance. It is therefore best used with drills and practice tasks designed to produce mastery of specific skills or where speed of performance or quantity of output is more important than creativity, artistry, or craftsmanship.

### Remember

The bottom line is that competitions can be fun and effective for certain kinds of learning goals, but teachers should take care to minimize individual anxiety and risk of embarrassment.

## 2.1.11 Expect Students to Succeed

Henry Ford, someone who knew a thing or two about success, stated his belief in the power of expectations when he said, “Whether you think you can or think you can’t, you are right”. Teachers can help support student motivation by expecting students to succeed. Teachers’ faith in their students and commitment to actively supporting their efforts contributes strongly to the students’ motivation and success. Teachers who believe in their students and expect success are more likely to





get it than teachers who doubt their students' ability and are resigned to minimal or mediocre performance.



### 2.1.12 Help Students Expect To Succeed

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One of the fundamental ways teachers can help students expect to be successful in their course is by ensuring that learning activities and assessment promote success through clear organization, appropriate level of difficulty, scaffolding of complex tasks, communication of standards, and fair grading. Beyond these baseline conditions, an important way to foster students' expectations of success is to help them attribute success to their own persistence and effort. You can help students recognize the link between effort and outcome in many ways:

- Model the effort/outcome linkage by talking out loud as you think through tasks. Show that learning takes time and may involve confusion or mistakes, but express confidence that you will eventually succeed if you persist working carefully and thoughtfully, searching for better strategies, or acquiring additional information.
- Consider sharing with students that differences in success are due largely to differences in experience: students who have had more experience with a particular task usually have more knowledge about how to do the task well.
- Explain that even with some subjects such as math, writing, and the arts that are conventionally understood as ability-driven, students can learn strategies and gain the learning necessary to succeed. Reassure students and tell them that in order to gain the experience they need, they must be tolerant of mistakes.
- Stress the effort-outcome linkage when you provide feedback, acknowledging



progress and the accomplishments students have achieved that have resulted from their efforts.

- Invite former students who started your course without much confidence but ended up being successful to share their tips for success with your current students. If having former students come to class is too difficult logistically, have students write out their tips at the end of the course and provide a collated, synthesized list of tips to students attached to the next term's syllabus.

In short, the best way to lead students to expect success is to structure the course so that they can succeed, and then show them throughout the course that if they try hard and persevere even when things are tough, they will succeed.



### 2.1.13 Try to Rebuild the Confidence of Discouraged and Disengaged Students

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Despite your best efforts to help students expect to succeed, some students will remain convinced they will fail. These students are quick to attribute failure to a lack of ability and jump to the conclusion that they just can't do it. He organizes these students into four types:

- Students with limited ability who truly do have difficulty keeping up and have developed chronically low expectations and numbed acceptance of failure;
- Students whose failure attributions or ability beliefs make them susceptible to learned helplessness in failure situations;

- Students who are obsessed with self-worth protection and thus focus on performance goals but not learning goals; and
- Students who underachieve due to a desire to avoid responsibility.
- Strategies to support these different types vary, and teachers who consistently face discouraged students are encouraged to refer to the detailed, type-specific strategies Brophy provides. Following are some of his recommendations that are generally applicable to students who seem predisposed toward expecting failure.
- Provide clear directions and structure, including dividing assignments into manageable parts with checkpoints and deadlines.
- Emphasize personal causation by allowing students to plan and set goals, make choices, and use self-evaluation procedures to check their progress.
- Help students establish realistic goals and provide them with encouragement that concentrates on their efforts and calls attention to their successes, guiding them to focus on trying to surpass their own prior achievements rather than competing with classmates.
- Organize material into modules that allow for students to move at their own pace based on mastery learning principles, but monitor these students frequently and provide supplementary tutoring.
- Set up “study buddy” systems so that low achievers can collaborate with higher-achieving students.
- Guide students to tutorial programs or other kinds of campus support programs that can help them develop general college academic and study skills.
- Help these students better understand themselves as learners—to explore which classroom situations they find comfortable and which provoke anxiety, and why; and to understand when they do or do not need help and become willing to get help when they need it.
- Emphasize your role as a resource person who assists them in their learning efforts.
- Finally, combine empathy for these students with determination and confidence that they will meet established learning goals.

## 2.2 STRATEGIES FOR PROMOTING ACTIVE LEARNING

Active learning engages students in learning, using activities such as reading, writing, discussion, or problem solving, which promote analysis, synthesis, and evaluation of class content. Learning is a dynamic process that consists of making sense and meaning out of new information and connecting it to what is already known. Students need to be active participants in that process. This typically involves doing something—for

example, thinking, reading, discussing, problem-solving, or reflecting. Following are tips and strategies culled from the literature that address various elements involved in promoting active learning.



### 2.2.1 Be clear on Your Learning Goals

“If you don’t know where you are going, how will you know when you get there?” This bumper sticker phrase contains elements of truth for teaching and learning just as it does for travel and life. Acknowledging that sometimes the most rewarding experiences are those that surprise us, in general, when we want to go somewhere, it helps to know what the “where” is. In our courses, we want students to learn, but if we are not clear about what we want them to learn, we can waste a lot of time and energy, or worse, find that students didn’t learn what we wanted them to learn after all.

Much has been written about identifying learning goals, and a whole vocabulary has developed with subtle distinctions between terms such as goals, objectives, and student learning outcomes. Consulting the assessment literature will help you through the process. Suggested resources are *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom’s Taxonomy of Educational Objectives*, *Learner-Centered Assessment on College Campuses*, and *Teaching First-Year College Students*, all of which include whole chapters on writing learning objectives. But in short, effective statements of intended learning outcomes or goals

- Are student focused rather than professor focused;
- Focus on the learning resulting from an activity rather than on the activity itself;

Active learning is the opposite of passive learning; it is learner-centered, not teacher-centered, and requires more than just listening; the active participation of each and every student is a necessary aspect in active learning.

### Did You Know?

- Focus on important, nontrivial aspects of learning;
- Focus on skills and abilities central to the discipline and based on professional standards of excellence;
- Are general enough to capture important learning but clear and specific enough to be measurable; and
- Focus on aspects of learning that will develop and endure but that can be assessed in some form now.

An unknown author said, “In absence of clearly defined goals, we become strangely loyal to performing daily acts of trivia.” In the classroom, both teachers and students can waste lots of time and energy doing things that don’t result in much learning. Once you are clear on what you want students to learn, you can make better decisions and choices about the kinds of tasks that will best promote active learning.

### 2.2.2 Clarify Your Role

If your goal is to promote active learning, your role in the classroom changes, yet what that role should be is debated in the literature. Some educators contend that instructors should play a minimal role in shaping and directing the work of students. Weimer, for example, stresses, “We must move aside, often and regularly”. Others, such as Miller and her colleagues, warn that “a common mistake of teachers in adopting an active learning strategy is to relinquish structure along with control, and the common result is for students to feel frustrated and disoriented”

How instructors operate in the classroom is influenced by their personal vision and philosophy about teaching and learning as well as the discipline, course objectives, class size, student experience, and unique characteristics of a particular class. Thus, some instructors see themselves as coaches—observing, correcting, and working with students to improve their performance; some prefer the role of facilitator, which implies arranging the learning environment to encourage **self-directed learning**; some use the term manager, emphasizing a sequential process of setting the conditions and managing the process to produce the desired outcomes; still others favor the role of co-learner, emphasizing the social function of constructing knowledge. Although opinions differ, the literature seems to agree that today’s college teacher must be more than a dispenser of



information. Regardless of the role you decide to take, clarifying it for yourself helps you to be clear and consistent in your interactions with students.

### 2.2.3 Orient Students to Their New Roles

Students have different responsibilities in active learning than they do in traditional education. The primary method for orienting students to these new responsibilities and teaching students active learning skills lies in the learning tasks themselves: students will develop active learning skills if they are given tasks that ask them to apply concepts, solve problems, discuss issues, or reflect upon the factors that influence their thinking. Some students may not know how to make this shift; others may actively resist. Teachers may want to consider taking the time early in the academic term to explain why they have organized the course around active learning principles.

#### *Telling Is Not Teaching*

1. Distribute blank sheets of paper to students, and then tell them some version of the following:
  - a. “We are going to begin this class with an activity that shows us some important things about the teaching-learning process. Pick up your sheet of paper and hold it in front of you. Now close your eyes and follow the directions I will give you, but don’t open your eyes to look.”
  - b. Give the following directions while you do the same with your sheet of paper:
    - “The first thing I want you to do is to fold your sheet of paper in half.”
    - “Now tear off the upper right-hand corner.”
    - “Fold it in half again and tear off the upper left-hand corner of the sheet.”
    - “Fold it in half again and tear off the lower right-hand corner of the sheet.”
  - c. “Now you can open your eyes, and let’s see what you

#### Keyword

**Self-directed learning** is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes.





have done. If I did a good job of telling you what to do, and you did a good job of listening, all of our sheets should look the same.”

2. Observe the differences. If any student’s sheet doesn’t match yours, ask them why not? Students will probably respond, “You didn’t let us ask questions” or “Your directions could be interpreted in different ways.”
3. Tell students what a “poor job” you did as an instructor during this exercise. Not only did you not allow for questions, but you also failed to recognize an important fact about the teaching-learning process: Telling is not teaching. This means that what an instructor says (or does) is not the measure of success; what the learner says (or does) determines success.
4. Consider following up with an activity in which students respond to the following (adapted from Confucius):
  - When I just hear it, I forget.
  - When I hear and see it, I remember a little.
  - When I hear, see, and ask questions about it or discuss it with someone else, I begin to understand.
  - When I hear, see, discuss, and do it, it allows me to acquire knowledge and skill.
  - When I teach it to another, I start to master the topic.



### 2.2.4 Help Students Develop Learning Strategies

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Help learners become better able to direct and manage their learning by showing them how to use learning strategies. Learning strategies are devices or behaviors that help us retrieve stored information as well as acquire and integrate new information with



existing knowledge. They include, for example, previewing, summarizing, paraphrasing, imaging, creating analogies, note taking, and outlining. Svinicki provides a table of learning strategies that illustrates the kinds of strategies or tactics students can use for learning different types of information or skills.

**Table 2.** Learning Strategies

To learn at this level:	The general strategy is based on:	Here is a sample strategy:	Comments
Basic definitions	Rehearsing	Use flash cards or anything that allows you to practice pairing a term with its definition.	These strategies help encode information into long-term memory.
	Organizing	Group similar words to make it easier to make connections among them. Identify examples and non-examples.	
Structural knowledge—how concepts go together	Recognizing key concepts	Pull out all the text headings and put them in outline format.	These strategies organize the concepts in terms of their relationships to other concepts.
Application of concepts to problems	Recognizing relationships among key ideas.	Draw a concept map that shows what ideas are connected and how.	The strategies here create a repertoire of examples or mental models in which the concepts have been used. These can form the basis of case-based reasoning (using familiar cases to solve problems).  This strategy has the learner figure out the steps for applying the concepts.
	Developing process steps	Write down the details of how the instructor or text uses examples to illustrate concepts. Then look for common steps or characteristics. Try your steps with a new example.  For each example figure out why the procedure was used and what steps were taken.	
Analysis of problem situations	Looking for relationships	Use the transition words or other text markers to identify important components or relationships.	These strategies are designed to help the learner see the components of a situation more clearly and break the problem down into manageable chunks.
	Visually representing the problem	Use a comparative organizer to contrast assumptions, ideas, and evidence.	

As she notes, “Many students have never been exposed to these different ways to approach studying or even to the idea that there are different ways to study.” Table 2 is an excerpt from the table that Svinicki provides students in her classes.

Learning strategies are best incorporated into content-based learning activities, but an explanation (such as Table 2) might also be provided in handouts. For example, Weimer (2002) includes as appendices a collection of handouts about various learning strategies that could be attached to the syllabus; examples include “Notetaking Types and Characteristics to Help Students Succeed” and “Successful Students: Guidelines and Thoughts for Academic Success.”

### *Five Effective Teaching Strategies to Help Students Develop Learning*

Every classroom brings together students with distinct abilities and personalities. Since every student has different capabilities, some learn faster than others. Because of this difference, it becomes a challenge for teachers to implement methods that help out the entire class.

Therefore, teachers need to come up with effective teaching strategies and implement innovative solutions in order to meet every student’s individual needs in the class.

Of course, coming up with effective teaching strategies that work best for all students is not possible because there is no “one-size-fits-all” solution in teaching. So here are a range of effective teaching strategies that can help your students to efficiently improve their learning abilities:

#### *1. Visualization of Information*

Visualization is a great method to summarize or process information that has been taught in class. When students consume information through visual means, it helps them retain what they have learned for a longer time. This strategy also helps slow learners in class to visualize the ongoing lesson in a clear, simple and systematic way.

Therefore, teachers have started using visual tools like graphic organizers, flow charts, Venn diagrams, and concept maps that effectively help students to grasp information through visual memory.



## 2. Student-Led Classrooms

Student-led classrooms have become a creative way for teachers and students to interact and carry out discussions in the class. Encouraging students to switch roles and become teachers for the day not only helps them in gaining confidence but also brings in a new perspective to the class.

You can team your students up in groups of 5 who then take turns teaching a new topic every day. This teaching strategy helps other students as well, who learn from their peers' unique take on the subjects.



### 3. *Implementing Technology in the Classroom*

Incorporating technology into your teaching is a great way to actively engage students. Using tablets and laptops in the classroom, teachers can introduce interactive online games like Prodigy for students to learn faster and interact more. These educational games function as a platform for students to polish their skills by engaging them in a game module where they solve questions and puzzles all the while fighting battles and completing with their peers.

On top of that, some educational games also provide teachers with a dashboard to assist them in tracking their student's progress and engagement with the game.

These dashboards help teachers to create assignments for students, monitor their daily progress, and understand where the individual is struggling.

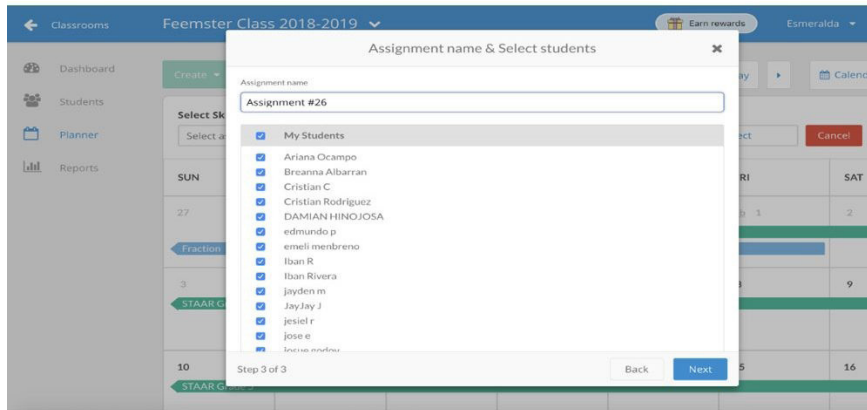
You can find many educational games for different subjects which will help your students understand the subject better.



### 4. *Differentiation*

Sometimes differentiation is important in motivating your students and help them gain confidence. You can differentiate in your teaching by allocating tasks based on students' abilities to ensure no one gets left behind.

It is important to give assignments to individual students based on their proficiency levels so that the students with higher academic capabilities can challenge themselves more and the ones who are struggling, get the required support to improve themselves.



### 5. Inquiry-Based Instruction

Encouraging students to ask thought-provoking questions is an effective teaching strategy that not only inspires your students to think practically but also become independent learners.

By asking questions and working together to solve the problems, students get to be involved in the learning process. It encourages students to work together as a class and also helps them retain new concepts in a better way.

Creating effective solutions for the entire class can be challenging because every individual is unique. However, using a combination of teaching strategies can help in addressing each student's learning ability and motivate them to learn more. Therefore, the best option for a teacher is to test out a combination of strategies that will help students to learn faster and retain more.





## 2.2.5 Activate Prior Learning

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Because active learning requires students to integrate new information or ideas into what they already know, it is helpful to have students participate in activities that activate prior knowledge. Some ideas for helping students discover what they already know about a given topic include:

- Writing brief essays to describe what they remember and understand,
- Interviewing each other,
- Participating in a think-pair-share that requires them to respond to prompts designed to elicit prior knowledge, and
- Using graphic organizers (generating concept maps, filling in tables that include blank cells, and so forth) to stimulate recall of prior learning.

## 2.2.6 Teach in Ways that Promote Effective Transfer

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Active learners connect new ideas and information to already known concepts and principles as well as apply already known concepts and principles to new situations. This involves a process known as transfer, which is the effect that past learning has on the processing and acquisition of new learning and the degree to which learners can apply what they have learned to new situations. Transfer is important both within a course or series of courses in an academic discipline (teachers strive for a cumulative effect as students keep building upon their skills or deepening their understanding) and between unrelated courses (for example, applying the writing skills learned in English classes to other courses). Research, unfortunately, has demonstrated that students are often not successful either in accurately connecting new material to existing understanding or in recognizing how what they learned can apply to new situations, suggesting that teachers need to be more intentional about helping students make connections between past learning and new learning.

The following suggestions from Sousa and Svinicki can help promote positive transfer:

- When teaching similar concepts, highlight the differences up front by identifying and teaching them first or incorporating learning activities that require students to identify critical distinguishing attributes.
- Use a variety of strategies to help students make associations. Metaphors, analogies, symbols, and images, for example, can help students understand and recall concepts or principles that you want them to transfer to a new learning situation.



- Teach students how to recognize when to use a strategy at the same time you are teaching them that strategy. Additionally, teach a skill just before students will have the real opportunity to use it.
- Make sure students have learned the task well enough to transfer it. Asking students to state the principles that have been learned and are being transferred can serve as a bridge between learning and practice.
- In the early stages of the transfer process, make sure the learning situation is similar to the situation in which the material or skill will actually be used. Incorporate more variation later in the learning process to prepare students for variations in the real world.

### 2.2.7 Teach for Retention

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Once students have learned material, teachers want them to be able to remember it. Because the ability to store, retain, and subsequently retrieve information is so fundamental to learning, “Remembering” is now the first level in the revision of Bloom’s taxonomy of educational objectives. Three components help ensure that new learning is moved from short-term memory to long-term memory:

- Emotional connection: If a student can make an emotional connection to the information, it is more likely to be stored permanently. Teachers can help students care about what they are learning by foregrounding the human dimension that underlies content. For example, rather than just having students read about an event, use images, films, and oral histories that convey the impact of the event on people’s lives.
- Sense: How well information makes sense and fits with what the student already knows also affects retention. Teachers can help students make sense of what they are learning by organizing learning into thematic units; crafting assignments that prompt students to identify the commonalities among diverse topics; asking students to brainstorm ways new learning can be applied in other situations; and asking students to create an analogy that illustrates similarities or differences between related topics.
- Meaning: There needs to be a reason for the brain to remember information, and it is better if this reason extends beyond just being able to pass a test. Teachers can help students find meaning and personal relevance in a new topic by asking them to connect what they are learning to their past, to what is going on presently in the world around them, or to the professional or civic responsibilities they may have in the future.

Even if a student seems to have learned material, there is no guarantee it will be remembered in such a way that it can be located, identified, and retrieved accurately in the future. A critical factor in retention is adequate time to process and reprocess

**Keyword**

**Long-term memory** refers to the storage of information over an extended period. This type of memory tends to be stable and can last a long time—often for years.

information so that it can be transferred from short- to **long-term memory**. This usually occurs during deep sleep. Research on retention shows that if a student can remember the information after twenty-four hours, there is a higher likelihood that it is in long term storage; if a student cannot remember the information after that period, it will most likely not be retained. One way to help both yourself and your students assess for long-term retention is with pop quizzes for which students cannot prepare. If these quizzes are not graded but rather are administered only as part of a supportive, formative assessment process to show both students and teachers what is being stored in long-term memory, they can be effective ways to monitor retention.

### 2.2.8 Limit and Chunk Information

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Research has determined that the average adult's working memory can handle between five and nine items of information at once. Additionally, the average adult can process an item for ten to twenty minutes before mental fatigue or boredom occurs and attention drifts. The implications for teachers who are presenting new material are (1) to limit topics or items to about seven; (2) where possible, to chunk smaller and similar components together; and (3) to break up presentations into sections interspersed with other kinds of activities such as discussion or writing.

### 2.2.9 Provide Opportunities for Guided Practice and Rehearsal

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Rehearsal reinforces learning and increases retention. Two major factors affect the quality of rehearsal: the amount of time and the type of rehearsal activity. In terms of time, there is an initial period in which the information first enters short-term memory. If the learner cannot attach sense or meaning to the new information, then it will most likely be lost. Providing sufficient time for a learner to review the information, make sense of it, and assign value and relevance increases the probability that the learning will be retained in long-term storage. There are two types of rehearsal activity:

- Rote rehearsal is used to remember and store information in the same form that it entered working memory, such



as in memorizing a poem or the precise steps of a procedure. We can help students by teaching them strategies to remember lists, facts, and definitions such as mnemonic devices to associate abstract ideas with concrete objects, or number memory techniques or link systems.

- Elaborative rehearsal helps the learner process the information so that it is more meaningful. It takes more time but results in deeper learning. Elaboration strategies include forming associations, organizing information into categories, outlining, clustering concepts into taxonomic categories with shared characteristics, paraphrasing, summarizing, creating analogies, and self-quizzing.

### 2.2.10 Organize Lectures in Ways that Promote Active Learning

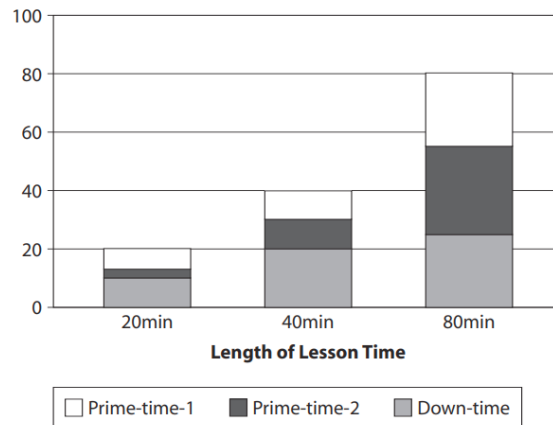
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The primacy-recency (or serial position) effect is our tendency to remember best what comes first, second best what comes last, and least that which is in the middle. Although documentation of this effect dates to research as far back as the 1880s, more recent studies indicate why: The first items of new information command our attention because they are within the working memory's functional capacity. As time goes on and more information is added, the capacity of working memory is exceeded and the information is lost. Toward the end of the learning episode, the initial items in working memory have been processed to allow the brain to turn its attention to the arriving information. Sousa explains that retention during a learning episode is highest in a bi-modal distribution at the beginning (Prime-Time 1) and end (Prime-Time 2) and least during the middle (see Figure 1). Retention is also influenced by the length of the teaching episode.

Unfortunately, teachers often use Prime-Time 1 for relatively unimportant information processing such as monitoring attendance, distributing graded assignments, collecting homework, and so forth. By the time they get to presenting new, important information, students are already in their "down-time."

Limited attention spans combined with the primacy-recency effect suggest that it is generally most productive to divide class time into short segments of about twenty minutes, introducing new material at the beginning, then giving students opportunity to process the new learning, and moving on to closure activities toward the end. Organizing class time in this way significantly reduces the proportion of down-time. Although an obvious activity is to have students apply what they just heard in lecture, it is also useful to give students a brief break. Telling a story or a joke, playing some music, allowing students to talk off-task with their neighbors or even get up and stretch or walk around the room can reenergize students so that they can focus again during the next twenty-minute learning segment. Wilson and Korn reviewed the research on student attention during lectures and conclude that it is clear that students' attention

varies, but they recommend more controlled research if this assertion is going to be presented as empirically based.



**Figure 1.** Approximate Ratio of Prime-Time to Down-Time during Learning Episode.

### 2.2.11 Use Reverse or Inverted Classroom Organization

Organizing curriculum according to the reversed or inverted classroom model (in which face-to-face class meetings are used to follow up on assignments done out of class either individually or as groups) can ensure that class time is used for effective active learning strategies. One of the early strategies emphasizing this approach is Just in Time Teaching. In JiTT, students complete a Web-based assignment that is due shortly before class. The instructor reads the students' submissions "just in time" to adjust the face-to-face session to respond to student needs. The face-to-face session is designed for active learning through mini-lectures, demos, classroom discussion, worksheet exercises, and even hands-on minilabs that are informed by the instructor's analysis of student responses. This provides a feedback loop in which students' outside-of-class preparation fundamentally affects what happens during the subsequent in-class time.

### 2.2.12 Use Rubrics to Give Learners Frequent and Useful Feedback

Imagine being blindfolded, alone, and trying to learn archery. Without the feedback of seeing the target, you would not know how close each shot came to hitting the bull's eye. In fact, you'd probably have only a vague sense whether you hit the target at all. One of a teacher's most important responsibilities is giving learners feedback. Learners need to know what they are doing right and what they are doing wrong so that they can adjust their efforts and improve. Most teachers know this, but the time and effort it takes to provide timely, effective feedback can be a major obstacle, especially in courses with large numbers of students.

Rubrics are an effective solution. They are used today to explicate and grade a wide range of learning tasks, from standard written assignments such as essays and research papers to discussion participation, group work, oral presentations, laboratory reports, Web-page design, projects, and portfolios. It takes time and effort to create an effective rubric, but once done, it saves time and effort.

**Table 3.** A Cycle of Tasks Blending Face-to-Face with Online Tools

Nature of Inquiry	Learning Activities	Use of Online Tools
<i>Before a Face-to-Face Session</i>		
Create a triggering event	Prereading assignment or activity on a specified topic or issue	Announcements tool
Determine learner's prior knowledge or experience with the topic or issue	Self-assessment quiz, survey, or discussion forum	Tests, surveys, discussion forums tools
<i>During a Face-to-Face Session</i>		
Respond to results	Instructor mini-lecture and/or tutorial to address results of quiz/survey	Display quiz or survey results
Explore the questions	Dialogue with teacher and fellow learners through whole-class or small-group discussion	Overheads or presentation software to project prompt or displays of support information
<i>After a Face-to-Face Session</i>		
Follow-up classroom assessment	Muddiest point (What are you still unclear about?) or one-minute paper (What did you learn from the class session?)	Survey tools or discussion forums
Further exploration and integration	Dialogue with fellow learners or additional reading/writing	Discussion forums or assignment tools
Tentative integration and initial phases of connecting theory to practice	Individual or group project work	Discussion forums, assignment tools
<i>The Next Face-to-Face Session</i>		
Resolution/application	Talking/listening/writing through review of online discussions, individual or group presentations	Display quiz or survey results
Introduction of next triggering event	Initiation of dialogue on the next topic or issue	Overheads or presentation software to project prompt or displays of support information

Here are some of the benefits of rubrics for teachers:

- Teachers are able to offer more complex, challenging assignments because they can present multiple components in a clear, organized manner, thus saving time and effort explaining assignments and clarifying expectations.
- Grading can be more consistent and equitable (for example, between the first

and last student's assignments the instructor is grading, or when work is graded by team teachers or teaching assistants).

- The anguish of grading is reduced, because performance standards are clearly spelled out, and either the student's work meets the explicit criteria, or it doesn't.
- Less time is needed to grade assignments and to justify or explain the grade to students who contest their grade.
- Core learning goals and performance expectations can be reinforced when rubrics are used for multiple assignments.
- Rubrics help teachers of the same course, sequenced courses, or similar assignments within a department or program communicate with each other about departmental or institutional standards, criteria, and assessment.

Rubrics have become such a popular assessment tool that Stevens and Levi introduce their book on rubrics in higher education with the comment that "professors like us who use rubrics often consider them the most effective grading devices since the invention of red ink". Students need feedback and instructors need to grade. Rubrics can meet both needs in an effective and efficient manner, providing the substantive, meaningful "educative" feedback that can help ensure students are on track and working in their optimal challenge zone.

Rubrics range in complexity, but Stevens and Levi (2005) identify four basic elements:

- Task description,
- Components of the task,
- Descriptions of the range of performance for each component, and
- A scale (such as excellent/competent/needs work) to rate how well or poorly any given task has been performed.

## 2.3 STRATEGIES FOR ENSURING STUDENTS ARE APPROPRIATELY CHALLENGED

A fundamental principle of learning is that tasks must be sufficiently difficult to pose a challenge, but not so difficult as to destroy the willingness to try. When students are working at their optimal challenge level, they are more likely to be engaged.

### 2.3.1 Assess Students' Starting Points

To ensure students are working in their optimal zone, it is essential to know their "starting points." Some disciplines already have widely used diagnostic tests that can help you identify what topics or skills students have already mastered. But if such a test is not available in your field, you can develop your own by creating a list of key



concepts, facts and figures, or major ideas.

A knowledge survey consists of course or unit learning objectives framed as questions that test mastery of the objectives. For example, if a core course learning objective in a science course is “Students will be able to distinguish science from other endeavors or areas of knowledge such as art, philosophy, or religion,” the survey question will be “What specifically distinguishes science from other endeavors or areas of knowledge such as art, philosophy, or religion?” Rather than actually answering the questions, students respond to a three-point rating indicating their confidence to respond with competence to each query. Here are the directions from a sample survey provided by Nuhfer and Knipp:

- Mark an “A” as a response to the question if you feel confident that you can answer the question sufficiently for graded test purposes.
- Mark a “B” response to the question if you can answer 50% of it or if you know precisely where you could quickly get the information needed and could return here in 20 minutes or less to provide a complete answer for graded test purposes.
- Mark a “C” response to the question if you are not confident that you could adequately answer the question at this time.

### 2.3.2 Monitor Class Pacing

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If you do not have the time or interest to adjust for individual learning needs, take steps to ensure that the class on the whole is functioning in an effective aggregate challenge zone. A simple way to do this is a classroom assessment technique known as the “Minute Paper”: at the end of class students write and submit anonymously a couple of paragraphs in response to questions such as “What was the most important thing you learned during this class?” and “What important question remains unanswered?” Huba and Freed offer a variation on this technique. They suggest that at a point late in a class session, students are asked to reflect on the class and in two minutes, think of any questions they want to ask or comments they would have liked to make, and write them on a piece of paper. The teacher collects the anonymous papers and in the remaining minutes of class, reads the questions/comments and answers or addresses them out loud to all. Strategies such as these help clarify and correct misunderstandings before students fall behind.

Applied to an educational setting, the Quality Circle technique involves establishing one or more groups of five to eight students and meeting with them on a regular basis to listen to them as they offer structured feedback on course materials, activities, and assignments. It provides a vehicle for regularly collecting thoughtful responses from students about class sessions, readings, activities, and so forth, and also engages students by involving them in decisions regarding classroom operations. Students in

the Quality Circles can serve both as advocates for their fellow students and as liaisons between the instructor and students, which can enhance communication in large classes. This strategy also indicates to students that you are serious about student learning and using student feedback to improve the course.

### 2.3.3 Help Students Learn to Self-Assess

Help students evaluate their learning and learning process. This allows them to take responsibility for determining whether they are in their optimal challenge zone and adjust accordingly by doing additional review, seeking help, or challenging themselves to pursue more advanced work. For example, “Diagnostic Learning Logs” are essentially limited, tightly focused versions of the academic journals that many teachers already use. When responding to a learning session, students write one list of the main points that they understood and a second list of points that were unclear along with possible remedies for problems. Diagnostic Learning Logs tell teachers something about students’ skills in recognizing their own learning difficulties in specific lessons, but the main virtue of this assessment technique is to make students aware of themselves as learners and to take more responsibility for analyzing their learning problems and doing something about them.

#### Keyword

**Spoken language** is a language produced by articulate sounds, as opposed to a written language.

### 2.3.4 Differentiate Course Elements to Meet Individual Student Needs

Nunley observes that education’s bottom line is “if students are learning, you are teaching”. She suggests that in formal educational environments, learning involves three steps: (1) teaching, (2) studying, and (3) assessment/testing. Although this three-part system seems logical and simple, problems arise through the traditionally narrow range of options and avenues we use for Steps 1 and 3. Teaching is almost always achieved through linguistic channels (we listen to **spoken language** and read the printed word), and assessment is almost always visual, linguistic, and fine motor activity involving reading printed words and manually writing a representation of our thoughts. Nunley urges teachers to remember that Step 1 (teaching) and Step 3 (assessment) are solely in existence for the purpose and

benefit of Step 2 (learning) and that because educational environments have traditionally been so rigid in the way teaching and assessment are offered, we are seriously limiting success at the most important step—the learning.

Creating an effectively differentiated course is one way teachers can support individual students working at their optimal challenge zone. Following are some ideas for differentiating a variety of course elements culled from several of these sources:

- **Level:** Challenge students who already know a portion of the material to move to new, more advanced material or more complicated, complex applications of the material, and focus the efforts of students for whom the material is new on building a solid foundation.
- **How students access material:** Make content available through a variety of delivery mechanisms such as teacher presentation, textbooks, online, media such as films and recordings, and computer-assisted instruction.
- **Process:** Offer activities in a range of modes (for example, writing, discussing, creating), at varied degrees of sophistication, over varying amounts of time, or with varied amounts of teacher or peer support.
- **Product:** Replace some or all tests with other kinds of products such as essays, Web pages, media-based materials, presentations, demonstrations, role plays, models, and exhibits.
- **Classroom space:** Differentiate space by organizing a physical classroom in ways that allow students to work in a variety of configurations (individual, small-group, or whole-class work) and to change configurations smoothly and efficiently. Extend options through online delivery systems.
- **Materials:** Use technology, media, and traditional materials in a creative way to offer a wide variety of tools to support learning. To prompt learning, consider using quotes, charts, images, film clips, assessment results, Web pages, and podcasts. To provide variety in terms of how students construct materials to communicate their learning, consider using journals, presentations, exhibits, videos, audio recordings, Web pages, portfolios (hard copy and electronic), images (2- and 3-dimensional and computer generated), analysis and reflections, Wikis, and blogs.
- **Time:** Think of ways to use time flexibly within the external constraints of the academic term and class hour(s) by asking yourself questions such as, When is it best to work as a whole class, independently, or in small groups? Are there times when these can occur simultaneously? What should students do when some finish early? In the online environment, which activities are best done asynchronously and which ones synchronously?

The amount of variables to consider when thinking about differentiation can make the concept so overwhelming that college teachers dismiss it out of hand.

But even Tomlinson observes that effective differentiated classrooms usually include whole-class, nondifferentiated fare as the standard. In fact, she recommends that instructors differentiate only when they see the need and when they are convinced that modification will increase the likelihood that students will understand important ideas and use important skills more thoroughly. Furthermore, differentiation can be phased in, gradually adding more levels of options.

Some types of classrooms are more flexible than others, but faculty can differentiate learning activities in any kind of classroom. All classrooms can be used for individual activities (such as writing essays, stopping to reflect quietly) as well as traditional whole-class presentation and discussion. Table 4 offers suggestions for adapting various kinds of classrooms for smallgroup work.

**Table 4.** Differentiating Learning Activities in Various Classroom Settings

Fixed-seat auditorium or lecture hall	Students seated next to each other on the same level can form pairs or trios to engage in short brainstorming or brief discussions. Since groups are unable to work together for long periods in uncomfortable conditions, more complex collaborative assignments can be done outside of scheduled class time.
Laboratories	Laboratories most often contain workstations where groups of students can work together. Depending upon the kind of laboratory, groups of different sizes can form and re-form throughout the class session. For example in a computer laboratory, pairs might work best for an assignment, but for brief periods pairs could form together to form a quad.
Moveable chairs and desks	Students can form pairs, small groups, or a circle for whole-class discussion. Because students do not have a single shared workspace, writing together or manipulating pieces of paper in a graphic organizer may be challenging.
Moveable tables	Students can form pairs, small groups, or a circle for whole-class discussion. Because students do not have a single shared workspace, writing together or manipulating pieces of paper in a graphic organizer may be challenging.
Moveable tables	The flexibility of this type of setting makes it ideal for a variety of group activities. In addition to pairs and pair-cluster arrangements, larger student teams can work together at a table. The tables can be pulled together to create one large conference table. The tables and chairs may also be arranged in a U shape. Almost any kind of group activity can be accomplished in this type of classroom.
Seminar	Organize the class into 2–3 groups; one group can work at the middle of the table, and the other groups can take different corners or ends of the table.

Large classroom with breakout space or rooms	Students can come together for a large session and then spread out for teamwork. This classroom allows groups to work independently on projects without disturbing other groups and is ideal for medium- or long-term groups.
Online class	Factors such as the level of students (lower division or graduate seminar?) and the size of the class (12 or 120?) influence how to form groups in online classes. In small classes with stable enrollment, it may work best to assign partners or triads early in the semester to work together throughout the term. In large classes with unstable enrollment and participation, it may work best to form larger groups of 8–12. Regardless of group size, identify groups (e.g., Group A, Group B), assign membership, and provide groups with their own “space” to discuss their work (e.g., a threaded discussion forum). Depending on the nature of the assignment, consider creating these forums as adjuncts to a whole-class discussion and/or providing only group members access to their group’s discussion area.

### 2.3.5 Use Scaffolding to Provide Assistance for Complex Learning

When students are working on challenging projects, they need assistance to support them as they move from not knowing or not being able to becoming independent and competent. Scaffolding is a term used to describe the general strategy of breaking down multipart processes into smaller steps or providing students with examples, clues, prompts, reminders, and so forth to help them succeed at complex learning tasks. Just as in construction, a scaffold provides a temporary framework where workers can stand safely and access areas otherwise out of reach, a scaffold for learning provides students with support until they can solve the problem, perform a skill, or complete a task on their own. Following is an adaptation of scaffolding steps described by Wlodkowski, with examples at each step to support students in writing a research paper:

- **Model:** Carry out the skill while students observe, or provide examples that students can imitate, such as completed projects or solved problems. To introduce the complex task of writing a research paper, form students into small groups, provide them with two research papers written by students in a previous class, with one being excellent and one being satisfactory. Ask them to identify the characteristics that make the one paper more effective than the other.
- **Think out loud:** Talk through the thought processes you would engage in as you carry out the task. For a research paper example, talk about how you might identify a topic, or how you would go about gathering and evaluating sources, data, and references; ask learners to share their own perceptions and processes about conducting and writing up research.
- **Anticipate difficulties:** Discuss with students areas where support is needed and mistakes are likely to occur. Talk about the strengths and weaknesses of

Web research and how to paraphrase and cite sources appropriately to avoid plagiarism.

- Break down an activity into smaller parts or provide prompts and cues: Break down a complex process into smaller procedural steps or highlight important aspects of a project. Provide an outline of the steps involved, a grading rubric specifying quality criteria, or a checklist of questions such as, Have you included an in-text citation for every source you paraphrased?
- Use reciprocal teaching: Before students have completed the task, ask them to discuss their work with peers in order to obtain guidance and suggestions. Form small groups in which students share drafts of their research paper to get and provide supportive feedback.

Although some college teachers resist providing this kind of assistance and criticize it for “coddling” students, scaffolding can provide the support students require to persist on a difficult task that might otherwise become overwhelming. It can also guide students to do their best work. The kind of assistance scaffolding provides should be just enough to keep students from getting lost, trusting them to chart the rest of their journey to learning on their own. It conveys the message that learners are not rugged individualists or solitary explorers, but rather, it embraces a vision of remarkable possibility nurtured by a caring community.





## SUMMARY

- Motivation is particularly helpful in encouraging persistence in applying effort to a learning task and testing new approaches. Although motivation is strongly influenced by student characteristics and varies across learning domains, the classroom environment also plays a vital role in influencing student motivation.
- Expect students in your course to be engaged in learning, and resist settling for less. If you have done everything you can to create classroom conditions that promote engagement and still see students who look bored or apathetic, talk to them privately.
- Building upon studies by industrial and organizational psychologists, educational researchers have found that even students who are not intrinsically motivated by their studies will put forth reasonable effort if they like and admire their teacher, just as they may become apathetic or resistant if they view their teacher negatively.
- Especially important to the college classroom is being aware of students' psychological needs and taking care to ensure students feel safe to say/write what they truly think or feel without fear of ridicule or criticism by either you or their peers.
- Self-determination is the basic human need to have control over one's life. In the classroom, students are more motivated to engage in meaningful learning if they are acting of their own volition. The need for self-determination works hand in hand with helping students build self-efficacy: they are more likely to believe they are capable of achieving a particular goal if they feel they are in control of the actions required for success.
- Teachers who believe in their students and expect success are more likely to get it than teachers who doubt their students' ability and are resigned to minimal or mediocre performance.
- Active learning engages students in learning, using activities such as reading, writing, discussion, or problem solving, which promote analysis, synthesis, and evaluation of class content.



## MULTIPLE CHOICE QUESTIONS

1. **An advantage of think-pair-share over small-group active learning is**
  - a. it takes less class time
  - b. it provides the learning benefits of both individual reflection and interactivity
  - c. it leads to greater acquisition of critical thinking skill
  - d. all of the above
2. **You want to show a complex problem solution to your class in a way that best equips the students to solve a similar problem themselves. The technique recommended for this purpose in the module is**
  - a. showing the step-by-step solution in class, giving students the chance to ask questions after every step
  - b. thinking-aloud pair problem solving (TAPPS)
  - c. think-pair-share
  - d. using personal response system (clicker) technology
3. **Which of the following definitions best reflects this module's definition of active learning?**
  - a. Students taking notes on a lecture
  - b. All students in class being asked to speak, write, or reflect on something
  - c. All students in class working in groups on an assigned activity
  - d. All students being physically active in class
4. **Which of the following learner characteristics is highly related to effectiveness of teaching ?**
  - a. Prior experience of the learner
  - b. Educational status of the parents of the learner
  - c. Peer groups of the learner
  - d. Family size from which the learner comes.
5. **From the list given below identify the learner characteristics which would facilitate teaching learning system to become effective. Choose the correct code to indicate your answer.**
  - a. Prior experience of learner
  - b. Learner's family lineage
  - c. Aptitude of the learner
  - d. Learner's stage of development
  - e. Learner's food habits and hobbies

**(6) Learner's religious affiliation**

Code:

- a. (a), (c) and (d)
- b. (d), (e) and (f)
- c. (a), (d) and (e)
- d. (b), (c) and (f)

**REVIEW QUESTIONS**

1. What is fostering motivation?
2. How to develop and display the qualities of engaging teachers?
3. Describe the strategies for promoting active learning.
4. Discuss the five effective teaching strategies to help students develop learning.
5. How to use rubrics to give learners frequent and useful feedback?

***Answer to Multiple Choice Questions***

1. (b)      2. (b)      3. (b)      4. (a)      5. (a)

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## CHAPTER 3

# KNOWLEDGE, SKILLS, RECALL, AND UNDERSTANDING

### LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Explain the background knowledge probe
2. Discuss about artifacts
3. Focused reading notes
4. Define reading skills
5. Describe the quotes
6. List the stations
7. Explain about team jeopardy
8. Define seminar

*"Your earning ability today is largely dependent upon your knowledge, skill and your ability to combine that knowledge and skill in such a way that you contribute value for which customers are going to pay."*

*—Brian Tracy*

## INTRODUCTION

The student engagement techniques (SETs) focus on engaging students as they learn the facts, principles, and ideas that constitute the foundational knowledge of the subject they are studying. Sometimes referred to as "declarative learning," this is the "what" of the course content and is generally represented by the lower tiers in learning taxonomies. The SETs in this chapter structure opportunities for students to organize, recall, understand, explain, and remember information and core concepts.

## 3.1 BACKGROUND KNOWLEDGE PROBE

A Background Knowledge Probe (BKP) is a focused questionnaire that students fill out at the start of a unit (or course) to help teachers identify the best starting point for the class as a whole.

### 3.1.1 Step-By-Step Instructions

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In this we provide you with guidance on each of the seven steps involved as you consider this technique.

#### *Step 1: Clarify Your Teaching Purpose and Learning Goals*

One of the most important principles in both motivation and learning is working at a level that is appropriately challenging. Activities that are too easy are boring, activities that are too hard are discouraging, and either extreme leads to disengagement. A Background Knowledge Probe helps teachers determine the most appropriate level at which to begin instruction. They also identify under-prepared students for whom remedial work may be needed and extremely well-prepared students who may benefit from tasks that are more challenging.

A Background Knowledge Probe is therefore a learning assessment activity that can help address problems related to low motivation and insufficient class preparation because it guides teachers in their quest to help students work at their optimal challenge level. Additionally, it can help learners foreground their prior knowledge so that they can better interpret and assign meaning to new information. Helping students to recognize the importance of activating prior knowledge so that they can better connect new information to their existing understanding also can help them become more efficient learners. A Background Knowledge Probe is most typically used to determine foundational knowledge: understanding and remembering the information, ideas, and perspectives that form the basis for other kinds of learning in the subject. However, teachers can also design the probe to assess other levels of learning such as problem solving or **critical thinking**. Furthermore, if the probe is open ended (“describe what you already know about this topic”) it includes aspects of reflection. It is therefore important for you to think through how this technique might work best in your class.

#### *Step 2: Identify The Learning Task’s Underlying Problem and Prompt*

Before starting instruction on an important new concept, subject, or unit, prepare a few questions that will probe students’ existing knowledge or understanding of the content.

### *Step 3: Set Assignment Parameters*

Choose how you will present the questions to students (such as on a presentation slide, in a handout, or in a quiz within an online learning management system), what type of questions to ask (such as objective or short essay) and then create the questionnaire. Determine other parameters such as time allowed for the activity, the deadline, how students should submit responses, etc.

### *Step 4: Develop a Plan for Learning Assessment or Grading*

When used to assess foundational knowledge, a Background Knowledge Probe usually consists of a short series of objective questions. Students' answers to these questions can be assessed based on accuracy. If you choose to use this technique to determine other learning levels (such as critical thinking), you will most likely want to create a rubric to assess student responses.

#### **Keyword**

**"Critical thinking** is essentially a questioning, challenging approach to knowledge and perceived wisdom.

### *Step 5: Communicate Assignment Parameters to Students*

Assure students that their answers will not be graded, and that the point of the exercise is to:

- Help them recall any prior knowledge so that they can better connect this to what you will be teaching them.
- Help them start the process of organizing their knowledge.
- Help you determine the most appropriate level at which to begin instruction.

### *Step 6: Implement the Technique*

- Present the Background Knowledge Probe to students.
- Provide students with time to respond to the questions.
- Review the answers so that you can determine the best point to start instruction.

### *Step 7: Reflect Upon the Activity and Evaluate Its Effectiveness*

When reflecting on the activity and how effective it was, consider the following questions:

- Did the technique match the course learning goals and objectives?
- Did it meet my goals for this learning module?
- Was it appropriate for the students?
- Did the technique keep the students engaged?
- Did it promote student learning?
- Did it provide me with information about student understanding?

If you answer yes to all or most of these questions, next consider how you might improve the activity for the next use.

### Remember

Students must also quickly assess what they do not understand and must be able to articulate their confusion (which is itself a complex and useful skill).

## 3.1.2 Examples

### *Political Science*

This professor knows that students start his class with a wide range of backgrounds in history and political science. To get a better sense of what students already know, he distributes a questionnaire that asks students to self-assess their current knowledge on a variety of names, terms, and concepts. An excerpt from the survey is provided in Exhibit 1.

The questionnaire continues with key terms and names such as Republic, the Constitution of the United States, and James Madison. Students submit their answers, which the professor quickly tallies and uses this profile of students' current knowledge to determine which topics he will spend more time on in class.

### *Human Anatomy and Physiology*

Professor Tish Oosells chose this SET to introduce a unit on the heart. She distributed a handout with an image of the exterior and interior structures of the heart and fill-in lines and arrows pointing to the different structures. She asked students to independently write in the names of as many of the structures they could recall. Then they worked in pairs to pool their knowledge to fill out a single handout, using three different colored pencils to represent individual and shared knowledge.



**EXHIBIT 1.****Sample Questions from Political Science Survey****Background Knowledge Probe #1**

Please circle the letter that best represents your current knowledge:

## 1. Federalism

- a. Have never heard of this
- b. Have heard of it, but don't really know what it means
- c. Have some idea what this means, but not too clear
- d. Have a clear idea what this means and can explain it

## 2. Separation of powers

- a. Have never heard of this
- b. Have heard of it, but don't really know what it means
- c. Have some idea what this means, but not too clear
- d. Have a clear idea what this means and can explain it

### *Music of Multicultural America*

This professor uses a “Background Knowledge Probe” as both a pre- and postassessment tool. She finds that the open-ended nature of the prompt helps capture a wide range of student knowledge and that the authentic nature of the task appeals to students. In addition to helping her assess students’ starting points, the grid (Exhibit 2 is an example) helps her identify students with special expertise whom she can consider inviting to give an in-class presentation. At the end of the term, she has students fill out the grid again to assess how well they have achieved the course’s learning goals. Students compare their responses on the pre- and post-grids, and they often report that it is gratifying to see how much they have learned. To ensure students are drawing from longterm rather than short-term memory, she does not inform students of the assessment in advance, and she also assures students the results will not negatively affect their course grade. She quickly evaluates the grids by assigning one point for each substantive information item and gives the points to students as bonuses.

### 3.1.3 Variations and Extensions

- Ask students to pair up and share insights or observations regarding their levels of background knowledge. Or have them pair up to create a composite assessment based on their combined knowledge.

**EXHIBIT 2****Music Background Knowledge Probe****Music of Multicultural America****Knowledge Grid**

Name \_\_\_\_\_

Directions: You are hosting a visitor from another country who asks you about American music. At first you can't think of anything but the latest pop hits, but then you remember (1) how America is a nation of immigrants, (2) how immigrants brought the music traditions of their home countries with them to America, and (3) how the cross-fertilization of immigrant styles led to the creation of the new kinds of music that we call "American music." Use single words and short phrases to indicate the info and ideas you use to show your visitor you know what you are talking about.

	<b>The Social/Historical Context</b>	<b>The Music (Representative Artists, Structural Characteristics, etc.)</b>
Native American music		
Gospel		
Blues		
Jazz		
Country		
Urban folk revival		
Rock 'n' roll		
Tejano, Banda		
Salsa, Reggae		
Hip-hop, Rap		

- Consider using the information you glean to pair students into mentor relationships.
- "Knowledge Surveys" are a more extensive approach to determining what students know. They can be used to assess information for an entire course, thus avoiding the piecemeal approach that can result from assessing background at the unit or task level.
- In a variation called "Con-Venn-Tions", students are given index cards and asked to each write the 5–8 most significant points they know with respect to a given topic, one idea per card. In pairs, students share and organize their ideas, sorting the cards into three piles consisting of unique and shared ideas in order to develop a Venn diagram containing their pooled knowledge about the topic. They can use an actual Venn diagram or a simple table created in a word-processing program.

If a student has little or no background knowledge, this activity may be demoralizing. If you suspect that some students in your class may fit this category, consider spending



time up front building trust by assuring them that you want all students to be able to succeed and reinforcing that one of the ways you can help them succeed is by knowing all the students' starting places.

If what students already know is far more or far less than you expect, this SET can be overwhelming because it can challenge you to make major revisions in your instructional plans. Therefore, do not use this activity if you do not have the time, energy, and willingness to make adjustments if necessary.

### Did You Know?

In the 1950s and 1960s, college instructors in the fields of psychology and the study of education used to research, theory, and experience with their own students in writing manuals.

## 3.2 ARTIFACTS

Based on the premise that images and objects can sometimes be more evocative than text, “Artifacts” uses visual representations and handheld items to arouse curiosity, stimulate ideas, and focus students when introducing a topic. Teachers provide groups of students with photos, specimens, charts, graphs, drawings, or objects that represent key ideas about a topic. Students then discuss the items in relation to instructor-designed prompts.

### 3.2.1 Step-By-Step Directions

- Identify a concept you wish students to discuss that is rich, complex, important to understand, and lends itself to visual imagery or physical representation.
- Collect or duplicate a sufficient number of objects or images to create a set for each group of 4–5 students.
- Craft the prompts you will use to guide students as they examine the artifacts and write these on handouts, presentation slides, or overhead transparencies.
- Decide how you will have students report out their findings.
- Form groups of 4–6 students, explain the purpose and directions for the activity, and distribute items to each group of students.



## 3.2.2 Examples

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### *Remedial Math*

This professor gathered postcards with a variety of evocative images such as tightrope walkers, a cartoon of a man looking overwhelmed next to a stack of books, and a picture of Edvard Munch's painting *The Scream*. On the first day of class, she organized students into groups of five, gave each group a stack of postcards, and told students to pick out a card whose image best captured how they felt about learning math. She gave students a few minutes to discuss their choices in groups and then moved to a whole-class discussion about math anxiety. She found that the activity was a lighthearted, engaging way to start building trust and community by foregrounding students' fears and reassuring them that they were not alone in their nervousness.

### *Art History*

Professor Al E. Gorical wanted students to understand how medieval Christian architecture used symbols and design elements to express a wide variety of spiritual concepts. Following a lecture in which he explained the meaning and significance underlying various numbers, colors, and objects, he distributed photos of different church facades as well as diagrams showing their structural layout. He formed students into groups of three and asked them to look closely at the images and identify and describe five or six uses of religious symbolism in the architecture of the churches.

### *American History*

To start a discussion on European immigration and settlement in the United States during the nineteenth century, Professor Emma Grashon gathered a chart of statistics, excerpts from immigrant diaries, a photo of the Statue of Liberty along with a key to Bartholdi's use of symbols in the statue, and a collection of photos (a starving family on a farm in Ireland, a village in ruins following a pogrom in Russia and so forth), and asked groups to answer a series of questions on a worksheet related to why people came to America.

For two-dimensional artifacts such as images, charts, graphs, and drawings, gather a collection and place it on a single Web page, craft the prompts, and ask students to discuss their responses and ideas in a threaded forum or submit them individually as an assignment.

### 3.2.3 Variation and Extensions

- Although this activity was developed with graphic and physical objects in mind, written information (such as quotations, statistical data, and facts) can also be used by copying it onto index cards.
- Have students collect items (such as photos, drawings they've created illustrating a literature assignment, or specimens related to a biology or botany course) and create their own set of artifacts.

#### Keyword

**Abstract ideas** refers to the ideas which are not concerned with worldly things.

### 3.2.4 Observations and Advice

Items that can be seen, touched, handled, and passed between students can engage students by helping to make **abstract ideas** or notions real.

Use this basic activity to stimulate discussion in response to a wide variety of prompts. For example, provide.

- objects that represent different versions of an idea and ask students to compare and contrast the two;
- photographs of disease symptoms and ask students to offer diagnoses;
- different images of an event (for example, war photos, political cartoons, and military recruitment posters) and ask students to answer questions such as Whose viewpoint or perspective does this image reflect? What does it mean? Why was this image made?
- objects or images and ask students to evaluate their function or effectiveness in conveying a message with questions such as Which of these are better? Why?
- a series of pictures and ask students to put them into a sequence and construct a story

## 3.3 FOCUSED READING NOTES

For focused reading notes, think about what you would like students to take away from a reading assignment. Then, identify 3-5 themes or concepts you would like students to watch for in the reading. Choose a short phrase or keyword related to each theme/concept, and have students write these down as column

headers on a sheet of paper. Students then enter reading notes in the appropriate column.

This technique gives students a strategy for focusing their reading to help them become more efficient and effective learners. Prior to giving students a reading assignment, instructors identify 3–5 themes or concepts they want students to look for in the text and then choose corresponding keywords or phrases. Students use these keywords as headings for columns on a sheet of paper and enter reading notes in the appropriate column. The column headings direct students' attention to what is important and provide them with an organizational framework for writing notes about new knowledge and understandings.

### 3.3.1 Step-By-Step Directions

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- Decide what it is you want students to look for in a reading assignment and assign keywords or phrases. For example, if the assignment is Plato's dialogue *Crito*, the headings might be "Crito's values," "Socrates' values," "Use of analogies," "City or family versus the individual," and "My questions or responses".
- Try out the keywords by creating columns and jotting down representative examples in the reading yourself, and then make any necessary adjustments.
- Create a handout, or simply plan to give students the column headings and instruct them to create their own worksheet.
- Explain the process to students, giving examples so that your expectations are clear.
- As students read, they look for examples that correspond to the headings and write these down in the appropriate column.
- Students submit their notes, or use them as study notes or as the basis for discussion with a partner.

### 3.3.2 Examples

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#### *English Literature*

Professor Rita Boone decided to have students write an essay in class analyzing Joy Kogawa's *Obasan*, a novel about the relocation of Japanese Canadians to internment camps during WWII. To prepare them for an in-class essay analyzing how changes in perspective and style reflect the narrator's complex attitude toward the past, she created a handout with four columns with headings for different literary elements: point of view, structure, selection of detail, and figurative language. As students read,

they looked for examples of these elements in Kogawa's writing and noted them in the appropriate column. Students were encouraged to bring their "Focused Reading Notes" to class for reference when they wrote their essays.

### *Music History*

The textbook for this course was dense with data and information and many students found it overwhelming. To guide students, the instructor created a master template for each historical period; the column headings were (1) Genres and styles, (2) Representative composers and compositions, and (3) Characteristic treatment of structural elements. Students were asked to fill in the columns with information gleaned from their reading and use these worksheets as study guides for the data portion of the exams. She also asked students to submit completed worksheets on exam days prior to taking the test.

### **3.3.3 Online Implementation**

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This is an easy technique to implement online. Prepare as you would for a face-to-face class, providing the explanation with columns, headings, and examples as an assignment that students submit either as an e-mail attachment or within your course's assignment tool.

### **3.3.4 Variations and Extensions**

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- Use "Focused Reading Notes" as a preparatory activity for whole class or small-group discussion, an essay, or an early step in a more comprehensive project.
- Instead of a worksheet with columns and headings, make an "Interactive Bookmark" to guide students as they read. Create a handout consisting of a vertical half-page bookmark listing prompts to guide students to take notes as they read independently. Prompts can focus on activities such as identifying cause-and-effect relationships, recognizing text structure, paraphrasing, inferring, and summarizing. This variation gives readers flexibility to choose the way they respond to the text (words, symbols, or other nonlinguistic elements). It can be used to engage students by activating prior knowledge, providing closure before moving from one subtopic to another, or to check for understanding and misconceptions. Here are some examples of prompts:

Jot down a key idea expressed by the author.

Paraphrase what you have read.

Draw a symbol or picture to help you remember an important part.

Make note of something important (a quotation, a theme).

Make a connection between this text and your own experiences.

Make a connection between this text and another.

Make a connection between this text and something in the real world.

Write two questions that can be answered by the reading.

Predict what will happen next.

Note evidence of text structure.

Identify a confusing part.

Pose a question you want answered.

Give your opinion of what you read.

Create a metaphor or simile to help you remember an important word or idea.

Once students have become skilled at discovering key issues and themes in a reading, they can develop their own headings.

If the entries in the columns will be uneven in terms of length (for example, sentences and terms), it may be more efficient to use a separate page for each heading.

### 3.3.5 Benefits

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Students will have a plan for focusing their reading to help them extract important concepts or themes. It provides them with an organizational framework capturing notes about new knowledge they are engaging. Completing the worksheet as they are reading helps engage them in the process of learning.

### 3.3.6 When to use

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- As a preparatory activity for class discussion or forum
- To prepare students for an essay assignment
- As a piece of a more detailed project

### 3.3.7 Method

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#### *Face to face*

- Determine important concepts from the text and assign keywords or phrases.



- Give the headings to the students along with directions for the assignment, or create a handout/worksheet for them
- Students complete the sheet as they are reading, using the headings/columns to organize their notes
- Students may be instructed to turn in the worksheet as an assignment, or they could use them as notes when they are preparing for another assessment (quiz, essay, etc.).

*If the reading is about a high engagement teaching practice, the headings/keywords might be “benefits”, “suitability for online courses”, “variations”, and so forth.*



### Online

- Prepare as for face to face. Provide students with the list of headings. Students complete their worksheet as an assignment that can be turned in through Canvas.

## 3.3.8 Improving Your Note Taking

Effective note taking is one of the keys to succeeding in school. Students should devote a considerable amount of time reviewing information discussed during classroom lectures. It is very difficult to remember specific details—even major concepts—from classroom lectures without good notes.

These note taking strategies will help you to take better notes:

### *Make clear and accurate notes*

Make sure to take legible and accurate notes since it is not uncommon to forget key details discussed during class after it has ended. Frequently, students comprehend the teacher’s lecture and think they’ll remember everything, so they neglect to jot down specific details only to find later that they can’t recall what it was they needed to remember. Students who keep accurate notes can review them later to review key points, recall necessary detail, solidify knowledge and study up on concepts

they didn't fully comprehend during the lecture. Additionally, since teachers frequently cover many topics during the course of their lectures, effective notes enable students to concentrate on specific topics that are most relevant.

### *Come to class prepared*

Students properly prepared for class usually take better notes than those who come unprepared. Proper preparation includes completing assigned reading prior to class and reviewing notes from previous lectures. Students who review their notes from previous lectures (1) will have a better context for learning new topics presented in the next lecture and (2) can ask questions about confusing concepts they didn't quite understand from the previous lecture.

### *Compare your notes*

To ensure your notes are as accurate and detailed as possible, compare them with the notes of other students after class is over. This is useful because your colleagues will frequently write down lecture details that you forgot or missed. This strategy will make classroom notes more thorough and precise.

### *Minimize distractions*

Effective note takers avoid classroom distractions. This can include sitting in spots with fewer distractions and not signing up for classes with friends that you might want to talk with during lectures. Some students will even sit in spots where it is difficult to constantly glance at the clock.

### *Organize your notes*

Notes organized by date, class, and subject make it easier to locate specific lecture details. It is also a good idea to keep information from different dates and classes separated or to begin each class with a new piece of paper. A good format for organizing your notes is the Cornell System for Taking Notes.

### *Use abbreviations and symbols*

Since teachers usually cover a lot of information during each lecture, it can be hard to write down everything important they say. This is why we recommend using symbols and that you abbreviate long words and use short phrases in your notes when possible. Many students use the following symbols and abbreviations while taking notes: & (and), w/o (without), eg (for example), ie (that is). When utilizing abbreviations, create a key of your most commonly used abbreviations, so you will not forget what they are.

### *Write clearly*

The most copious notes will be of no benefit if you can't read them. This is why it is important to use good penmanship when taking notes. It is also recommended that you leave space in margins and near key concepts in your notepad, so you can add important details relating to previous lecture topics that are addressed during future lectures.

### *Review your notes*

In order to retain information discussed during lectures, it is best to review notes immediately after class. This will help you better understand the lecture, your notes, and it will enable you to focus on what you just learned for long-term retention. You should review your notes a second time just before your next lecture. This will help refresh in your mind important topics and concepts, and prepare you for the next lecture. You should continue to review your notes on a regular basis between your lectures and your exams.

### *Write down questions*

No matter how intelligent a student is, from time to time they're bound to get confused and end up having questions unanswered by the lecture. For this reason, it is a good idea to write down questions to ask after class, or during subsequent lectures. You can also answer your own questions through a web search, a tutor, another student or by using reference books—but only if you wrote down your questions in enough detail during the lecture.

If you want to increase the effectiveness of your studying and performance on exams, it's imperative to learn how to take good notes. Effective **note taking** is a key element of the formula for success for successful students.

### *Avoid Digital Notes*

The world has become increasingly digital, and it's become ever more common for students to take notes using their tablets and laptops. However, research shows that taking notes on these devices, instead of by hand, actually reduces how much

#### **Keyword**

**Note-taking** is the practice of recording information from different sources and platforms.



a student remembers. According to researchers Pam Mueller and Daniel Oppenheimer, people often try and take verbatim notes on their devices, while they often abbreviate their notes when taking them by hand. Students have to be more selective about the notes they take when taking them by hand, so they are more actively engaged in the lecture. This means that students often remember their hand-written notes better than they do their digital ones. Students should consider dropping the digital devices in favor of taking notes using old fashioned pen and paper.

### *Overlook the PowerPoints*

If your instructor has PowerPoint displays on the screen that are heavily text based, you may want to avert your eyes. Human beings only have so much working memory. They can only devote so much of that memory to both listening and seeing the world simultaneously. If you're sitting in on a class and your lecturer is basically saying the same thing as what's on the PowerPoint slide, then just don't look at the PowerPoint. Students who try to listen and read identical content at the same time actually end up remembering less because they strain themselves trying to process identical audio and visual information at the same time. Researchers Adesope and Nesbit referred to this as the "redundancy effect," when text and speech are identical. The number of mental processes going through a student's mind is known as cognitive load, and that load gets too heavy when identical information is presented in both visual and audio forms. This leads to poorer learning.

The problem is made worse when students try to write down PowerPoint notes verbatim. Much like with taking digital notes, this reduces the amount of effort they can devote to engaging with the lecture that they're listening to. To optimize note taking, students should focus on the words being spoken, be selective in what notes they're taking, and record those notes in physical form. This approach is likely to lead to better memorization and learning over time.

### *Note Taking Methods*

Over time, various methods of taking notes have been developed. These systems were designed to help students take effective notes without too much trouble. After learning the method, students can more effectively follow along in class and take notes as they go. These approaches are designed to reduce the time and attention students need to devote to taking effective notes, leaving them able to focus on the lecture.

Take, for instance, the outline method. The outline method reduces the time that students need to devote to writing out notes by simplifying notes into single sentences divided into subheadings. The top heading includes the main topic, the second heading is the sub topic, and the third heading includes a supporting fact. So, students might write "World War II" as the main heading, "America entered the war because of Japan"



as the subtopic, and “Japan bombed Pearl Harbor” as the supporting fact. Simply by limiting the number of notes taken to core ideas, students can devote more time to listening. Because this approach limits how much information is captured, it may not be suitable for information dense discussions, such as science or mathematics lectures.

Another method that can help is the charting method. The charting method involves creating what amounts to a spreadsheet. The first column of the spreadsheet contains the topics being covered, and each subsequent column includes more detailed information about the topic. This spreadsheet approach is best suited for documenting a heavy amount of information, so it’s best when there is going to be a lot of information that needs to be remembered. However, because it is supposed to be used to capture a lot of information, it’s not well suited for use during lectures. It draws too much attention away from listening. However, it’s ideally suited for independent study, when students are taking notes on their own time.

### 3.3.9 Tips for Focused Reading

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One place in particular where our focus can wain is in the Verbal section. There is so much to read, and so much of it seems uninteresting. But the moment you let that idea slip into your mind, you’ve lost the battle. You need to have a strategy for staying focused and interested, even during the most banal passages.

Let’s look at some ways to stay focused and engaged.

#### *Ask Questions*

Don’t let the words just wash over you when you read. Engage with them and ask questions about what you are reading. The key is to continually ask questions, to ask the same questions, and change your answer as you read more. Iterate through a set of questions and update the answer as you encounter more information.

For example, you should ask yourself: What’s the purpose of this passage? What’s the main idea? Where’s this going? How does the author feel about all this? Use these questions as a basis for investigating this unknown topic. At first you may want to have these written on a slip of paper to refer to every time you read something—not just passages on the GMAT. As you practice, these questions will be imprinted in your mind, and your reading, out of habit, will involve answering these questions.

#### *Have a Pen in Your Hand*

Pens aren’t just for writing! Use the pen to keep track of what you are reading. Follow each line with the pen. It gives your hand something to do and will keep you focused on pushing forward and moving through the passage.

This may seem outdated and something you did when you were just learning to read. And it probably was, but that doesn't mean it won't help you to stay focused. By using a pen and moving it across the screen or page, you make reading a physical act. As such, you will engage more with what you are reading.

### *Take Notes with that Pen*

If you're holding a pen, you might as well put it to good use. But don't just write down things when you see something in the passage that sparks your attention. Rather, focus on taking notes on the flow of the passage, the major points and shifts in tone in the passage.

For example, the first paragraph will introduce some idea, generally, and you can make note of what that is. Then in the next paragraph, there are a few things that might happen. The author might reverse directions and argue against that idea, or she might present a counterpoint of view. Or, the next paragraph could easily be an example of what was just introduced, give supporting evidence, or move on and talk about the result of what was just mentioned.

You should keep track of this flow and change. Don't worry too much about writing down what is in the paragraph. Rather focus on the purpose of the paragraph or the purpose of a section.

### *Be Curious*

Of all the things you could do, the most important is to be curious. You need to cultivate a general curiosity, which is not easy to do, but will help you so much on the test. If you approach something and your first reaction is, "This is ridiculous! Who wrote this?!? Who cares about this stuff?" You will struggle through the entire test, and you will quickly lose focus.

But if you approach a passage, and your reaction is, "Woah! That's weird! Why's that?" you will find the test much easier and less like work. Remember that the passages you read, although esoteric, come from actual articles and journals. The information does have a connection to our world. And if you can dive into the test, open to learning something new, if you are up for a challenge and down to solve some puzzles, you will dominate the test and never lose focus.

### *Takeaway*

No one comes into this world born to focus. Focus is something cultivate. We have to train ourselves to focus. If you want to stay focused, and you want to improve your score, you will need to take these tips and start applying them. Don't expect them to



work right away. Adapt these tips as you develop and grow. Over time you will see the benefit.

### 3.4 READING SKILLS

The reading demands of university study are not easy. Unfortunately, however, it is all too common for students to pay little attention to their own approaches to reading, that is, how they read, and how they can improve the effectiveness and speed of their reading.

This helpsheet provides extensive reading advice. Furthermore, the helpsheet provides reading tips that are specific for particular text types and for the purposes you may have.

Before you read this advice, you may find it worth reflecting on the nature of the reading that you conduct at university. This may help you consider which of the following tips might be particularly useful. The following section may help you do this.

#### 3.4.1 Effective Reading: General Advice

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The following advice may seem obvious, but is important.

- Consider where you read. Always read in a well-lit and quiet place that is free of distractions, and don't get into the habit of reading uni materials in bed! (unless you want to go to sleep).
- Don't vocalise as you read. This will slow you down, it won't help concentration, and it will lead to bad reading approaches.
- Read at times when you can concentrate, and maintain concentration by taking regular short breaks, perhaps every 30 or 45 minutes.
- Set yourself reading tasks (10 pages, 1 chapter, 1 section of a chapter etc).
- Remember that reading often takes longer than you expect and you often need to go beyond set texts. Give yourself enough time!

#### 3.4.2 Reading Strategy 1: Purposeful Reading

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If you tend to begin reading like this: "I need to read Chapter 6 – here it goes! ...", you may need to rethink your approach. Specifically, you will need to create a purpose for reading. You can create this purpose if you:

**Refer to:**

- assessment tasks
- lecture slides
- tutorial questions
- textbook questions

**Create:**

- questions based on lectures or tutorials
- questions based on a skim of the text
- (contents, headings, subheadings, diagrams, introductions, etc)

**Consider:**

- what you already know
- related knowledge or experiences

Be very clear about exactly what you are looking for. Don't just read aimlessly. Perhaps you will look for answers to questions, general understanding of a topic or issue, detailed knowledge, a range of perspectives, identification of a writer's position, evaluation of a writer's position, arguments that support your position, arguments that oppose your position, examples, statistics, definitions, explanations, quotes, etc. Try to have the purpose in writing nearby so you maintain focus.

Purposeful reading of this nature can help you read faster and more selectively. It can also help your concentration and your ability to remember.

### 3.4.3 Reading Strategy 2: Scanning

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Scanning is reading quickly to search for specific information. You may not realise it, but you are already good at scanning. You scan, for example, when checking a TV guide or a phone book. Scanning may allow you to 'read' up to 1,500 words a minute.

One reason to scan an academic text that you have found while researching is to locate key terms as a means to assess the text's relevance.

### 3.4.4 Reading Strategy 3: Skimming

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Skimming is reading quickly to gain a general idea. Skimming may allow you to 'read' up to 1000 words a minute.

Skimming helps you identify whether or not to continue reading, what to read carefully, and where the best place is to begin. Skimming an academic text immediately before you read it carefully can help you consider what you already know and can help you develop a purpose for reading. An initial skim can also help maximise your interest in the text and your understanding and reflection on the material.

As with scanning, skimming does not involve reading every word. Instead, you may skim by reading:

- titles
- subheadings
- words that are in bold, in italics or underlined
- diagrams
- a report's abstract, introduction or conclusion
- the first sentence of every paragraph
- chapter questions
- chapter objectives
- chapter summaries

### 3.4.5 Reading Strategy 4: Information Words

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There will be times when you need to do more than skim a text in the way described above, but still need to read quickly. This may require ability to conduct “surface reading”.

It is worth remembering that no more than 50% of the words in an average textbook are “information” words. The other words are like glue and paint: they are there to provide connections and add interest, but are not essential for meaning. If you concentrate on information words, you can read faster and with better comprehension.

But, how do you learn to pick out the important information words? A large part of the trick involves paying attention to what the author is trying to say. Look for the message, and the information words will emerge naturally.

### 3.4.6 Reading Strategy 5: Phrase Reading

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Watch the eyes of a friend or a member of your family while he or she is reading. You will see that they move along each line of print in a series of jerks. The pauses between the jerks are known as fixations. It is during the fixations that your eyes take in words.

Poor readers take in only one or two words in each fixation.

| This is | how a | poor | reader's | eyes move | along | lines | of print. |

A good reader, on the other hand, takes in several words in each fixation

| This is how | a better reader's | eyes move along | lines of print. |

### 3.4.7 Reading Strategy 6: Analytical Reading

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Analytical reading (or study reading) is needed when you want to make sure that you fully grasp and appreciate what you are reading. You may have to read statements more than once, stop to think about them, or jot down key words when using this style. As a result, your reading rate can easily drop to below 100 words a minute.

### 3.4.8 Reading Strategy 7: Marking the Text

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If the text you are reading is your own copy, you could also underline key words, highlight with a marker, or make notes in margins, or alternatively, if you don't own the text, you could use little 'post-it' labels.

This process of marking texts can help you concentrate (and keep reading!) and can help you identify key points and make the book easier to survey later when you need to use it again for your assignment or to revise for an exam revise effectively later.

### 3.4.9 Reading Strategy 8: Note-Taking

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If you don't take notes well, or don't take them at all, now is the time to develop this essential skill! Note-taking can help you gain deeper understanding and reflection, a better ability to remember and good exam preparation materials for later.

When taking notes, pay keep in mind the following 7 principles:

#### *1. Record publication details*

Always note publication details of any text you may use. Specifically, record such things as the title, author, date, publisher, place of publication, URL, and page numbers.

#### *2. Preview the text before you take notes*

As mentioned earlier, scan, skim and 'surface read' the text before noting to help you develop understanding of the text and awareness of what is important to note. Taking notes of everything is a slow, boring, ineffective exercise.

#### *3. Maintain a central place for your notes.*

Where record your notes is up to you. Some people prefer using a computer, while others use flash cards, folders, or exercise books. What is important is that you will be able to find the notes and understand their layout and content a few weeks or months later.

#### 4. *Paraphrase and summarise ideas*

Writing out sentences word for word is probably even less useful than just highlighting sentences with a marker. Sure, they will be times you need write things word for word (use quotation marks when you do this!) but better understanding will come through putting things in your own words. Not sure how to do this? Say the key points in your own words out loud and then write them down. Finish by checking your paraphrase is clear and accurate.

#### 5. *Note your thoughts*

Don't forget the great value of noting beyond just what is said in the text. Note down such things as your ideas, points you agree or disagree with, relevant experiences, questions, examples, and relationships with other texts. Those initial thoughts you have as you read may be of great use later, and it is a mistake to risk forgetting them.

#### 6. *Be creative*

Consider how you should note different parts of texts as well as just what you should note. The process of thinking about how to note can aid understanding as well as ability to remember information and reflect. Depending on the nature of the information you wish to note, you may choose to use spider diagrams, concept maps, titles, columns, dot points, numbers, symbols, colours, pictures or columns for your reflections.

#### 7. *Review your notes*

Once you have completed some notes, always look back at them and check: 1. they are accurate, 2. they are readable, 3. you will be able to use them later and 4. they contain full reference details.

### 3.4.10 Reading Strategy 9: Managing Vocabulary

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Even if you are a native English speaker, you may at times feel overwhelmed by the amount of unfamiliar vocabulary you encounter. Of course, as a university student, you have a great opportunity and need to build you vocabulary (discipline specific and general), so consult glossaries and use a dictionary. Keep a list of new words: record their definitions and write example sentences which show meaning and usage.

When using your dictionary, be discerning. Know which words can be ignored, and see if it is possible to guess the meanings of words. You may be able do this if you:

### 1. *Guess using context:*

The patient suffered from respiratory ailments, skin problems, anacritis, and hypertension.

### 2. *Guess using prefixes, suffixes and word stems*

- Antichocoflavourism
- Aquaengineacousticology

## 3.4.11 Reading Strategy 10: Reading with Others

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Consider getting a “study buddy” or study group. Be careful to keep focussed on what you need to do and you may find that by sharing notes, explaining, asking and quizzing each other, you can increase your ability to understand, reflect upon and remember key points in texts.

## 3.5 QUOTES

Students select a slip of paper from a container filled with quotes from an assigned reading. They are given a few minutes to think about what they want to say in response to their quote, and then each student reads their quote and comments on it.

“Quotes” is an effective strategy for ensuring equitable participation because it provides all students a platform by which to join the discussion. It also underscores the instructor’s commitment to the value of the assigned reading, addressing complaints that follow-up, in-class conversations do not draw explicitly enough on the text that students have been asked to spend time reading

### 3.5.1 Step-By-Step Directions

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- Select 5–6 different sentences or passages from a text.
- Type and copy these to create multiple slips of paper each containing one quote, and put them into a container.
- Each student draws one slip of paper.
- Students take a few minutes to think about what they want to say in response to their quote.
- In an order controlled by students, the discussion continues with each student reading a quote and commenting on it, offering new insights or building upon or contradicting comments that have already been made.



### 3.5.2 Examples

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#### *Introduction to Shakespeare*

Professor Rose N. Crantz uses a variation of “Quotes” as a means to stimulate whole-class discussion and detailed analysis of the dramatic works of Shakespeare. She selects a variety of quotes from one of the assigned plays. Students use the quote they’ve drawn as the basis for their contribution to the discussion. The first student to talk about a specific quote must provide, at a minimum, basic information about the quote (who said it and the dramatic context). Other students build upon these comments, adding insights regarding the quote’s deeper meaning and relationship to the play’s themes. She observes that the SET helps ensure students have done the reading and come to class prepared, that it gets discussion started quickly, and that the structure propels the discussion naturally as students must offer new and deeper insights as they build upon each other’s contributions.

#### *Principles of Advertising*

In this course, the teacher selects slogans from a wide range of advertising campaigns spanning several decades and prints them on index cards. He then organizes students into groups, asks each group to draw 2–3 cards from the stack, and participate in a group discussion on the selected quote. To help focus the discussion, he provides students with a handout that includes a series of prompts asking students to determine the intended audience; to identify the idea, product, or service the slogan was designed to promote; and to analyze why, in their assessment, the slogan was or was not persuasive. He follows up with a wholeclass discussion in which students identify the characteristics of effective advertising slogans, using the quotes their group analyzed to illustrate their points.

### 3.5.3 Online Implementation

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Although this technique is very effective when students are able to interact in the moment as they respond to their quote and to the comments of others, you can modify it for an online course by selecting 4–5 quotes and creating a forum for each quote, asking students to select a forum (or assigning them to a forum) to which they post comments on the quote.

### 3.5.4 Variations and Extensions

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- Ask students to find their own relevant quotes from a preparatory text. Quotes in the pre-reading can be statements that they especially liked or disliked, that

best illustrated the major thesis, that they found most difficult to understand, and so forth. Students say where their quote is in the text (for example, “page 3, paragraph 5”) and then read the quote while all class members follow along.

- Instead of drawing quotes from an assigned reading, select a set of interesting quotes to use as a discussion stimulus.
- Organize students into groups, give groups a container with the quotes, and have students draw and comment on their quote in round-robin fashion.

Give students sufficient time to think about their quote and formulate their ideas before starting the class discussion. The time required will depend on the nature, scope, and complexity of the quotes and the reading assignment from which they were taken.

## 3.6 STATIONS

This SET offers an alternative to traditional lecture. It engages students by requiring them to move around the room and interact with learning materials in an active way as they examine, question, exchange ideas with peers, respond to prompts, and formulate their own thoughts and commentary.

Exhibits can be simple (flip-chart paper with a question written on it) or elaborate (an interactive multi-sensory presentation). Displayed items depend on course content and instructional goals. Examples are written documents (such as letters, content summaries, quotes), visual documents (charts, photographs, art work reproductions), objects (cultural artifacts, biological specimens), and media (audio and film recordings). Learner interactions also vary and can include solving exhibit-posed problems, discussing responses to a prompt, using exhibit information to complete worksheets, or writing group or individual reflective essays.

### 3.6.1 Step-By-Step Directions

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- Select a topic that seems suitable for display and ask yourself what kinds of objects, images, documents, and other items could be included in an exhibit that would help students learn at a deeper, more engaged level than could be achieved from a more traditional method of accessing information such as reading.
- Plan for exhibit logistics (number, type, and location of stations; items needed at each station; how students will move among stations; how long they will have at each station; and so forth). Although it is possible to make a “progressive” exhibit (with each station building upon the learning acquired in the previous station), stand-alone stations are more practical because students can begin at different stations and start touring the exhibit at the same time.

- Construct the exhibits and create and copy a group worksheet that gives directions and questions about each station in the exhibit.
- Use class size, numbers of stations, exhibit layout, and complexity of interaction to decide on the size of the groups that will move through the exhibit together and whether multiple groups can be at the same station at the same time. Groups of 2–3 students are generally the most practical.
- Divide the class into groups, explain the task, hand out the worksheet, and elicit questions.

### 3.6.2 Examples

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#### *African American Literature*

This professor used “Stations” as a follow-up activity to reading Jamaica Kincaid’s *Autobiography of My Mother*. She created six stations, each consisting of a taped piece of newsprint with a single question at the top. For example on Station 1, this was the prompt:

This book starts with the following quote, “My mother died at the moment I was born, and so for my whole life there was nothing standing between myself and eternity; at my back was always a bleak, black wind.” How does this set the tone for the book? What does this say about Xuela to you?

She organized students into groups of five, gave each group a different colored marker, and had groups start at different stations. Groups were asked to discuss the prompt and write their response onto the paper. At about ten-minute intervals, she announced, “Change stations” and groups moved to the next station. After students had visited all stations, she had groups go around a second time and put a check next to the response (other than their own) that they felt was most thoughtful and interesting. The activity closed with a whole-class discussion, and the group that had received the most checks next to their responses received bonus points.

#### *Mathematics*

To help motivate students in a remedial math course, Professor Al Gorithem wanted students to think about how understanding basic math principles could help them make better choices in their lives. He set aside one class session early in the term for students to walk around in small groups and tour an exhibit he titled “Math in Daily Life: How Do Numbers Affect Everyday Decisions?” He gave each group a worksheet to record their responses to problems posed at the five exhibit stations. Groups were allowed a specific amount of time at each exhibit, and when he announced, “Rotate,” they moved on to the next exhibit.

The first station, “Playing to Win,” consisted of a poster with a brief narrative describing the many ways people make decisions based on probability (such as sports bets, lottery tickets, poker, casino gambling, stock markets). Students were then asked to select a color-coded paper scrap out of a brown bag and compare their results against mathematical probabilities. The second station in the exhibit, “Savings and Credit,” explained simple and compound interest. Using examples from savings accounts, loans, credit bills, and so forth, students were asked to solve problems that showed how paying attention to these percentages could make big payoffs in terms of their financial well-being. The remaining stations (“Population Growth,” “Cooking by Numbers,” and “Math: The Universal Language”) contained similar displays and problems to solve. After the groups had visited all the stations, he held a brief whole-class discussion, then asked groups to submit their worksheets.

### **U.S. History**

To help deepen students’ understanding of the issues, historical significance, and human dimension of Watergate, (the political scandal stemming from the 1972 break-in by Republican operatives at the U.S. Democratic National Committee headquarters), Professor Vi O’Lashuns requires students to explore the Ford Library’s online exhibit titled “The Watergate Files”. The exhibit is organized into five display areas:

The Watergate Trial: May 1972–January 1973

Senate Hearings: February 1973–July 1973

Battle for the Tapes: July 1973–November 1973

Trials and Tribulations: February 1974–April 1974

The Aftermath: May 1974–September 1974

Each display area provides an overview, corresponding documents, a timeline, film clips and photographs, and brief bios of the people involved. To guide students through the exhibit, she created a worksheet containing questions requiring both objective and subjective answers and then had students write a reflective essay.

### **3.6.3 Variations and Extensions**

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Find online sites to create a virtual exhibit. A search for using “educational exhibits” as keywords will help you find a wide range of sites, including sites that are resources for finding other sites. For example, the Franklin Institute’s Resources for Science Learning includes lists of educational and interactive exhibits such as “Linus Pauling: A Centenary Exhibit” and “The History of Computing.”

### 3.6.4 Observations and Advice

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Posters containing relevant information can be hung on walls around the classroom. Most print shops can take a page created using standard wordprocessing software and expand it to poster size.

Because exhibits tend to be multisensory, this SET is more engaging than traditional lectures for visual and kinesthetic learners.

If the exhibits are complex, “Stations” can be time-consuming and laborintensive. However, if you are able and willing to put in the investment, the payoff in terms of student engagement can be substantial. Well-designed exhibits can help students make connections between theory and practice, understand principles and concepts at a deeper level, and be an interesting and enjoyable change of pace. Furthermore, once developed, the exhibits can be used in subsequent classes, hence amortizing the effort over time.

If your classroom does not have the physical space to house an exhibit, there may be community space on campus for the exhibit. Elicit the help of students. Be sure to allow sufficient time at the end to disassemble and pack up the exhibits.

### 3.6.5 Create Learning Stations Students Will Love

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What if you could blend differentiation, brain-based learning, collaboration, and student engagement all into one power-packed lesson? It’s possible! In this post, you’ll find ideas for how to create learning stations that maximize movement, differentiation, and student engagement.

If learning stations are new to you, just picture students spread out around the room working in small groups (usually selected by you based upon skill needs or readiness levels). Each group is working on a different task that targets an area students need to practice. Identify your standard, deconstruct it (what must students be able to do and understand to be proficient with that standard?), and create tasks to help students develop those skills. Each station may last for 10-15 minutes (or however long you think is necessary). Students rotate between stations (yay – movement!) and participate in a variety of practice opportunities.

Before we get into some of the details about using learning stations effectively with older students, it’s important to note that learning stations require strategy. We can’t just gather some random activities and put them in corners of the room, hoping students will stay on task and take something away from the experience. We’ve made that mistake, and it feels very much like busy work for students. **Learning stations** have to be purposefully designed. Is off-task behavior a concern? We have to work at building a culture in which students stay focused and respectful. Most importantly,

**Keyword**

**Learning stations** are physical locations in the classroom where students are asked to solve a problem and answer some questions using the materials provided.

while students are doing the thinking in learning stations, it's the teacher's job to make sure they are getting targeted practice and to identify common misconceptions, areas of strength, and points for growth.

### 3.6.6 Designing Learning Stations

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When we create learning stations, we need to first identify the learning goal. Are you trying to pique students' curiosity about a culture or time period? Are you trying to build background knowledge? Or, are you emphasizing the inherent behaviors and understandings of a specific standard? Often, learning stations are a way to differentiate skills students have already been introduced to during direct instruction.

Not all stations in the lineup need to be about the same topic. If you want students to engage in critical thinking about grammar, vocabulary, analysis, and writing about something they are reading, you could create each station to address one of those topics.

Let's say you are reading a short story. Stations might include:

- small group reading strategy instruction with the teacher
- mentor sentence analysis from the story
- connotation and denotation exploration in word choice
- responding to an essential question or a standards-aligned prompt (ex – how does the setting impact the storyline) in writing

In this way, you've essentially created a differentiated close reading experience for students. They are required to look back at the text four times, but each time through a different lens and with a fresh purpose for reading.

### 3.6.7 Differentiating Station Tasks

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When you sit down to create learning stations, make sure to build in some differentiation. How might that look in middle or high school?



### *Use low-floor, high-ceiling tasks*

Select tasks that are open ended. In other words, make sure students of all readiness levels can access the activity. For instance, if you ask students to identify character development, give them a graphic organizer. Some of them are going to be identifying obvious details from the story, while others will naturally lean toward making higher-level inferences. All students can be involved at their readiness level.

### *Give students ownership*

One of the most effective ways to ensure students are engaged in learning stations is to give them voice and choice.

**Voice:** Tell them about the learning target, and ask them, based upon what they already know, how they would like to practice and develop those skills more. They might not have a specific answer on the spot, but they might be able to suggest something like, “a game” or using a tech tool.

**Choice:** Provide a few different learning options at at least one of the stations. Vocabulary? Have them create sketch associations, create (or complete) analogies, or use pictures as inspiration to write sentences using the words. This resource contains many more ideas for creative vocabulary learning station activities.

### *Build in tiered activities*

When you create learning stations, you should have an idea of your students’ current aptitude with the content and skills. Build in some tiered activities so that no one is bored or under challenged. Let’s use writing as an example. Perhaps you give students three options at a station.

- Revise your essay for fragments and run-ons.
- Incorporate a few dependent clauses as transitions.
- Find at least one hole or flaw in your arguments, and brainstorm how to fill or revise it.

To prevent students from flying down the list without digging in to each task, you could tell students which one you want them to focus on that day. If they finish early and their group members don’t have any revision suggestions, they can move on to the next item.

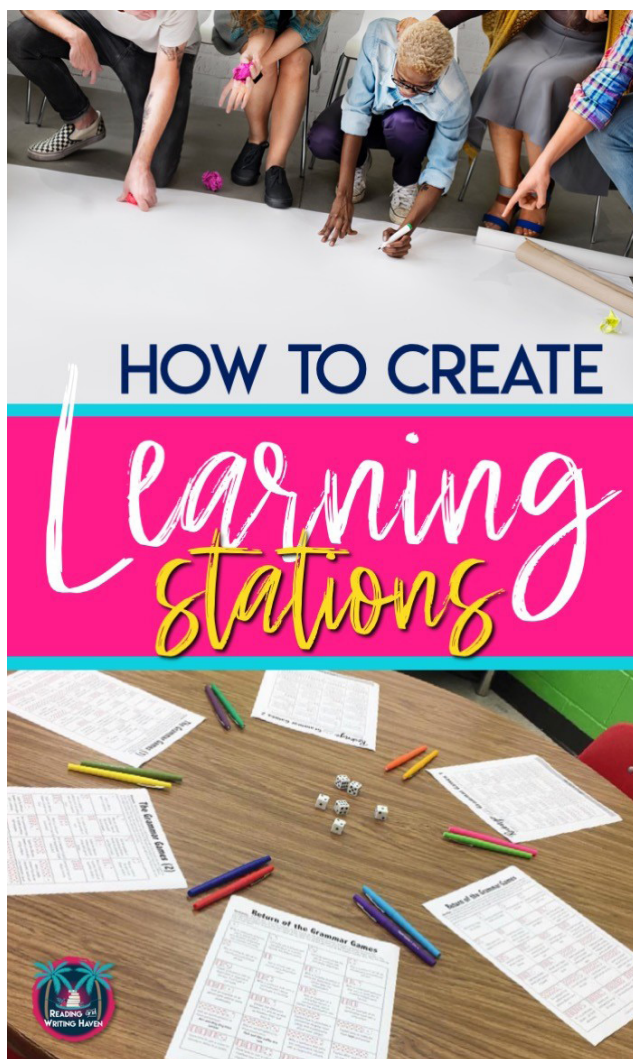
### *Vary learning preferences*

Brain research supports many of the approaches already mentioned in this post. While the validity of learning styles is still highly debatable, We have noticed a difference in

learning when students are offered opportunities to explore new information through multiple avenues. To increase engagement, try building in different learning preferences.

For example, when studying how to embed cited research...

- Students might use manipulatives on their desks or tables. *Where does the signal phrase go? the quote? the punctuation? Where should the punctuation go?*
- Add a video or two short ones students can watch and then give them choice in how they want to take notes – a t-chart, sketch notes, etcetera.
- Use highlighters to have students color code the various aspects of the embedded quote. Color code them!
- On big chart paper, ask students to work together (standing, if you prefer, for movement) to write the quote's introduction, the quote, and the elaboration. Have them annotate their work.



### 3.6.8 Incorporating Movement

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Students will naturally move when they rotate between stations, but when you create learning stations, you can also build in movement intentionally. For instance, before rotating, maybe walk students through some simple neck or forearm stretches to reduce stress. Play a song and dance to the next station. When you stop the music, students know that is their cue to get started.

Build movement into your actual station activities by having them do a mini scavenger hunt. Hang task cards in the hallway. Incorporate games or skits that add small movement. Use Post-It notes to have them arrange or classify ideas. Or, ask them to write ideas on the board.

### 3.6.9 Creating an Effective Group Work Culture

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Even if you have designed the best learning stations on the planet, you might end up walking away frustrated if the classroom culture doesn't suit them. So, when you create learning stations, consider the "what ifs." Here are some instructional strategies We've found beneficial in creating an ideal culture that supports learning stations.

#### *Involve students in creating the norms*

Explain to students what learning stations are. Maybe even show them a video clip from the web so they can see them in action. Then, brainstorm together what effective learning stations should look like, sound like, and feel like. Compile their ideas on chart paper, and each time you use learning stations, review the chart first. Reminders never hurt!

#### *Build group work stamina*

Keep track of how long students are able to work together and stay focused. Then, create a visual (a common one is a bar chart on big paper) showing how many minutes students increase each time. If there is a disruption, stop the class, review the norms, and then get back to work.

#### *Focus on evidence of learning*

Accountability is somewhat of a taboo term any more, but we do need evidence of learning. Combine the information you hear and see when observing your students with an exit slip or learning station notes page. Use this evidence to reflect on the effectiveness of the instruction and to plan future teaching.

### *Consider including a teacher station*

Learning stations are an opportunity for you to sit with small groups of students to give them targeted instruction! Maybe the whole class is working on being able to analyze theme, but different groups of students are at different readiness levels. Form your groups so that when you meet with each of them, you can tweak the theme lesson to fit their needs.

Some students might be identifying themes that don't extend beyond the text. Others might need to work on supporting the theme with text evidence. Or, maybe they are ready to dig into a mini lesson about how to explain theme using plot, character development, and conflict.

### *Use a visible timer*

Whether you display the station rotation times on the white board or use one from online, make sure students can see how much time they have to finish their work. The sense of urgency will be there, which will keep them on task. We find timers help to keep order as well! If working with a group, time can get away from me, and then the subsequent stations are shortened.

### *Plan for fast finishers*

Don't compile a bunch of worksheets. But. Do have an idea of what you want students to do if they finish early at a station. Should they watch a related video to add to their understanding on the topic? Reading a book of their choice or responding to reading with writing are also meaningful options. Students could improve their listening comprehension by tuning into a podcast. Or, have students work on reviewing their vocabulary words.

### *Have a back-up plan*

Some students don't do well with lots of transitions and unpredictability. Have a back-up plan ready for them. Maybe that includes working through a Hyperdoc of very similar learning experiences but in a quiet location or next to a teacher. This shouldn't be a punishment. Have a private, one-on-one conversation with any students necessary during or after your first round of learning stations. Ask them if they'd prefer to learn in a different format, and tell them you have an option they might like better!

Learning stations often take some prep time, but once you have stations established that you love, you can use them again. If you can't incorporate all of these tips for success, that's okay, too! This is what works for me, but they are also insights we've gained over fifteen years of teaching. We know very little of this as a first-year middle

and high school teacher. If you do your best to incorporate stations and part of the experience flops, celebrate it as a learning experience and try again.

### 3.7 TEAM JEOPARDY

The main focus of some courses is to help students understand and remember the basic facts, figures, and vocabulary that constitute a course or discipline's foundational knowledge. Often this material must be mastered before students can move on to tasks that require higher levels of thinking. Yet it is sometimes difficult to motivate students to put in the effort required to memorize such material. Modeled on the TV show Jeopardy!, this SET offers a fast-paced, energizing way for students to work together as they review this kind of nuts-and-bolts information.

Student teams take turns selecting the category and point value of cells on a grid that correspond to course content questions, and then compete to answer these questions correctly. As on Jeopardy! questions are presented in the form of an answer. For example, the correct response to the grid question "An Englishman considered to be the father of antiseptic surgery" is "Who was Joseph Lister?" Questions are organized in categories and vary in difficulty, with more challenging questions having the potential to earn more points. When the question is revealed, a team has an allotted time period to "ring in" with their response.

#### Remember

You will be playing Jeopardy in teams. Three teams will play in the first and the other three later in the day. Each team must select a captain who will be in charge of the buzzer and will be the spokesperson.

#### 3.7.1 Step-By-Step Directions

1. Choose the medium for your game board. For most teachers, the simplest medium is an overhead transparency, so the following preparation steps will be based on this choice. See Variations and Extensions later in this SET for other mediums.
2. Decide on the number and type of categories (for example, People, Places, Events, Dates, Things), the number of questions for each category, and whether there will be more than one match. A match consists of one time through the entire grid.
3. On an overhead transparency (or other medium), create a simple table in which the columns correspond to



**Keyword**

**Team Jeopardy** is a game in which student teams take turns selecting a square from a grid that is organized vertically by category and horizontally by difficulty.

categories and the row cells correspond to questions. In each cell, write in varying numbers of points. For an example, see Table 2.

4. Prepare questions and answers for each category, varying the level of difficulty and assigning each question one of the established point values.
5. Decide how teams will “ring in.” The quietest and easiest method is for the team captain to raise a hand (or stand up) and say “Ready!”
6. Decide on and print out game rules and directions. “**Team Jeopardy**” can be played with many variations (see Variations and Extensions in this SET), but Exhibit 2 is an example of basic rules.
7. Divide the class into teams of 5–6 students and designate (or have teams choose) a team captain who will choose the cells and state the team’s answer.
8. Post (or distribute) the rules, review them with the class, and answer any questions.
9. Decide which team goes first.
10. Proceed, following your established rules.
11. Cross off each cell as it is selected.
12. Keep score on the board using a simple score sheet such as Table 3.

**Table 2:** Grid for “Team Jeopardy”

Category I	Category II	Category III	Category IV	Category V
5	5	5	5	5
10	10	10	10	10
15	15	15	15	15
20	20	20	20	20
25	25	25	25	25



## EXHIBIT 2.

## Rules for Team Jeopardy

1. Each team has a team captain who has 30 seconds to select a cell (for example, "Category I for 30 points").
2. Team A starts. Once the teacher reads the question, Team A has 1 minute to decide on its answer and "ring in."
3. Once the team rings in, the team captain has 30 seconds to state the team's answer to the whole class.
4. Correct answers earn the stated points, and the next turn moves to Team B.
5. Incorrect answers lose the stated points, and Team B gets an opportunity to answer. If that team answers correctly, it earns the stated points and has the opportunity to select a new category/point cell.
6. If a team cannot provide an answer, the team loses the points stated on the cell, and the opportunity to answer the question goes to the next team. If that team answers correctly, it earns the stated points and has the opportunity to select a new category/point cell.
7. At the end of the match, the team with the most points wins. In the event of a tie, the two teams will compete to answer a tie-breaker question.
8. Winning team members will be rewarded with the following number of points applied toward their final grade:

1st Place:	2nd Place:	3rd Place:
50 Points	30 Points	10 Points

**Table 3: Score Sheet for “Team Jeopardy”**

Team 1	Team 2	Team 3	Team 4
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### 3.7.2 Examples

## History of the United States

To motivate students to learn and remember the basic information that served as the knowledge foundation for the course, Professor James Town used “Team Jeopardy” as a

review strategy to prepare students for both the midterm and the final exam. A week before the game, he provided students with a study guide that included names, dates, and core concepts. On the review day, he divided the class into teams of six students and led them through several fast-paced rounds of the game. Members of the three teams with the top scores were given bonus points that were applied to their exam scores. Students told him they enjoyed the change of pace from the usual lecture. He found that they also performed better on the objective portion of the exam.

### 3.7.3 Variations and Extensions

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- Eliminate the Jeopardy! Twist and pose traditional questions as opposed to questions in the form of answers.
- To help visual learners and non-native speakers or to help all students if the questions are too complex to understand by listening to the teacher reading them, transfer each question to its own overhead transparency along with the category/point value in font large enough to be read by the students at their desks. Keep the transparencies organized by categories so that you can easily retrieve them during the game.
- Use this SET for problem-solving or more complex essay questions by extending the response time or having all teams work on a response simultaneously. For example, teams can compete to be the first to successfully solve a math or economics problem.
- Include one or more special “bonus questions” that are hidden behind regular questions and can be answered only by the team that selected that cell. The team can wager all or part of its accumulated points and have that amount either added to or subtracted from its total depending on whether the answer is correct.
- Reduce student anxiety over answering incorrectly by eliminating penalties.
- Instead of alternating teams, allow teams to compete simultaneously with individual team members ringing in to compete to answer the question.
- Vary the prizes. Instead of grade points, consider coupons for assignment exemption, candy, or gift coupons for coffee or fast food.
- If the class is large, consider having multiple games played simultaneously. Divide the class into an equal number of teams, subdivide into groups of two teams, and proceed with concurrent games of two teams competing against each other monitored by students who have been designated as game show hosts.
- To prevent a hot-shot team from collecting all the points from the higher-level cells early in the game, require that all columns in Row 1 be selected before moving to Row 2, then all in Row 2 before moving to Row 3, and so forth.

- Add variety to the game by selecting categories requiring different kinds of responses—for example, short answer, essay, image identification, role play, problem-solving. Increase point values as questions become more challenging.
- If you decide to use this SET on a regular basis, consider purchasing the materials to conduct a more official-looking game. Instead of using an overhead transparency, construct a game board out of cardboard or foam-core board (approximately 5 × 4 feet) and use 3 × 5 inch sticky notes for each cell. On the side of the note that faces the students, write the point value, and on the opposite side, write the corresponding question. For an even more professional appearance, invest in game show supplies. For example, Trainer's Warehouse offers a wide array of supplies including different sizes of game boards and buzzers for ringing in.
- LearningWare (<http://www.learningware.com/>) offers software that helps you construct games and also incorporate them into online classes.
- Extend this SET by combining it with CoLT 12, "Test Taking Teams" in Collaborative Learning Techniques. Form the teams prior to the game and have them study for the review game (which will prepare them for a subsequent exam) together. Use "Team Jeopardy" to review. On the day of the exam, have individuals take the exam and then, before you return the graded exam, have them take the exam again with their team. Individual grades can be a combination of that student's "Team Jeopardy" score, individual exam, and team exam.

### 3.7.4 Observations and Advice

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"Team Jeopardy" works best for review of a lot of fact-related information. It is not as effective for questions with subjective or highly involved answers.

The amount of time you wish to allot for this activity in combination with the extent of the material you wish to review will dictate the number of questions and matches. A typical "Team Jeopardy" game involving twentyfive questions for two matches takes 30–45 minutes. Shorten the game by using smaller grids (such as 3 × 3) or breaking the game into several segments, using only part of the grid at one time.

Provide students with a study guide to prepare for the game.

Game shows require clearly defined and established rules that are communicated up front. You are the rule maker, so you can customize the rules for the level of competition or collaboration you want, the type of questions you wish to ask, the ways in which you wish to reward or penalize, and so forth. Post or distribute the rules and go over them in advance. Most of the unproductive contentiousness that can arise due to the competition in this SET is due to unclear rules. For example, in

the real Jeopardy! game show, contestants must answer in the form of a question. In an educational context, this rule is usually ignored and participants can say “Joseph Lister” without having to preface it with “Who is.” It will save potential problems if you make this explicit as part of the game rules.

Timing is important in this SET. Establish times in advance, but know that the timing can be adjusted during the game if you find that the times are too long or too short. Depending on how you structure the game, you may need to set times for three elements:

**Read time:** How long teams have to read (or hear) and understand the question;

**Ring-in time:** How much time teams have before deciding they will try to answer; and

**Answer time:** How much time a team has to provide its answer.

Timers are crucial for effective game play because they keep things moving and fair. Kitchen timers work best because they free teachers from having to look at their watch.

If ring-in time is highly competitive, you can distinguish which team rings in first by using different kinds of noisemakers such as bells, whistles, and sound-effect makers.

Consider appointing a student as your assistant who can help you by keeping score, serving as a second set of eyes to see which team rings in first, crossing off cells, and so forth.

This SET can be particularly effective for test preparation as it helps ensure adequate preparation, thus alleviating test-taking anxiety. Furthermore, because it can be fun, students relax and are more open to learning and remembering.

“Team Jeopardy” promotes teamwork, encouraging students to use their classmates as a resource.

This SET gives immediate feedback to both the instructor and the students on how well material has been mastered. Students, particularly, can gauge what they are and are not understanding or remembering.

You can use this SET to clarify and expand on material. For example, if the question is “The type of soil conditioner that should be used when planting a new evergreen tree” and the response is “Peat moss,” the teacher can elaborate by saying “Peat moss is essential to retain moisture, fertilize, and loosen hard soils.”

Some students may get rowdy, or highly competitive students may resort to cheating or unsportsmanlike behavior. Professional sports offer ideas for penalties: consider giving a warning for the first infraction; deducting points as appropriate;

giving non-offending teams free opportunities to answer and gain additional points; requiring offending teams or players to sit out one or more rounds or, in the worst cases, expelling them from the game.

This SET can be a single activity, but it can also be effective if used so that groups work together to review material on several occasions. This allows students to form strong bonds and to begin to feel responsible for each other's successes.

### 3.8 SEMINAR

“Seminar” helps students prepare for and participate in an in-depth, focused, and meaningful small-group discussion of a text. In preparation for class, students read a document, marking and prioritizing specific passages they want to discuss with the group, and writing a short essay about what they read in response to a prompt. Students bring their marked-up copies and essay to class, and they use these as their ticket to participate in a highly structured small-group discussion.

The steps students must take to prepare for the discussion encourage them to stay focused in their reading and to get more deeply into the source, even if they initially find it overwhelming or off-putting. The structure of the small-group discussion provides even shy and diffident students and non-native speakers with a platform to practice their voice. Additionally, the passages that each student reads are ones that they found to be most personally relevant and therefore require some degree of individual commitment.

#### 3.8.1 Step-By-Step Directions

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- Select a text that is conceptually rich (a journal piece, a book chapter, a newspaper editorial) and duplicate it or provide a Portable Document File (PDF) online so that each student has his or her own copy to mark up.
- Craft a prompt for a writing assignment that connects to the reading and will prepare students for participating in a discussion.
- Create a handout that provides students with directions for both the reading and discussion. Consider incorporating Exhibit 3, “Identifying Good Seminar Behaviors.”
- Outside of class, students read the document, marking and then prioritizing the passages that they found to be most interesting, provocative, puzzling, and so forth and that they want to discuss with the group. They also write a brief essay in response to the instructor-developed prompt. This preparation is their ticket for assignment to a small group (although they do not submit the essay until the SET is finished).

- The teacher forms prepared students into groups of 4–6. (Either dismiss unprepared students, or allow them to observe in fishbowl fashion, sitting in chairs outside a group, listening to the discussion but not participating.)
- In round-robin fashion, each student selects one of his or her highpriority passages, identifies it (such as “page 3 paragraph 2”) so that other group members can follow along, reads it aloud to the group, and then briefly explains why it was selected. The other group members listen and take notes but do not respond.
- After every student has contributed, students respond to what they heard from one or two of the other participants.
- Students enter into a free-flowing discussion, sharing what they learned or found most meaningful, and as much as possible connecting their comments to specific passages in the text.
- After discussion, students add further comments, reflections, or insights as a postscript to their essays and submit them to the instructor.

### 3.8.2 Examples

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#### *Intro to American Literature*

Professor Sal Inas uses “Seminar” regularly to provide a structure for both discussion and in-depth analysis of reading assignments. For example, as students read John Steinbeck’s *East of Eden*, he organizes a “Seminar” around the theme of immigration and American literature, and asks students to mark up the text as well as write a brief essay in response to the prompt “When Sam and his wife Liza immigrate to America, what is it from the ‘old country’ that they bring with them, and why? How does living in America change them, and their children? What are the challenges and the opportunities America presents to the family?”

#### *Cultural Anthropology*

To help students explore anthropological perspectives on contemporary issues, this professor decided to use “Seminar” to have his students discuss a think piece on the challenges Bhutan, an isolated Himalayan Buddhist kingdom, faces as it opens to the Western world. She asked students to read through the article and mark it carefully, paying special attention to the topics of political organization, language, kinship, religions, and social inequality that they were studying in class. She also asked students to write responses to each of the following questions:

- Identify three examples the author provides on how tradition and change now coalesce in Bhutan.



- Discuss three concerns a cultural anthropologist might have regarding the impact of westernization on traditional Bhutanese culture.

Students used their marked-up articles and their written assignment as the basis for small-group discussions. The teacher believed that the activity helped deepen students' grasp of the concepts, theories, and methods used in the class, and by focusing on the challenges Bhutan was facing right now, that the activity helped give the course contemporary relevance.

This technique is designed for a face-to-face environment. However, the basic steps can be adapted for an online class. For the reading stage of this SET, students can take notes on specific passages and write the essay and then submit these as an assignment. After submission, students can be assigned to a group to participate in an online discussion. To implement the SET without adaptation, students could scan and upload their marked-up documents and talk “in the moment” using synchronous tools such as teleconferencing or chat sessions—but these modifications are cumbersome and probably not worth the effort.

### 3.8.3 Observations and Advice

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Most students will need guidance on how to read critically and how to contribute effectively to the discussion. Suggest to students that as they read, they keep in mind the following three questions and underline appropriate passages or make comments in the margins:

- What does the text say? (Stick to straightforward facts.)
- What does the text mean? (Look for the concepts or interpretations behind the exact words or inferences between the lines.)
- Why is this important? (Share your personal analysis, reaction, or evaluation.)

To prepare students for good discussion, consider reviewing with them Exhibit 3, “Identifying Good Seminar Behaviors.”

**EXHIBIT 3.****Identifying Good Seminar Behaviors**

When assessing seminar behaviors one can ask, How does a person contribute to the seminar? To what degree does he or she engage in the following three kinds of behaviors?

**A. Introduce substantive points:** A substantive point is one that is clearly a result of thoughtful reading and thinking about the assigned text and becomes the focus for group exploration lasting several minutes.

Identify essential issues or questions the text is discussing.

Point to the author's main hypotheses, claims, and supporting arguments and evidence.

Point to important passages that need to be understood.

Explain the complexities faced in exploring this text.

Describe passages that are personally meaningful or connected to some shared experience.

**B. Deepen the discussion:** Help the seminar process with individual contributions that lead the group to discover new insights and understanding of assigned readings.

Provide additional supportive quotes; explain relevance; ask clarifying questions.

Share the thought process that was personally used in developing an idea.

Paraphrase what the author means in a specific passage.

Summarize the arguments being presented.

Identify similarities and differences in positions being argued.

Challenge an idea or present an alternative interpretation.

Connect ideas from several participants or from other texts the group has read.

Formulate insightful questions that spark group response.

Introduce personal experiences that illuminate the text for others.

**C. Facilitate group exploration:** Focus on what the group is accomplishing more than on individual students' performance.

Help to identify the goals and format for the group process.

Keep the group on task.

Focus group back to the text.

Summarize for the group what has been discussed.

Bring closure to one point and make a transition to a new one.

Paraphrase someone's comments, identify what you don't understand, and/or formulate a specific question asking for clarification.

Encourage nonparticipants by being alert to who wants to speak, or who hasn't spoken, and help them get the floor.

Indicate support by responding to a person's ideas, or complimenting them.

Show active listening by means of nonverbal cues like eye contact, nods, and smiles.

Become aware when dominating the discussion and then modify behavior.

Defuse a tense moment with use of humor.



## SUMMARY

- A Background Knowledge Probe (BKP) is a focused questionnaire that students fill out at the start of a unit (or course) to help teachers identify the best starting point for the class as a whole.
- If a student has little or no background knowledge, this activity may be demoralizing.
- For focused reading notes, think about what you would like students to take away from a reading assignment.
- Students will have a plan for focusing their reading to help them extract important concepts or themes.
- The reading demands of university study are not easy. Unfortunately, however, it is all too common for students to pay little attention to their own approaches to reading, that is, how they read, and how they can improve the effectiveness and speed of their reading.
- If learning stations are new to you, just picture students spread out around the room working in small groups (usually selected by you based upon skill needs or readiness levels).
- Student teams take turns selecting the category and point value of cells on a grid that correspond to course content questions, and then compete to answer these questions correctly.



## MULTIPLE CHOICE QUESTIONS

1. **A Background Knowledge Probe helps teachers determine the most appropriate level at which to begin instruction.**
  - a. True
  - b. False
2. **Once students have not become skilled at discovering key issues and themes in a reading, they can develop their own headings.**
  - a. True
  - b. False
3. **The column headings direct students' attention to what is important and provide them with an organizational framework for writing notes about new knowledge and understandings.**
  - a. True
  - b. False
4. **Skimming is not reading quickly to gain a general idea. Skimming may allow you to 'read' up to 1000 words a minute.**
  - a. True
  - b. False
5. **"Quotes" is an effective strategy for ensuring equitable participation because it provides all students a platform by which to join the discussion.**
  - a. True
  - b. False

## REVIEW QUESTIONS

1. What do you understand by background knowledge probe?
2. Explain about artifacts.
3. What are the reading skills?
4. Define the List the stations in student engagement.
5. Explain the term team jeopardy.

### *Answers to Multiple Choice Questions*

1. (a)      2. (b)      3. (a)      4. (b)      5. (a)

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## CHAPTER 4

# ANALYSIS OF CRITICAL THINKING

### LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Discuss about critical thought and logic thinking
2. Focus on teacher-directed instruction
3. Brief the student-centered learning

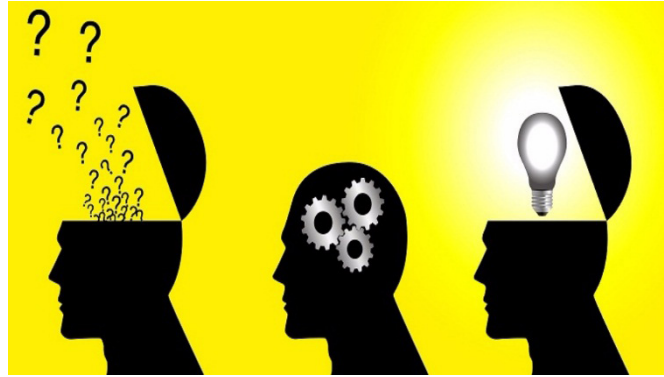
*"Do not indoctrinate your children. Teach them how to think for themselves, how to evaluate evidence, and how to disagree with you."*

*—Richard Dawkins*

## INTRODUCTION

Critical thinking is the objective analysis of facts to form a judgment. The subject is complex, and several different definitions exist, which generally include the rational, skeptical, unbiased analysis, or evaluation of factual evidence. Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposed assent to rigorous standards of excellence and mindful command to their use. It entails effective communication and problem solving abilities, as well as a commitment to overcome our native egocentrism and sociocentrism.

Critical thinking is the ability to think clearly and rationally, understanding the logical connection between ideas. Critical thinking has been the subject of much debate and thought since the time of early Greek philosophers such as Plato and Socrates and has continued to be a subject of discussion into the modern age.



Critical thinking might be described as the ability to engage in reflective and independent thinking.

- In essence, critical thinking requires you to use your ability to reason. It is about being an active learner rather than a passive recipient of information.
- Critical thinkers rigorously question ideas and assumptions rather than accepting them at face value. They will always seek to determine whether the ideas, arguments and findings represent the entire picture and are open to finding that they do not.
- Critical thinkers will identify, analyze and solve problems systematically rather than by intuition or instinct.



## 4.1 CRITICAL THOUGHT AND LOGIC THINKING

A separate set of mental processes facilitates your ability to do complex, sophisticated thinking, such as understanding concepts, generating original ideas, and using logical approaches to address complicated problems. **Complex thinking** includes many key abilities that are important to success in today's world. People with strengths in complex thinking may be good at deeply understanding ideas and concepts, seeing connections among information from different sources, demonstrating imagination, constructing and defending arguments based on facts or evidence, taking risks with new ideas, and/or drawing inferences from limited information.

### Keyword

**Complex thinking** processes often involve content that is abstract or complex.



Conversely, people with challenges in this area may struggle to understand new ideas and concepts without considerable support, have trouble “reading between the lines” or making inferences, approach problems in a haphazard way, or tend to rely on existing ideas rather than coming up with original ones. As with other areas of learning, complex thinking is not something you’re simply either good at or not good at. Different

people are good at thinking about different kinds of ideas. The subject matter—and your level of interest in it—can affect how well you understand and think about concepts. And everyone has a certain degree of imagination and creativity.

### 4.1.1 Forms of Thinking Associated with Classroom Learning

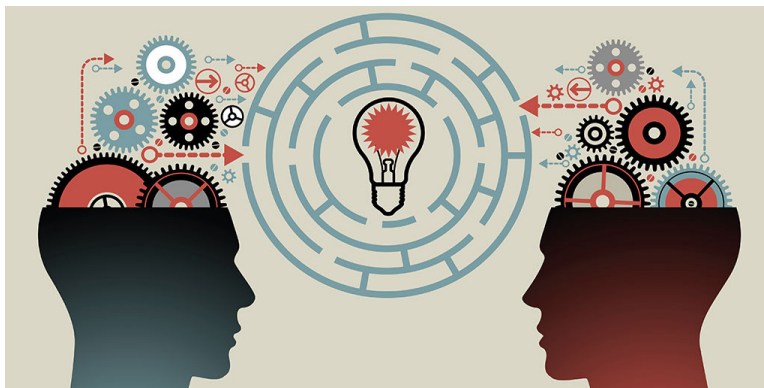
Although instructional strategies differ in their details, they each encourage particular forms of learning and thinking. The forms have distinctive educational purposes, even though they sometimes overlap, in the sense that one form may contribute to success with another form. Consider three somewhat complex forms of thinking that are commonly pursued in classroom learning: (1) critical thinking, (2) creative thinking, and (3) problem-solving.

#### Keyword

A key type of **critical thinking** skill involves observation -- you use this to gather information about a process, for example

#### Critical Thinking

Critical thinking requires skill at analyzing the reliability and validity of information, as well as the attitude or disposition to do so. The skill and attitude may be displayed with regard to a particular subject matter or topic, but in principle it can occur in any realm of knowledge. A critical thinker does not necessarily have a negative attitude in the everyday sense of constantly criticizing someone or something. Instead, he or she can be thought of as astute: the critical thinker asks key questions, evaluates the evidence for ideas, reasons for problems both logically and objectively, and expresses ideas and conclusions clearly and precisely. The **critical thinker** can apply these habits of mind in more than one realm of life or knowledge.





It is not surprising that educators have suggested a variety of specific cognitive skills as contributing to critical thinking. Students were initially instructed in ways of annotating reading materials. When the students completed additional readings for assignments, it was found that some students in fact used their annotation skills much more than others—some simply underlined passages, for example, with a highlighting pen. When essays written about the readings were later analyzed, the ones written by the annotators were found to be better reasoned—more critically astute—than the essays written by the other students.

### *The Importance of Critical Thinking*

- Critical thinking is a domain-general thinking skill. The ability to think clearly and rationally is important whatever we choose to do. If you work in education, research, finance, management or the legal profession, then critical thinking is obviously important. But critical thinking skills are not restricted to a particular subject area. Being able to think well and solve problems systematically is an asset for any career.
- Critical thinking is very important in the new knowledge economy. The global knowledge economy is driven by information and technology. One has to be able to deal with changes quickly and effectively. The new economy places increasing demands on flexible intellectual skills, and the ability to analyse information and integrate diverse sources of knowledge in solving problems. Good critical thinking promotes such thinking skills, and is very important in the fast-changing workplace.
- Critical thinking enhances language and presentation skills. Thinking clearly and systematically can improve the way we express our ideas. In learning how to analyse the logical structure of texts, critical thinking also improves comprehension abilities.
- Critical thinking promotes creativity. To come up with a creative solution to a problem involves not just having new ideas. It must also be the case that the new ideas being generated are useful and relevant to the task at

#### Keyword

**Democracy** is a form of government in which the people have the authority to choose their governing officials or to deliberate and decide legislation via direct democracy.

hand. Critical thinking plays a crucial role in evaluating new ideas, selecting the best ones and modifying them if necessary

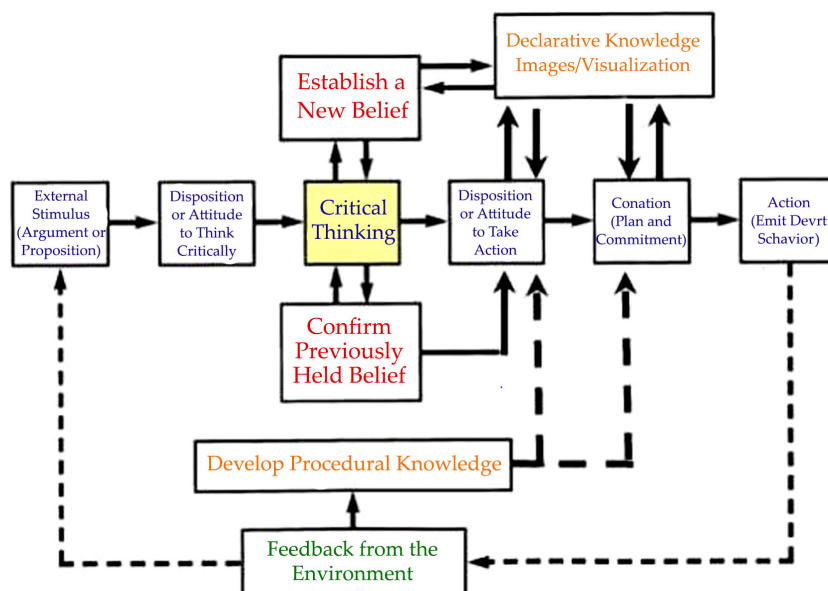
- Critical thinking is crucial for self-reflection. In order to live a meaningful life and to structure our lives accordingly, we need to justify and reflect on our values and decisions. Critical thinking provides the tools for this process of self-evaluation.
- Good critical thinking is the foundation of science and democracy. Science requires the critical use of reason in experimentation and theory confirmation. The proper functioning of a liberal **democracy** requires citizens who can think critically about social issues to inform their judgments about proper governance and to overcome biases and prejudice.

### *Critical Thinking Is an Important Issue in Education Today*

The movement to the information age has focused attention on good thinking as an important element of life success. These changing conditions require new outcomes, such as critical thinking, to be included as a focus of schooling. Old standards of simply being able to score well on a standardized test of basic skills, though still appropriate, cannot be the sole means by which we judge the academic success or failure of our students. The purpose of this brief overview is to review what we know about critical thinking, how it might be differentiated from creative thinking, and to suggest future research and implementation activities.

### *Model of Critical Thinking and Its Modification*

The following is a proposed model of critical thinking:





This model proposes that there are affective, conative, and behavioral aspects of critical thinking that must be considered in addition to the cognitive processes involved. This supports the definitions of Mertes, Scriven and Paul, and Ennis that include some component of beliefs and behavior. First, a stimulus presents an argument or proposition that must be evaluated. There is an affective disposition to use critical thinking that must activate the critical thinking processes if it is to take place. This will be established as a component of declarative memory in its semantic form although there may be episodic information associated with it. There may also be images or visualizations formed or remembered as part of the critical thinking process.

There is then an affective disposition to plan and take action in order for the critical thinking to act as a guide to behavior. As action is taken it results in feedback from the environment and a corresponding increase in procedural knowledge. This new learning is then available as either necessary corrective action is taken to guide action toward the desired goal based on beliefs or a new situation presents itself that requires additional critical thinking.

A complete critical thinking program will successfully deal with each of the components in the model. The most appropriate teaching methods are possibly different for each component. For example, if one is most interested in impacting declarative knowledge (facts, concepts, principles, etc. that are stored in semantic and episodic memory), the most appropriate teaching method is probably some form of didactic, explicit, or direct instruction. On the other hand, if the focus is on procedural knowledge it is likely that modeling and/or personal experience would be more appropriate teaching methods. Likewise, if one were trying to impact the memory of images or visualizations, then modeling, active visualizations, or working with pictures might be more appropriate. Attitudes are probably impacted most directly by socialization and the teaching method of cooperative learning. Learning the process of critical thinking might be best facilitated by a combination of didactic instruction and experience in specific content areas. Impacting conation might best be done through goal-setting exercises and action learning. Finally, overt behavior and learning to use feedback might best be accomplished using positive and **negative reinforcement**.

### Keyword

**Negative reinforcement** is the encouragement of certain behaviors by removing or avoiding a negative outcome or stimuli.



## Creative Thinking

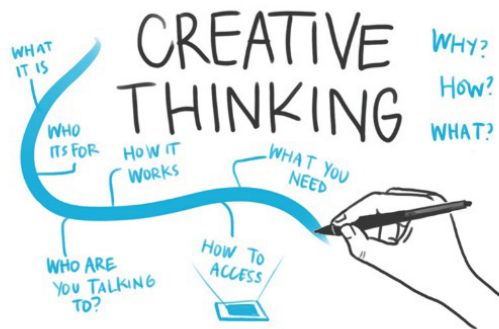
Creativity is the ability to make or do something new that is also useful or valued by others. The “something” can be an object (like an essay or painting), a skill (like playing an instrument), or an action (like using a familiar tool in a new way). To be creative, the object, skill, or action cannot simply be bizarre or strange; it cannot be new without also being useful or valued, and not simply be the result of accident. If a person types letters at random that form a poem by chance, the result may be beautiful. Viewed this way, creativity includes a wide range of human experience that many people, if not everyone, have had at some time or other. The experience is not restricted to a few geniuses, nor exclusive to specific fields or activities like art or the composing of music.



Especially important for teachers are two facts. The first is that an important form of creativity is creative thinking, the generation of ideas that are new as well as useful, productive, and appropriate. The second is that creative thinking can be stimulated by teachers' efforts. Teachers can, for example, encourage students' divergent thinking—ideas that are open-ended and that lead in many directions. Divergent thinking is stimulated by open-ended questions—questions with many possible answers, such as the following:

- How many uses can you think of for a cup?
- Draw a picture that somehow incorporates all of these words: cat, fire engine, and banana.
- What is the most unusual use you can think of for a shoe?

Note that answering these questions creatively depends partly on having already acquired knowledge about the objects to which the questions refer. In this sense divergent thinking depends partly on its converse, convergent thinking, which is focused, logical reasoning about ideas and experiences that lead to specific answers. Up to a point, then, developing students' convergent thinking—as schoolwork often does by emphasizing mastery of content—facilitates students' divergent thinking indirectly, and hence also their creativity. But carried to extremes, excessive emphasis on convergent thinking may discourage creativity.



Whether in school or out, creativity seems to flourish best when the creative activity is its own intrinsic reward, and a person is relatively unconcerned with what others think of the results. Whatever the activity—composing a song, writing an essay, organizing a party, or whatever—it is more likely to be creative if the creator focuses on and enjoys the activity in itself, and thinks relatively little about how others may evaluate the activity. Unfortunately, encouraging students to ignore others' responses can sometimes pose a challenge for teachers. Not only is it the teachers' job to evaluate students' learning of particular ideas or skills, but also they have to do so within restricted time limits of a course or a school year. In spite of these constraints, though, creativity still can be encouraged in classrooms at least some of the time. Suppose, for example, that students have to be assessed on their understanding and use of particular vocabulary. Testing their understanding may limit creative thinking; students will understandably focus their energies on learning "right" answers for the tests. But assessment does not have to happen constantly. There can also be times to encourage experimentation with vocabulary through writing poems, making word games, or in other thought-provoking ways. These activities are all potentially creative. To some extent, therefore, learning content and experimenting or playing with content can both find a place—in fact one of these activities can often support the other.

## Problem-Solving

### Remember

Problem-solving is, and should be, a very real part of the curriculum. It presupposes that students can take on some of the responsibility for their own learning and can take personal action to solve problems, resolve conflicts, discuss alternatives, and focus on thinking as a vital element of the curriculum.

Somewhat less open-ended than creative thinking is problem solving, the analysis and solution of tasks or situations that are complex or ambiguous and that pose difficulties or obstacles of some kind. Problem solving is needed, for example, when a physician analyzes a chest X-ray: a photograph of the chest is far from clear and requires skill, experience, and resourcefulness to decide which foggy-looking blobs to ignore, and which to interpret as real physical structures (and therefore real medical concerns). Problem solving is also needed when a grocery store manager has to decide how to improve the sales of a product: should she put it on sale at a lower price, or increase publicity for it, or both? Will these actions actually increase sales enough to pay for their costs?

It provides students with opportunities to use their newly acquired knowledge in meaningful, real-life activities and assists them in working at higher levels of thinking

Here is a five-stage model that most students can easily memorize and put into action and which has direct applications to many areas of the curriculum as well as everyday life:

- Understand the problem. It's important that students understand the nature of a problem and its related goals. Encourage students to frame a problem in their own words.
- Describe any barriers. Students need to be aware of any barriers or constraints that may be preventing them from achieving their goal. In short, what is creating the problem? Encouraging students to verbalize these impediments is always an important step.
- Identify various solutions. After the nature and parameters of a problem are understood, students will need to select one or more appropriate strategies to help resolve the problem. Students need to understand that they have many strategies available to them and that no single strategy will work for all problems. Here are some problem-solving possibilities:
  - Create visual images. Many problem-solvers find it useful to create "mind pictures" of a problem and its potential solutions prior to working on the



problem. Mental imaging allows the problem-solvers to map out many dimensions of a problem and “see” it clearly.

- Guesstimate. Give students opportunities to engage in some trial-and-error approaches to problem-solving. It should be understood, however, that this is not a singular approach to problem-solving but rather an attempt to gather some preliminary data.
  - Create a table. A table is an orderly arrangement of data. When students have opportunities to design and create tables of information, they begin to understand that they can group and organize most data relative to a problem.
  - Use manipulative. By moving objects around on a table or desk, students can develop patterns and organize elements of a problem into recognizable and visually satisfying components.
  - Work backward. It's frequently helpful for students to take the data presented at the end of a problem and use a series of computations to arrive at the data presented at the beginning of the problem.
  - Look for a pattern. Looking for patterns is an important problem-solving strategy because many problems are similar and fall into predictable patterns. A pattern, by definition, is a regular, systematic repetition and may be numerical, visual, or behavioral.
  - Create a systematic list. Recording information in list form is a process used quite frequently to map out a plan of attack for defining and solving problems. Encourage students to record their ideas in lists to determine regularities, patterns, or similarities between problem elements.
- Try out a solution. When working through a strategy or combination of strategies, it will be important for students to:
- Keep accurate and up-to-date records of their thoughts, proceedings, and procedures. Recording the data collected, the predictions made, and the strategies used is an important part of the problem solving process.
  - Try to work through a selected strategy or combination of strategies until it becomes evident that it's not working, it needs to be modified, or it is yielding inappropriate data. As students become more proficient problem-solvers, they should feel comfortable rejecting potential strategies at any time during their quest for solutions.
  - Monitor with great care the steps undertaken as part of a solution. Although it might be a natural tendency for students to “rush” through a strategy to arrive at a quick answer, encourage them to carefully assess and monitor their progress.
  - Feel comfortable putting a problem aside for a period of time and tackling

it at a later time. For example, scientists rarely come up with a solution the first time they approach a problem. Students should also feel comfortable letting a problem rest for a while and returning to it later.

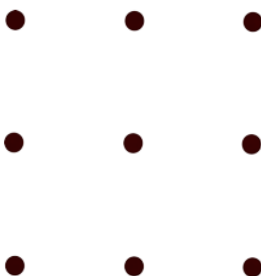
- Evaluate the results. It's vitally important that students have multiple opportunities to assess their own problem-solving skills and the solutions they generate from using those skills. Frequently, students are overly dependent upon teachers to evaluate their performance in the classroom. The process of self-assessment is not easy, however. It involves risk-taking, self-assurance, and a certain level of independence. But it can be effectively promoted by asking students questions such as "How do you feel about your progress so far?" "Are you satisfied with the results you obtained?" and "Why do you believe this is an appropriate response to the problem?"

### *Problem Solving in the Classroom*

Problem solving happens in classrooms when teachers present tasks or challenges that are deliberately complex and for which finding a solution is not straightforward or obvious. The responses of students to such problems, as well as the strategies for assisting them, show the key features of problem solving. Consider this example, and students' responses to it. We have numbered and named the paragraphs to make it easier to comment about them individually.

#### *A problem to be solved*

A teacher gave these instructions: "Can you connect all of the dots below using only four straight lines?" She drew the following display on the chalkboard:



**Figure 4.1:** The teacher gave these instructions: "Can you connect these dots with only four lines."

The problem itself and the procedure for solving it seemed very clear: simply experiment with different arrangements of four lines. But two volunteers tried doing it at the board, but were unsuccessful. Several others worked at it at their seats, but also without success.

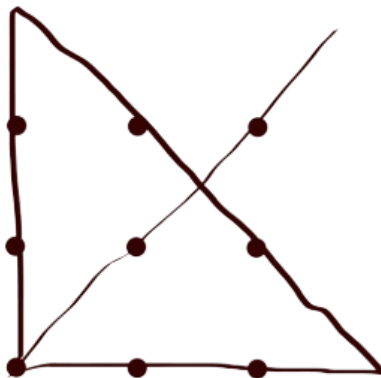


### *Coaxing Students to Re-Frame the Problem*

When no one seemed to be getting it, the teacher asked, “Think about how you’ve set up the problem in your mind—about what you believe the problem is about. For instance, have you made any assumptions about how long the lines ought to be? Don’t stay stuck on one approach if it’s not working!”

### *Alicia Abandons a Fixed Response*

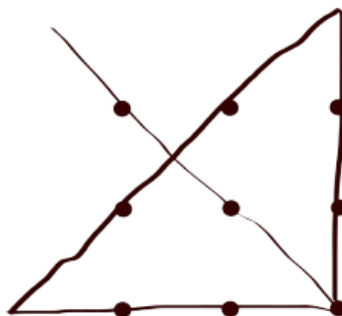
After the teacher said this, Alicia indeed continued to think about how she saw the problem. “The lines need to be no longer than the distance across the square,” she said to herself. So she tried several more solutions, but none of them worked either. The teacher walked by Alicia’s desk and saw what Alicia was doing. She repeated her earlier comment: “Have you assumed anything about how long the lines ought to be?” Alicia stared at the teacher blankly, but then smiled and said, “Hmm! You didn’t actually say that the lines could be no longer than the matrix! Why not make them longer?” So she experimented again using oversized lines and soon discovered a solution:



**Figure 4.2:** Alicia’s solution.

### *Willem’s and Rachel’s alternative strategies*

Meanwhile, Willem worked on the problem. As it happened, Willem loved puzzles of all kinds, and had ample experience with them. He had not, however, seen this particular problem. “It must be a trick,” he said to himself, because he knew from experience that problems posed in this way often were not what they first appeared to be. He mused to himself: “Think outside the box, they always tell you...” And that was just the hint he needed: he drew lines outside the box by making them longer than the matrix and soon came up with this solution:



**Figure 4.3:** Willem's and Rachel's solution.

When Rachel went to work, she took one look at the problem and knew the answer immediately: she had seen this problem before, though she could not remember where. She had also seen other drawing-related puzzles, and knew that their solution always depended on making the lines longer, shorter, or differently angled than first expected. After staring at the dots briefly, she drew a solution faster than Alicia or even Willem. Her solution looked exactly like Willem's. This story illustrates two common features of problem solving: the effect of degree of structure or constraint on problem solving, and the effect of mental obstacles to solving problems. The next sections discuss each of these features, and then looks at common techniques for solving problems.

### *The Effect of Constraints: Well-Structured Versus Ill-Structured Problems*

Problems vary in how much information they provide for solving a problem, as well as in how many rules or procedures are needed for a solution. A well-structured problem provides much of the information needed and can in principle be solved using relatively few clearly understood rules. Classic examples are the word problems often taught in math lessons or classes: everything you need to know is contained within the stated problem and the solution procedures are relatively clear and precise. An ill-structured problem has the converse qualities: the information is not necessarily within the problem, solution procedures are potentially quite numerous, and a multiple solutions are likely. Extreme examples are problems like "How can the world achieve lasting peace?" or "How can teachers insure that students learn?"

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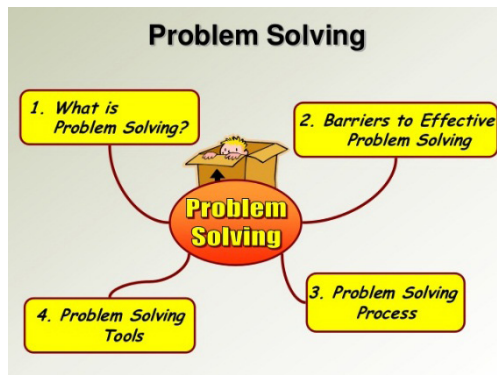
solutions are likely. Extreme examples are problems like “How can the world achieve lasting peace?” or “How can teachers insure that students learn?”

### *Common Obstacles to Solving Problems*

The example also illustrates two common problems that sometimes happen during problem solving. One of these is functional fixedness: a tendency to regard the functions of objects and ideas as fixed. Over time, we get so used to one particular purpose for an object that we overlook other uses. We may think of a dictionary, for example, as necessarily something to verify spellings and definitions, but it also can function as a gift, a doorstop, or a footstool. The notion of “**drawing**” a line was also initially fixed; they assumed it to be connecting dots but not extending lines beyond the dots. Functional fixedness sometimes is also called response set, the tendency for a person to frame or think about each problem in a series in the same way as the problem, even when doing so is not appropriate to later problems. Students often tried one solution after another, but each solution was constrained by a set response not to extend any line beyond the matrix.

#### Keyword

**A drawing** instrument releases a small amount of material onto a surface, leaving a visible mark.



Functional fixedness and the response set are obstacles in problem representation, the way that a person understands and organizes information provided in a problem. If information is misunderstood or used inappropriately, then mistakes are likely—if indeed the problem can be solved at all. With the nine-dot matrix problem, for example, construing the instruction to draw four lines as meaning “draw four lines entirely within the matrix” means that the problem simply could not be solved.

For another, consider this problem: “The number of water lilies on a lake doubles each day. Each water lily covers exactly one square foot. If it takes 100 days for the lilies to cover the lake exactly, how many days does it take for the lilies to cover exactly half of the lake?” If you think that the size of the lilies affects the solution to this problem, you have not represented the problem correctly. Information about lily size is not relevant to the solution, and only serves to distract from the truly crucial information, the fact that the lilies double their coverage each day.

### *Strategies to Assist Problem Solving*

Just as there are cognitive obstacles to problem solving, there are also general strategies that help the process be successful, regardless of the specific content of a problem. One helpful strategy is problem analysis—identifying the parts of the problem and working on each part separately. Analysis is especially useful when a problem is ill-structured. Consider this problem, for example: “Devise a plan to improve bicycle transportation in the city.” Solving this problem is easier if you identify its parts or component sub-problems, such as:

- installing bicycle lanes on busy streets,
- educating cyclists and motorists to ride safely,
- fixing potholes on streets used by cyclists, and
- Revising traffic laws that interfere with cycling.

Each separate sub-problem is more manageable than the original, general problem. The solution of each sub-problem contributes the solution of the whole, though of course is not equivalent to a whole solution.

Another helpful strategy is working backward from a final solution to the originally stated problem. This approach is especially helpful when a problem is well-structured but also has elements that are distracting or misleading when approached in a forward, normal direction. The water lily problem is a good example: starting with the day when all the lake is covered, ask what day would it therefore be half covered. Working backward in this case encourages reframing the extra information in the problem as merely distracting, not as crucial to a solution.

A third helpful strategy is analogical thinking—using knowledge or experiences with similar features or structures to help solve the problem at hand. In devising a plan to improve bicycling in the city, for example, an analogy of cars with bicycles is helpful in thinking of solutions: improving conditions for both vehicles requires many of the same measures (improving the roadways, educating drivers). Even solving simpler, more basic problems is helped by considering analogies. A first grade student can partially decode unfamiliar printed words by analogy to words he or she has learned already.



*If the child cannot yet read the word screen, for example, he can note that part of this word looks similar to words he may already know, such as seen or green, and from this observation derive a clue about how to read the word screen. Teachers can assist this process, as you might expect, by suggesting reasonable, helpful analogies for students to consider.*



### 4.1.2 Broad Instructional Strategies That Stimulate Complex Thinking

Because the forms of thinking just described—critical thinking, creativity and problem solving—are broad and important educationally, it is not surprising that educators have identified strategies to encourage their development. Some of the possibilities are shown in Table 1 and group several instructional strategies along two dimensions: how much the strategy is student-centered and how much a strategy depends on group interaction. It should be emphasized that the two-way classification in Table 1 is not very precise, but it gives a useful framework for understanding the options available for planning and implementing instruction. The more important of the two dimensions in the table is the first one—the extent to which an instructional strategy is either directed by the teacher or initiated by students.

**Table 4.1:** Major instructional strategies grouped by level of teacher direction and student focus

	<b>Directed by student(s) more</b>		
	Cooperative learning	Self-reflection	
<b>Emphasizes groups somewhat more</b>	Inquiry	Independent study	
	Discovery learning	Concept maps	
	Lectures	Mastery learning	<b>Emphasizes individuals somewhat more</b>
	Direct instruction	Textbook readings	
	Madeline Hunter's "Effective Teaching"	Advance organizers	
		Outlining	
		Recalling, relating, and elaborating	
	<b>Directed by teacher more</b>		

## 4.2 TEACHER-DIRECTED INSTRUCTION

Teacher-directed instruction includes any strategies initiated and guided primarily by the teacher. A classic example is exposition or lecturing (simply telling or explaining important information to students) combined with assigning reading from texts. But teacher-directed instruction also includes strategies that involve more active response from students, such as encouraging students to elaborate on new knowledge or to explain how new information relates to prior knowledge. Whatever their form, teacher-directed instructional methods normally include the organizing of information on behalf of students, even if teachers also expect students to organize it further on their own. Sometimes, therefore, teacher-directed methods are thought of as transmitting knowledge from teacher to student as clearly and efficiently as possible, even if they also require mental work on the part of the student.





### 4.2.1 Lectures and Readings

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Lectures and readings are traditional staples of educators, particularly with older students (including university students). At their best, they pre-organize information so that (at least in theory) the student only has to remember what was said in the lecture or written in the text in order to begin understanding it. Their limitation is the ambiguity of the responses they require: listening and reading are by nature quiet and stationary, and do not in themselves indicate whether a student is comprehending or even attending to the material. Educators sometimes complain that “students are too passive” during lectures or when reading. But physical quietness is intrinsic to these activities, not to the students who do them. A book just sits still, after all, unless a student makes an effort to read it, and a lecture may not be heard unless a student makes the effort to listen to it.

### 4.2.2 Advance Organizers

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In spite of these problems, there are strategies for making lectures and readings effective. A teacher can be especially careful about organizing information for students, and she can turn part of the mental work over to students themselves. An example of the first approach is the use of advance organizers—brief overviews or introductions to new material before the material itself is presented. When used in a lecture, advance organizers are usually statements in the form of brief introductory remarks, though sometimes diagrams showing relationships among key ideas can also serve the same purpose. Whatever their form, advance organizers partially organize the material on behalf of the students, so that they know where to put it all, so to speak, as they learn them in more detail.

### 4.2.3 Recalling and relating prior knowledge

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Another strategy for improving teacher-directed instruction is to encourage students to relate the new material to prior familiar knowledge. When one of us first learned a foreign language (in his case French), for example, he often noticed similarities between French and English vocabulary. A French word for picture, for example, was image, spelled exactly as it is in English. The French word for splendid was splendid, spelled almost the same as in English, though not quite. Relating the French vocabulary to English vocabulary helped in learning and remembering the French.





#### 4.2.4 Elaborating Information

Elaborating new information means asking questions about the new material, inferring ideas and relationships among the new concepts. Such strategies are closely related to the strategy of recalling prior knowledge as discussed above: elaboration enriches the new information and connects it to other knowledge. In this sense elaboration makes the new learning more meaningful and less arbitrary. A teacher can help students use elaboration by modeling this behavior. The teacher can interrupt his or her explanation of an idea, for example, by asking how it relates to other ideas, or by speculating about where the new concept or idea may lead. He or she can also encourage students to do the same, and even give students questions to guide their thinking. When giving examples of a concept, for example, a teacher can hold back from offering all of the examples, and instead ask students to think of additional examples themselves. The same tactic can work with assigned readings; if the reading includes examples, the teacher can instruct students to find or make up additional examples of their own.

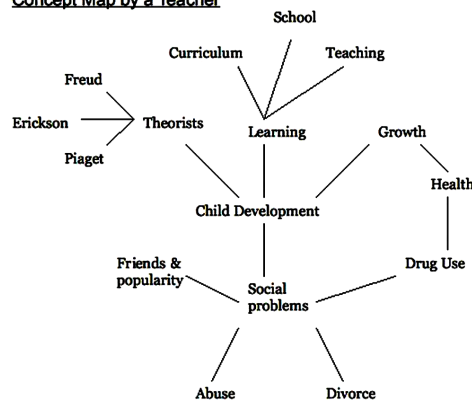


#### 4.2.5 Organizing New Information

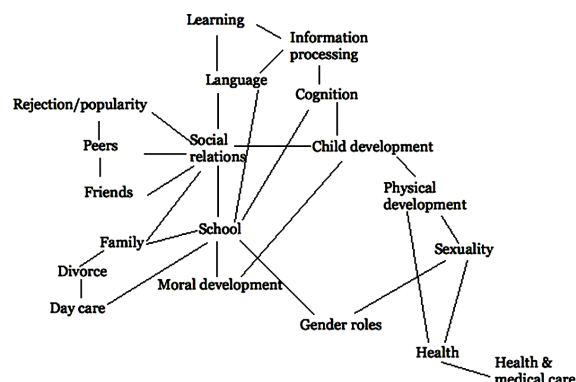
There are many ways to organize new information that are especially well-suited to teacher-directed instruction. A common way is simply to ask students to outline

information read in a text or heard in a lecture. Outlining works especially well when the information is already organized somewhat hierarchically into a series of main topics, each with supporting subtopics or sub points. Outlining is basically a form of the more general strategy of taking notes, or writing down key ideas and terms from a reading or lecture. Research studies find that that the precise style or content of notes is less important than the quantity of notes taken: more detail is usually better than less. Written notes insure that a student thinks about the material not only while writing it down, but also when reading the notes later. These benefits are especially helpful when students are relatively inexperienced at school learning in general (as in the earlier grade levels), or relatively inexperienced about a specific topic or content in particular. Not surprisingly, such students may also need more guidance than usual about what and how to write notes. It can be helpful for the teacher to provide a note-taking guide.

Concept Map by a Teacher



Concept Map by a University Professor



**Figure4.4:** Maps of personal definitions of “child development”.

### Keyword

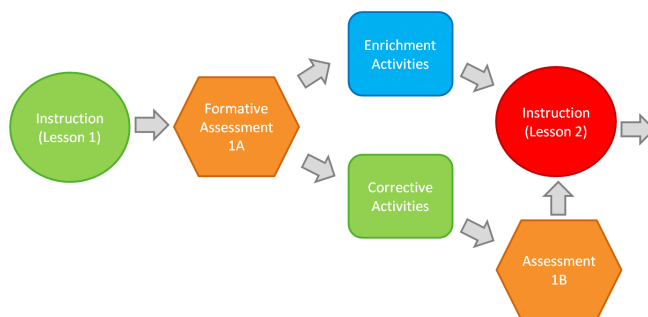
**Psychology** is the science of mind and behavior. Psychology includes the study of conscious and unconscious phenomena, as well as feelings and thought.

In learning expository material, another helpful strategy—one that is more visually oriented—is to make concept maps, or diagrams of the connections among concepts or ideas. Figure 4 shows concept maps made by two individuals that graphically depict how a key idea, child development, relates to learning and education. One of the maps was drawn by a classroom teacher and the other by a university professor of **psychology**. They suggest possible differences in how the two individuals think about children and their development. Not surprisingly, the teacher gave more prominence to practical concerns (for example, classroom learning and child abuse), and the professor gave more prominence to theoretical ones (for example, Erik Erikson and Piaget). The differences suggest that these two people may have something different in mind when they use the same term, child development. The differences have the potential to create misunderstandings between them. By the same token, the two maps also suggest what each person might need to learn in order to achieve better understanding of the other person's thinking and ideas.

## 4.2.6 Mastery Learning

This term refers to an instructional approach in which all students learn material to an identically high level, even if some students require more time than others to do so. In mastery learning, the teacher directs learning, though sometimes only in the sense of finding, writing, and orchestrating specific modules or units for students to learn. In one typical mastery learning program, the teacher introduces a few new concepts or topics through a brief lecture or teacher-led demonstration. Then she gives an ungraded assignment or test immediately in order to assess how well students have learned the material, and which ones still need help. The students who have already learned the unit are given enrichment activities. Those needing more help are provided individual tutoring or additional self-guiding materials that clarify the initial content; they work until they have in fact mastered the content (hence the name mastery learning). At that point students take another test or do another assignment to show that they have in fact learned the material to the expected high standard. When the system is working well, all students end up with high scores or grades, although usually some take longer to do so than others.





As you might suspect, mastery learning poses two challenges. The first is ethical: is it really fair to give enrichment only to faster students and remediation only to slower students? This practice could deteriorate into continually providing the fast with an interesting education, while continually providing the slow only with boring, repetitious material. In using the approach, therefore, it is important to make all materials interesting, whether enrichment or remedial. It is also important to make sure that the basic learning goals of each unit are truly important—even crucial—for everyone to learn, so that even slower individuals spend their time well. The other challenge of mastery learning is more practical: the approach makes strong demands for detailed, highly organized curriculum. If the approach is to work, the teacher must either locate such a curriculum, write one herself, or assemble a suitable mixture of published and self-authored materials. However the curriculum is created, the end result has to be a program filled with small units of study as well as ample enrichment and remedial materials. Sometimes providing these practical requirements can be challenging. But not always: some subjects (like mathematics) lend themselves to detailed, sequential organization especially well. In many cases, too, commercial publishers have produced curricula already organized for use in mastery learning programs

### 4.2.7 Direct Instruction

Although the term direct instruction is sometimes a synonym for teacher-directed instruction, more often it refers to a version of mastery learning that is highly scripted, meaning that it not only organizes the curriculum into small modules, but also dictates how teachers should teach and sometimes even the words they should speak. Direct instruction programs are usually based on a mix of ideas from behaviorism and cognitive theories of learning. In keeping with behaviorism, the teacher is supposed to praise students immediately and explicitly when they give a correct answer. In keeping with cognitive theory, she is supposed to state learning objectives in advance of teaching them (providing a sort of mini-advance organizer), provide frequent reviews of materials, and check deliberately on how well students are learning. Direct instruction usually also introduces material in small, logical steps, and calls for plenty of time for students to practice.

Direct instruction programs share one of the challenges of other mastery learning approaches: because they hold all students to the same high standard of achievement, they must deal with differences in how long students require to reach the standard. But direct instruction has an additional challenge, in that they often rely on small-group interaction more heavily than other mastery learning programs, and use self-guiding materials less. This difference has the benefit that direct instruction works especially well with younger students (especially kindergarten through third grade), who may have limited skills at working alone for extended periods. The challenge is that reliance on small-group interaction can make it impractical to use direct instruction with an entire class or for an entire school day. In spite of these limits, however, research has found direct instruction to be very effective in teaching basic skills such as early reading and arithmetic.

### 4.2.8 Madeline Hunter's Effective Teaching Model

Dr. Madeline Hunter's research showed effective teachers have a methodology when planning and presenting a lesson. Hunter found that no matter what the teacher's style, grade level, subject matter, or economic background of the students a properly taught lesson contained eight elements that enhanced and maximized learning.

**Table 4.2:** Madeline Hunter's "Effective Teaching Model"

<p>Prepare students to learn.</p> <ul style="list-style-type: none"> <li>• Make good use of time at the beginning of a lesson or activity, when attention is best</li> <li>• Direct students' attention to what lies ahead in a lesson—for example, by offering "advance organizers"</li> <li>• Explain lesson objectives explicitly</li> </ul>
<p>Present information clearly and explicitly.</p> <ul style="list-style-type: none"> <li>• Set a basic structure to the lesson and stay with it throughout</li> <li>• Use familiar terms and examples</li> <li>• Be concise</li> </ul>
<p>Check for understanding and give guided practice.</p> <ul style="list-style-type: none"> <li>• Ask questions that everyone responds to—for example, "Raise your hand if you think the answer is X"</li> <li>• Invite choral responses—for example, "Is this a correct answer or not?"</li> <li>• Sample individuals' understanding—for example, "Barry, what's your example of X?"</li> </ul>
<p>Provide for independent practice.</p> <ul style="list-style-type: none"> <li>• Work through the first few exercises or problems together</li> <li>• Keep independent practice periods brief and intersperse with discussions that offer feedback</li> </ul>

She labeled eight elements and began two decades of teacher training. The elements referred to as Lesson Design, Target Teaching, or Critical Teaching, have stood the test of time – still used today in many teacher colleges and as reference for judging



teacher effectiveness in many school districts. A number of direct instruction strategies have been combined by Madeline Hunter into a single, relatively comprehensive approach that she calls mastery teaching (not to be confused with the related term mastery learning) or the effective teaching model. Important features of the model are summarized in Table 2. As you can see, the features span all phases of contact with students—before, during, and after lessons.

What happens even before a lesson begins? Like many forms of teacher-directed instruction, the effective teaching model requires curricula and learning goals that are tightly organized and divisible into small parts, ideas, or skills. In teaching about photosynthesis, for example, the teacher (or at least her curriculum) needs to identify the basic elements that contribute to this process, and how they relate to each other. With photosynthesis, the elements include the sun, plants, animals, chlorophyll, oxygen produced by plants and consumed by animals, and carbon dioxide that produced by animals and consumed by plants. The roles of these elements need to be identified and expressed at a level appropriate for the students. With advanced science students, oxygen, chlorophyll, and carbon dioxide may be expressed as part of complex chemical reactions; with first-grade students, though, they may be expressed simply as parts of a process akin to breathing or respiration.

Once this analysis of the curriculum has been done, the Hunter's effective teaching model requires making the most of the lesson time by creating an anticipatory set, which is an activity that focuses or orients the attention of students to the upcoming content. Creating an anticipatory set may consist, for example, of posing one or more questions about students' everyday knowledge or knowledge of prior lessons. In teaching about differences between fruits and vegetables, the teacher could start by asking: "If you are making a salad strictly of fruit, which of these would be OK to use: apple, tomato, cucumber, or orange?" As the lesson proceeds, information needs to be offered in short, logical pieces, using language as familiar as possible to the students. Examples should be plentiful and varied: if the purpose is to define and distinguish fruits and vegetables, for example, then features defining each group should be presented singularly or at most just a few at a time, with clear-cut examples presented of each feature. Sometimes models or analogies also help to explain examples. A teacher can say: "Think of a fruit as a sort of 'decoration' on the plant, because if you pick it, the plant will go on living." But models can also mislead students if they are not used thoughtfully, since they may contain features that differ from the original concepts. In likening a fruit to a decoration, for example, students may overlook the essential role of fruit in plant reproduction, or think that lettuce qualifies as a fruit, since picking a few lettuce leaves does not usually kill a lettuce plant.

Throughout a lesson, the teacher repeatedly checks for understanding by asking questions that call for active thinking on the part of students. One way is to require all students to respond somehow, either with an actual choral response (speaking in

unison together), another way with a non-verbal signal like raising hands to indicate answers to questions. In teaching about fruits and vegetables, for example, a teacher can ask, “Here’s a list of fruits and vegetables. As we point to each one, raise your hand if it’s a fruit, but not if it’s a vegetable.” Or she can ask: “Here’s a list of fruits and vegetables. Say together what each one is as we point to it; you say ‘fruit’ or ‘vegetable’, whichever applies.” Even though some students may hide their ignorance by letting more knowledgeable classmates do the responding, the general level or quality of response can still give a rough idea of how well students are understanding. These checks can be supplemented, of course, with questions addressed to individuals, or with questions to which individuals must respond briefly in writing. A teacher can ask everyone, “Give me an example of one fruit and one vegetable”, and then call on individuals to answer. She can also say: “I want everyone to make a list with two columns, one listing all the fruits you can think of and the other listing all the vegetables you can think of.”

As a lesson draws to a close, the teacher arranges for students to have further independent practice. The point of the practice is not to explore new material or ideas, but to consolidate or strengthen the recent learning. At the end of a lesson about long division, for example, the teacher can make a transition to independent practice by providing a set of additional problems similar to the ones she explained during the lesson. After working one or two with students, she can turn the rest of the task over to the students to practice on their own. But note that even though the practice is supposedly “independent”, students’ understanding still has to be checked frequently. A long set of practice problems therefore needs to be broken up into small subsets of problems, and written or oral feedback offered periodically.

### *The Pros and Cons:*

The Hunter Model has a number of advantages, and an equal number of disadvantages. For instance, it is a great drill and practice model. The model is an excellent one for content or processes that benefit from lots of repetition. In that regard it is more readily suited for lessons which emphasize the lower tier of Bloom’s revised taxonomy – remembering (knowledge), understanding (comprehension), and applying (application).

However, without considerable thought, revision, and artful manipulation, the model’s repetitive structure it is not appropriate for open-ended learning experiences, discovery learning sessions, or exploratory educational experiences, especially ones requiring divergent thinking skills, creative problem solving, or higher level thinking skills. Too, this model is not particularly well suited for use with gifted students. This population becomes easily bored with repetitious applications and steps, especially if they are not very challenging. Gifted students may also resent tightly, teacher-controlled learning settings where learning patterns are readily apparent from the very beginning.

Instructors attempting to meet the learning needs of gifted/creative learners may wish to explore one of the many models better suited to this population.



### *The 7 Classic Steps:*

Within the main portions of the model – getting students ready to learn, instruction and checking for understanding, and independent practice – there are basically 7 steps and these are listed below. The steps in the beginning and ending portions can be varied and changed in sequence, the portion in the middle should not be changed.

Ordering the beginning portions really depends on what you are doing as an anticipatory set as to whether you state your objectives and standards first, or if you start out with the anticipatory set and then make a statement of objectives and standards. Some variations include a review as the first step or as something incorporated into the anticipatory set. But users can also review, state objectives, and then have an anticipatory set as separate portions in the “getting students ready” portion.

The ending segment of the lesson also can be altered and depending on how controlling the instructor wants to be. Some folks believe that independent practice portion should be carefully monitored and then followed up with a closure activity or summary. Other educators like to offer closure for the formal lesson with an activity or ending discussion and then give independent practice as seat work or as homework.

Here are the different steps:

### *Getting students set to learn*

The first two elements are interchangeable. As stated earlier a distinctive review is optional. However, typically at the beginning of the lesson the teacher may briefly review material if it is related to the current lesson.

- 1) **Stated Objectives** – Letting students know where they are going. Giving them a sense of where they are headed belays the feeling of being a hostage in a learning experience. This step gives students direction and let's know what they are supposed to accomplish by the end of the lesson.
- 2) **Anticipatory Set** – Getting students ready and/or excited to accept instruction. (Please note that giving directions may be part of the procedural dialog of a lesson, but in and of themselves directions are NOT an Anticipatory Set!!!! The key word here is “anticipatory” and that means doing something that creates a sense of anticipation and expectancy in the students — an activity, a game, a focused discussion, viewing a film or video clip, a field trip, or reflective exercise, etc.). This step prepares the learner to receive instruction much like operant conditioning.

### *Direct instruction and checking for understanding*

This part involves quickly assessing whether students understand what has just been demonstrated or presented.

- 3) **Input Modeling/Modeled Practice** – Making sure students get it right the first time depends on the knowledge, or processes to be shown or demonstrated by an expert, or by someone who has mastered what is to be demonstrated or shown. In addition to the instructor, prepared students can certainly model the focused skill, process or concept for peers. Instructors could also use a video for this portion.
- 4) **Checking Understanding** – Teachers watch students’ body language, ask questions, observe responses and interactions in order to determining whether or not students are making sense of the material as it is being presented. This portion takes place as instruction is being given. This is a whole class exercise, one in which the instructor carefully monitors the actions of the learners to make sure they are duplicating the skill, process, procedure, or exercise correctly.
- 5) **Guided Practice** – Takes place after instruction has been modeled and then checked for understanding to make sure students have it right! The question here is can they replicate what you want them to do correctly? Students are given the opportunity to apply or practice what they have just learned and receive immediate feedback at individual levels.

### *Independent practice*

These last two components can be interchanged.

- 6) **Independent Practice** – After students appear to understand the new material they are given the opportunity to further apply or practice using the

new information. This may occur in class or as homework, but there should be a short period of time between instruction and practice and between practice and feedback. Essentially they are doing a learning task by themselves.

- 7) **Closure** – Bringing it all to a close – one more time. What did they accomplish? What did they learn? Go over it again. As you can see this model is highly repetitive — it is really a drill model and as we indicated earlier not conducive to support a number of high level thinking or feeling functions without some serious alteration or modifications.

### 4.2.9 The Limits of Teacher-Directed Instruction

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Whatever the grade level, most subjects taught in schools have at least some features, skills, or topics that benefit from direct instruction. Even subjects usually considered “creative” can benefit from a direct approach at times: to draw, sing, or write a poem, for example, requires skills that may be easier to learn if presented sequentially in small units with frequent feedback from a teacher. The usefulness of teacher directed instruction for a variety of educational contexts when it is designed well and implemented as intended. Teachers themselves also tend to support the approach in principle.

Teacher-directed instruction, whatever the form, requires well-organized units of instruction in advance of when students are to learn. Such units may not always be available, and it may not be realistic to expect busy teachers to devise their own. Other limits of direct instruction have more to do with the very nature of learning. Some critics argue that organizing material on behalf of the students encourages students to be passive—an ironic and undesirable result if true. In support of this argument, critics point to the fact that direct instruction approaches sometimes contradict their own premises by requiring students to do a bit of cognitive organizational work of their own. This happens, for example, when a mastery learning program provides enrichment material to faster students to work on independently; in that case the teacher may be involved in the enrichment activities only minimally.

## 4.3 STUDENT-CENTERED LEARNING

The term student-centered learning refers to a wide variety of educational programs, learning experiences, instructional approaches, and academic-support strategies that are intended to address the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students and groups of students. To accomplish this goal, schools, teachers, guidance counselors, and other educational specialists may employ a wide variety of educational methods, from modifying assignments and instructional strategies in the classroom to entirely redesigning the ways in which students are grouped and taught in a school.





### Remember

The basic rationale is that schools should be designed to enhance student learning, not improve organizational efficiency. It is important to integrate authentic, reflective and collaborative learning experiences when designing for student-centered learning.

The term student-centered learning most likely arose in response to educational decisions that did not fully consider what students needed to know or what methods would be most effective in facilitating learning for individual students or groups of students. For example, many traditional approaches to schooling could be considered “school-centered,” rather than student-centered, because schools are often organized and managed in ways that work well for organizational operations, but that might not reflect the most effective ways to educate students. For example, it’s far more manageable—from an institutional, administrative, or logistical perspective—if all students are being taught in classrooms under the supervision of teachers, if they are given a fixed set of course options to choose from, if they all use the same textbooks and learning resources, or if their education unfolds according to a predetermined schedule.

Advocates of student-centered learning want to challenge or overturn many common organizational or instructional tendencies in schools by making student learning the primary objective—i.e., all considerations that do not in some way improve or facilitate student learning would become secondary (or lower) in importance.

### *Authentic Learning*

Authentic learning occurs when learners engage in tasks that they are likely to encounter in the real world. General guidelines to follow include providing: an authentic context that reflects the way the knowledge will be used in real life, authentic activities, access to expert performance and the modelling of processes,



multiple roles and perspectives, collaborative construction of knowledge, reflection, articulation, coaching and scaffolding, and authentic assessment.

Authentic learning is experiential learning located in settings that reflect complex real world problems. It is characterized by:

- Situated learning contexts within which the application of knowledge and skills may be demonstrated
- Tasks with ill-defined real world problems
- Sustained investigation (i.e., time and effort) to arrive at solutions
- Scenarios with multiple roles and perspectives and where expert performances and processes are modeled (i.e., making tacit knowledge explicit)
- Collaborative activities to produce real world 'products' or 'performances'
- Reflective practice (as a basis for professional learning)
- Scaffolding and coaching at critical times. Assessment of authentic learning should be seamlessly integrated with a learning activity that is practical, realistic and challenging.

### *Benefits of authentic learning experiences*

Educational research has shown that authentic learning experiences give learners the capacity to turn information into useful transferable knowledge and to build professional identity. By situating knowledge within relevant contexts learning is enhanced.

Authentic learning experiences:

- Encourage learners to assimilate and connect knowledge that is unfamiliar
- Expose learners to different settings, activities and perspectives
- Enhance transferability and application of theoretical knowledge to the 'real world'
- Create opportunities for learners to collaborate, produce polished products and to practice generic (e.g., problem solving) and professional skills
- Build capacity to exercise professional judgments (in a 'safe' environment) and attachment to professional knowledge and principles.

Authentic learning potentially builds learners' capacity in all four domains of learning: cognitive, affective, psychomotor and conative and is therefore a useful learning approach to preparing students for work in the 21st century.

## *Reflective Learning*

Reflection is an inter-subjective process that promotes deeper learning; it involves consciously thinking about and analyzing what one has done (or is doing). In higher education settings it provides a framework for developing professionals as lifelong learners who are committed to continuous improvement of their practice.

There are many theories explaining what reflection is and why it is so important in higher education. Schon (1983) and Kolb (1984) are two leading theorists on reflection. Schon defined reflective practice as two capabilities

- reflecting in action whilst doing something, and
- Reflecting on action (after an action has been done).

Kolb produced a cyclical model for reflective practice where individuals learn from experience.

## *Benefits of reflective learning*

Reflective learning enables learners to activate prior knowledge, and to construct, deconstruct and reconstruct their knowledge. In doing so, several benefits accrue, including:

- Learning from experience
- Developing meta-cognitive skills
- Developing the skills of professional practice
- Exercising responsibility for their own learning (and actions)
- Building capacity to restructure / reframe knowledge
- Continual improvements in practice

## *Collaborative Learning*

Collaborative learning is an educational approach that involves groups of learners working together to solve a problem, complete a task, or create a product. It is based on the idea that learning is a naturally social act. Learning occurs through active engagement among peers, either face-to-face or online.

The main characteristics of collaborative learning are: a common task or activity; small group learning, co-operative behavior; interdependence; and individual responsibility and accountability. Collaborative learning is similar to, but not the same as, cooperative learning. In cooperative learning the task is divided vertically (i.e., members work more or less concurrently on different aspects of a project), whereas in collaborative

learning the task is divided horizontally (i.e., members work together more or less sequentially on different aspects of a project).

### *Benefits of collaborative learning*

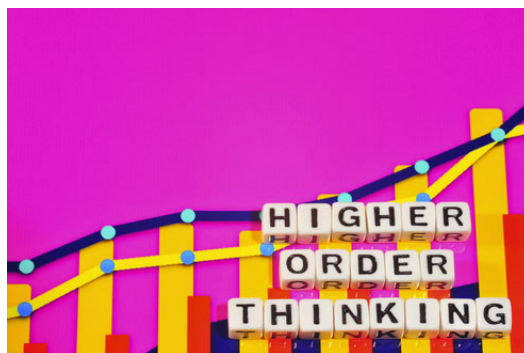
Collaborative learning activities create opportunities for students to:

- Engage in subject specific discussions with peers
- Learn how to work cooperatively and support each other
- Develop effective teamwork and communication (including interpersonal and cross cultural awareness) skills
- Assimilate multiple views to deepen knowledge and promote critical thinking
- Foster individual accountability to the team
- Develop independent learning strategies
- Structure out-of-class learning
- Mitigate learner isolation

Online collaboration brings additional benefits of flexibility, managing student participation and behavior, track ability and student autonomy.

### **4.3.1 Teaching Strategies that Enhance Higher-Order Thinking**

One of the main 21<sup>st</sup> century components that teachers want their students to use are higher-order thinking skills. This is when students use complex ways to think about what they are learning. Higher-order thinking takes thinking to a whole new level. Students using it are understanding higher levels rather than just memorizing math facts. They would have to understand the facts, infer them, and connect them to other concepts.



Here are basic teaching strategies to enhance higher-order thinking skills in your students.

### ***1. Teaching Strategies to Help Determine What Higher-Order Thinking is***

Help students understand what higher-order thinking is. Explain to them what it is and why they need it. Help them understand their own strengths and challenges. You can do this by showing them how they can ask themselves good questions. That leads us to the next strategy.

### ***2. Encourage Questioning***

A classroom where students feel free to ask questions without any negative reactions from their peers or their teachers is a classroom where students feel free to be creative. Encourage students to ask questions, and if for some reason you can't get to their question during class time, then show them how they can answer it themselves, or have them save the question until the following day.

### ***3. Connect Concepts***

Lead students through the process of how to connect one concept to another. By doing this you are teaching them to connect what they already know with what they are learning. This level of thinking will help students learn to make connections whenever it is possible, which will help them gain even more understanding. For example, let's say that the concept they are learning is "Chinese New Year." An even broader concept would be "Holidays," and if you take it one step further it can be "Celebrations." Each small concept can be connected to a bigger, broader concept.

### ***4. Teach Students to Infer***

Teach students to make inferences by giving them "Real-world" examples. You can start by giving students a picture of a people standing in line at a soup kitchen. Ask them to look at the picture and focus on the details. Then, ask them to make inferences based on what they see in the picture. Another way to teach young students about how to infer is to teach an easy concept like weather. Ask students to put on their raincoat and boots, then ask them to infer what they think the weather looks like outside.

### ***5. Use Graphic Organizers***

Graphic organizers provide students with a nice way to frame their thoughts in an organized manner. By drawing diagrams or mind maps, students are able to better connect concepts and see their relationships. This will help students develop a habit of connecting concepts.



## ***6. Teach Problem-Solving Strategies***

Teach students to use a step-by-step method for solving problems. This way of higher order thinking will help them solve problems faster and easier. Encourage students to use alternative methods to solve problems as well as offer them different problem-solving methods.

## ***7. Encourage Creative Thinking***

Creative thinking is when students invent, imagine, and design what they are thinking. Using your creative senses help students process and understand information better. Research shows that when students utilize creative higher order thinking skills, it indeed increases their understanding. Encourage students to think “Outside of the box.”

## ***8. Use Mind Movies***

When concepts that are being learned are hard, encourage students to create a movie in their mind. Teach them to close their eyes and picture it like a movie playing. This way of higher order thinking will truly help them understand in a powerful, unique way.

## ***9. Teach Students to Elaborate Their Answers***

Higher-order thinking requires students to really understand a concept not repeat it or memorize it. Encourage students to elaborate their answers and talk about what they are learning. Ask parents to reinforce this at home, as well by asking the right questions that make students explain their answers in more detail, or to answer their child’s question with a more detailed response.

## ***10. Teach QARs***

Question-Answer-Relationships, or QARs, teach students to label the type of question that is being asked, then use that information to help them formulate an answer. Students must decipher if the answer can be found in a text or on the Internet, or if they must rely on their own prior knowledge to answer it. This strategy has been found to be effective for higher-order thinking because students become more aware of the relationship between the information in a text and their prior knowledge, which helps them decipher which strategy to use when they need to seek an answer.



### 4.3.2 Teacher-Centered or Student-Centered Education

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As a teacher considering how you want to approach your means of instruction, you (of course) want to employ a method that is beneficial for *all* of your students. You want them to enjoy the learning process, and for your classroom to be orderly and controlled.



In your research, you've probably come across a debate that has been at the forefront of educators' minds when they think about instruction: what's better, teacher-centered or student-centered education? To simplify the two approaches and help you determine which is best for you, we defined both teacher-centered education and student-centered education and rounded up what has been proposed as pros and cons of each.

#### *Teacher-centered education*

In teacher-centered education, students put all of their focus on the teacher. You talk, and the students exclusively listen. During activities, students work alone, and collaboration is discouraged.

#### *Pros*

- When education is teacher-centered, the classroom remains orderly. Students are quiet, and you retain full control of the classroom and its activities.
- Because students learn on their own, they learn independence and make their own decisions.
- Because you direct all classroom activities, you don't have to worry that students will miss an important topic.

#### *Cons*

- When students work alone, they don't learn to collaborate with other students, and their communication skills may suffer.



- Teacher-centered instruction can be boring for students. Their minds may wander, and they may miss important facts.
- Teacher-centered instruction doesn't allow students to express themselves, ask questions, and direct their own learning.

### *Student-centered instruction*

When a classroom operates with student-centered instruction, students and instructors *share* the focus. Instead of listening to the teacher exclusively, students and teachers interact equally. Group work is encouraged, and students learn to collaborate and communicate with one another.

#### *Pros*

- Students learn important communicative and collaborative skills through group work.
- Students learn to direct their own learning, ask questions, and complete tasks independently.
- Students are more interested in learning activities when they can interact with one another and participate actively.

#### *Cons*

- Because students are talking, classrooms may often be noisy or chaotic.
- Teachers may have to attempt to manage all students' activities at once, which can be difficult when students are working on different stages of the same project.
- Because the teacher doesn't always deliver instruction to all students at once, some students may miss important facts.
- Some students prefer to work alone, so group work can become problematic.

In recent years, more teachers have moved toward a student-centered approach. However, some students maintain that teacher-centered education is the more effective strategy. In most cases, it is best for teachers to use a combination of approaches to ensure that all student needs are met. You know your classroom better than anyone, so decide what works best for you and your students.

## CASE STUDY

### GUIDING STUDENTS TO THINK CRITICALLY USING CASE STUDIES



One of the best practices in teaching and learning is the use of a three-part case study, or a scenario-based story, to help students deepen their understanding of a concept. The three parts of a case study are a scenario-based story that focuses on a specific, hypothetical problem, supporting literature that aligns with the main themes of the story, and guiding questions that help the learner gain the most from understanding the concepts and objectives of the case study by applying critical and higher order thinking skills.

A scenario-based story is a situation, problem, or issue that is used to help students grasp the learning objectives of a lesson. For example, in an educational leadership law course that I teach, one day I might create an elaborate scenario that focuses on several problems and issues that also align with the lesson's objectives and concepts. Another day, the scenario could be a short one- to two-sentence story that is used at the beginning of class to engage students in reviewing key concepts and prepare them for the day's lesson, or at the end of a lesson to review what was discussed during class. Finally, I might present a scenario-based story through a video or news story. There are many great videos on YouTube and many great news stories all over the Internet that offer up scenarios that are easily accessible and provide a visual that may help stimulate learning.

Supporting literature that aligns with the main themes of the case study helps students focus on what is important. This literature can be the texts and supplemental material that are required for students to read for a course, or, for example, it can be

state and federal codes that must be followed. Then, the guiding questions are created and used to help students think about the different outcomes that could occur and possibly prepare for confronting an issue in the real-world. These questions can be as elaborate or straightforward as needed.

Like a book study, a case study can provide the necessary platform for students to communicate and collaborate about a situation that concerns a certain group. They can be used to help a group of learners or others focus on a specific concept, or they can help those solve a problem. Additionally, they can be used to analyze a current practice, like an ineffective policy. Although case studies are not a new teaching method, they are a method that can be useful, providing an opportunity for students to think outside the box. Through the use of a case study, students can actively engage in applying learned concepts, objectives, and knowledge to hypothetical situations by using critical and higher order thinking skills to answer tough questions.

Below are brief examples of the three types of case studies that I've used in my graduate course:

**1. Elaborate Case Study:** A high school senior is caught cheating on an exam. A passing grade on this exam is essential, since the exam grade will be applied to the senior's overall GPA. The teacher respects the student and counts the student as a favorite, especially since the student was accepted to attend Harvard. The teacher decides to ignore the policy and does not report the student's cheating, and allows the grade to be averaged with the student's GPA.

- What are the implications of the teacher not reporting the cheating?
- How would you have handled this situation differently?

**2. One- to Two-Sentence Case Study:** You are on campus late one night working on paperwork when you hear laughter and loud talking down the hall. As you approach the raucous, you enter a classroom to find three teachers and their spouses drinking beer.

- What do you do next and is your decision based on ethics or fear?

**3. Video/News Story Case Study:** Please view the assigned videos. As you watch them, keep in mind what you have learned about student speech and academic freedom.

- Are there any student speech or academic freedom issues?
- Has the student code of conduct been violated with these dances?

## SUMMARY

- Critical thinking is the objective analysis of facts to form a judgment. The subject is complex, and several different definitions exist, which generally include the rational, skeptical, unbiased analysis, or evaluation of factual evidence.
- Complex thinking includes many key abilities that are important to success in today's world. People with strengths in complex thinking may be good at deeply understanding ideas and concepts, seeing connections among information from different sources, demonstrating imagination, constructing and defending arguments based on facts or evidence, taking risks with new ideas, and/or drawing inferences from limited information.
- Critical thinking requires skill at analyzing the reliability and validity of information, as well as the attitude or disposition to do so. The skill and attitude may be displayed with regard to a particular subject matter or topic, but in principle it can occur in any realm of knowledge
- Critical thinking is a domain-general thinking skill. The ability to think clearly and rationally is important whatever we choose to do. If you work in education, research, finance, management or the legal profession, then critical thinking is obviously important. But critical thinking skills are not restricted to a particular subject area. Being able to think well and solve problems systematically is an asset for any career.
- Critical thinking is very important in the new knowledge economy. The global knowledge economy is driven by information and technology. One has to be able to deal with changes quickly and effectively. The new economy places increasing demands on flexible intellectual skills, and the ability to analyse information and integrate diverse sources of knowledge in solving problems. Good critical thinking promotes such thinking skills, and is very important in the fast-changing workplace.



## MULTIPLE CHOICE QUESTIONS

1. **Critical thinking concerns...**
  - a. Determining the cause of our beliefs
  - b. Pinpointing the psychological basis of our beliefs
  - c. Determining the quality of our beliefs
  - d. Assessing the practical impact of our beliefs
2. **A belief is worth accepting if...**
  - a. We have good reasons to accept it
  - b. It is consistent with our needs
  - c. It has not been proven wrong
  - d. It is accepted by our peers
3. **The word critical in critical thinking refers to...**
  - a. A fault-finding attitude
  - b. Attempts to win an argument
  - c. Using careful judgment or judicious evaluation
  - d. A lack of respect for other people
4. **According to the text, critical thinking complements...**
  - a. Our prejudices
  - b. Our emotions
  - c. Peer pressure
  - d. Our unconscious desires
5. **A statement is...**
  - a. A question or exclamation
  - b. An affirmation of prior beliefs
  - c. An assertion that something is or is not the case
  - d. An assertion that is neither true nor false
6. **Statements backed by good reasons are...**
  - a. Worthy of strong acceptance
  - b. To be believed with certainty
  - c. Never false
  - d. Beyond all possible doubt
7. **The statements (reasons) given in support of another statement are called...**
  - a. An argument

- b. The conclusion
  - c. The premises
  - d. The complement
8. **Statements given in support of another statement are called.**
- a. Conclusions
  - b. Premises
  - c. Arguments
  - d. Summaries
9. **The statement that premises are intended to support is called.**
- a. A related premise
  - b. An argument
  - c. A description
  - d. The conclusion
10. **The process of reasoning from a premise or premises to a conclusion based on those premises is known as.**
- a. Extended reasoning
  - b. Subordinate premise
  - c. Dialectic
  - d. Inference

## REVIEW QUESTIONS

- 1. Focus on critical thinking.
- 2. Difference between critical thought and logic thinking.
- 3. Explain the organizing new information.
- 4. Explain the limits of teacher-directed instruction.
- 5. Focus on encourage questioning.

### *Answer to Multiple Choice Questions*

- |        |        |        |        |         |
|--------|--------|--------|--------|---------|
| 1. (c) | 2. (a) | 3. (c) | 4. (b) | 5. (c)  |
| 6. (a) | 7. (c) | 8. (b) | 9. (d) | 10. (d) |



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engage students by challenging their creativity and ability to synthesize and by asking them, in one way or another, to use what they know or have done as the basis for generating something new and original.

### Keyword

**Creativity** is a phenomenon whereby something somehow new and somehow valuable is formed.

## 5.1 TEAM CONCEPT MAPS

This SET is an example of a graphic organizer. Because a picture can be worth a thousand words, graphic organizers are powerful tools for converting complex information into meaningful displays. They can be used for many different purposes, including helping students pull background knowledge forward, assessing how well knowledge is remembered and understood, and fostering **creativity** as participants generate new ideas.

In “Team Concept Maps,” student teams draw a diagram that conveys members’ combined ideas or understanding of a complex concept, procedure, or process. This SET engages students by challenging them to synthesize and be creative as they organize their hierarchy of associations into a meaningful graphic. Diagramming words, ideas, tasks, or principles is identified by many different names, including “Word Webs,” “Mind Maps,” and “Cognitive Maps.” The name “Concept Maps” is used here because this term is used in the literature to describe a broad, inclusive approach and this SET will be most effective if teachers are creative in deciding what should be diagrammed and students are encouraged to be creative in choosing what the most appropriate graphic is.

### 5.1.1 Step-By-Step Directions

- Choose a concept, procedure, or process for students to map that is important to your course and that is rich in associations and connections.
- Brainstorm for a few minutes, writing down terms and short phrases that represent the most important components of the concept.
- Choose a graphic image that you believe best captures the relationships of the concept (for example, a spoked wheel, a flowchart, a network tree, or a fishbone) and

map the concept yourself so that you can uncover potential problems. Your own diagram can also serve as a model against which to assess group work.

- Map a parallel concept to demonstrate the process to students.
- Decide what to use as a shared writing space (for example, flip charts, large pieces of paper, the whiteboard) and bring it and colored markers or crayons to class.
- Describe and demonstrate the process to students.
- Form teams, distribute paper and markers, and present the central concept that you want students to graph.
- Have students sketch out a diagram starting with the central idea or first step in a process and adding words, phrases, or images connected by lines or arrows.

### 5.1.2 Online Implementation

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This technique is most effective when students are able to interact in the moment. Consider using a whiteboard tool during a synchronous session. The outcome can be captured as a screenshot to be uploaded onto a forum and shared with other students. If this SET will be an ongoing activity in your course, consider purchasing a software package that assists in the development of concept maps, such as Inspiration or use presentation or word-processing software that includes drawing tools. Each person adds to the diagram in different color fonts.

#### *Examples*

##### *Statics*

Professor Alec Tricity used “Team Concept Maps” to help students synthesize and demonstrate their understanding of the elements and processes of an electric charge. He explained what he wanted students to do, using an overhead projector to demonstrate the concept of an electric field as an example. He formed groups of three and provided each group with newsprint and markers. After about ten minutes, he asked each group to select a reporter who then explained its map to the whole class.

##### *History of the United States from 1877*

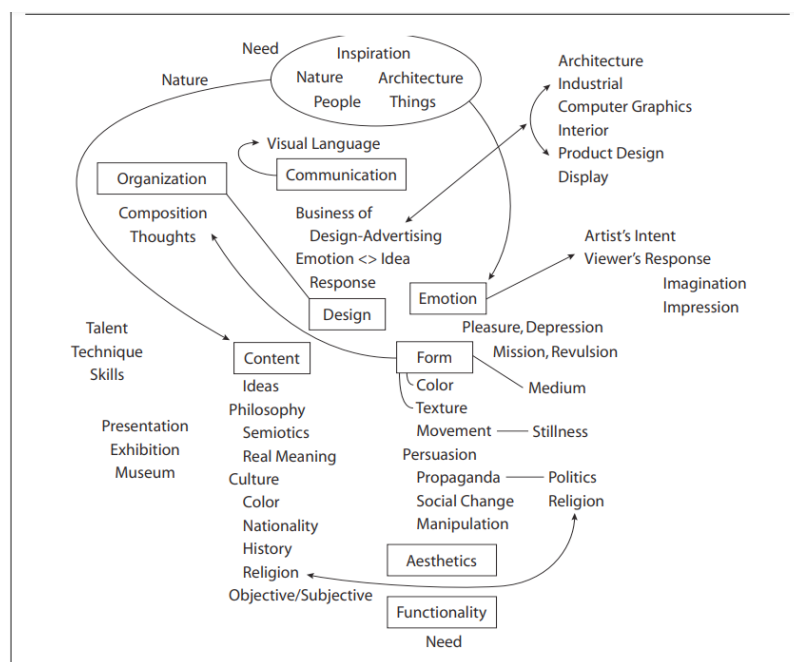
In a freshman history course, Professor Rose E. Riveter wanted students to synthesize their understanding of the complex effects of World War II on the United States. She organized the class into groups of four, and gave each group a large piece of newsprint paper and four different colored markers. Using “WW II’s effects on the continental



U.S.” as the central theme, she asked students to generate ideas and to show the relationship of their ideas in a graphic. For example, students in one group identified women, education, and the economy as core ideas, with each student who had the idea writing it on the paper with his or her marker. The next step was to identify and graph details and supporting elements. Under *Economy*, students mentioned that World War II provided many jobs in defense, boosted American markets, and brought the United States out of the depression. Again using their markers in different colors, students were able to demonstrate relationships (for example, that jobs in defense offered opportunities for women). The groups turned in their “Team Concept Maps” to Professor Riveter for evaluation, and because students used different colored markers, Professor Riveter could assign individual participation grades.

### Basic Two-Dimensional Design

This course introduces students to basic design concepts and their application. Professor Pat Tern Uses “Team Concept Maps” throughout the class to help students analyze and synthesize ideas and represent them visually. As the term progresses and students become more adept at diagramming, she encourages them to enhance the graphic by choosing various shapes, lines, images, and values and arranging them to create a unified visual statement. Figure 1 is a copy of a “Team Concept Map” a group of students created the first day of class in response to her prompt “What is design?”.

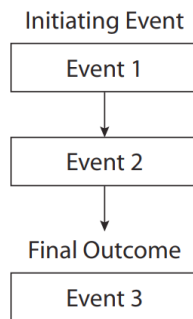


**Figure 1.** Example of a Team Concept Map.



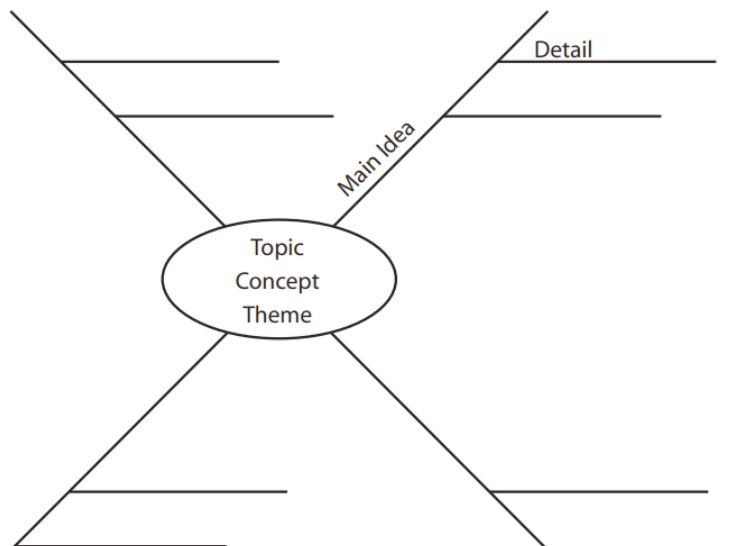
### 5.1.3 Variations and Extensions

- Use different kinds of graphics to represent different relationships. For example, graphs may resemble a spoked wheel with the central idea at the hub, or a solar system with the stimulus in the sun's position, or a geographical map. There are many models for organizing information.
  - The “Series of Events Chain” in Figure 2 is useful for describing the stages of an event.



**Figure 2.** Series of Events Chain.

- The “Spider Map” in Figure 3 demonstrates a more layered approach to charting ideas related to a central concept.



**Figure 3.** Spider Map.

- Additional ideas include “Network Tree” (Figure 4) to organize a hierarchical set of information and “Fishbone Map” (Figure 5) for non-redundant cause-effect relationships.
- Instead of having students generate the list of ideas constituting the components of a concept, provide them with a list and ask them to graph out the relationships between the items, adding any new ideas.

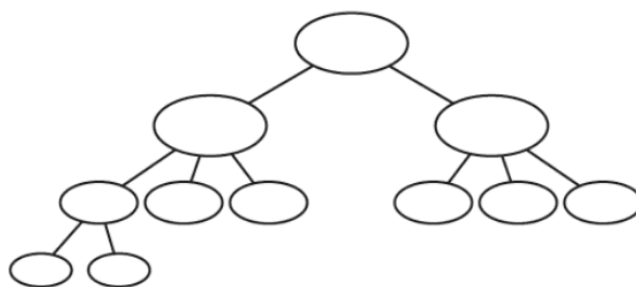


Figure 4. Network Tree.

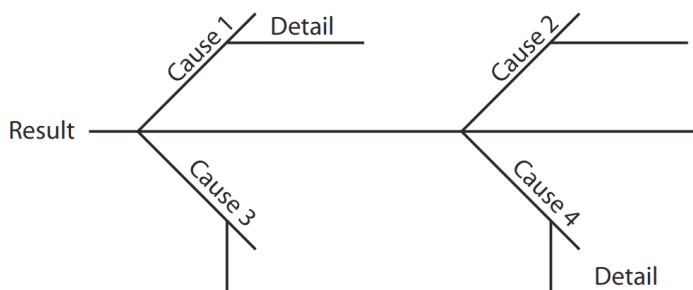


Figure 5. Fishbone Map

### 5.1.4 Observations and Advice

Angelo and Cross offer the following considerations regarding use of concept maps.

- Asking students to create concept maps helps educators and students pay attention to the schemata—or conceptual networks—that we use to organize what we learn.
- Because concept maps organize information graphically, this activity appeals to students with strong visual learning skills. Conversely, students with well-developed verbal skills and weaker visual skills may find this activity frustrating and believe that it is a waste of time.

- Although some students may find it difficult to generate ideas or distinguish between levels of ideas, it may be even more difficult for them to identify relationships. Therefore, take sufficient time to introduce this activity so that you can demonstrate the process and clarify your expectations.
- Comparing groups' concept maps can be difficult unless you limit items to a closed list of terms or phrases. Although comparisons will be easier, this limitation diminishes student creativity, breadth, and depth.

See Nilson (2007) for an insightful discussion on the benefits of graphics for learning. She also explicates the features that distinguish concept maps from mind maps.

How you close this activity depends upon your purpose for having students construct the concept map. Teachers often use this activity to prepare students for a second, more extensive activity. For example, you may want teams to create concept maps to generate and organize their ideas for the teaching stage in a jigsaw activity or to create a topic overview for a "role play". Or you may want to use the concept maps as the basis for a whole-class discussion, asking team spokespeople to show and explain the ideas and associations in their group's concept map. Another option is to have teams submit their concept maps to you for evaluation. If each student on a team uses a different colored marker, it is possible to assess individual participation.

## 5.2 VARIATIONS

"Variations" challenges students' creativity as they imagine and evaluate alternatives to a given stimulus in order to build something new.

Students create an altered version of the original, such as rewriting the ending of a story, imagining the consequences of a changed event in history, composing a different conclusion to a famous musical composition, or using an iconic art image as the basis for a new work of art.

### Did You Know?

Studies of language variation and its correlation with sociological categories, such as William Labov's 1963 paper "The social motivation of a sound change," led to the foundation of sociolinguistics as a subfield of linguistics.



### 5.2.1 Step-By-Step Directions

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- Select the item you wish to use as the stimulus or starting point for this activity.
- Reflect upon the stimulus yourself and brainstorm ideas for how you might create the variation, noting your thought processes as well as any problems you encounter.
- Use your experiment in #2 as the basis for writing assignment directions.
- Explain the activity to students, perhaps using your experiment as an illustration, and answering any questions.
- Students create and submit their projects.

### 5.2.2 Examples

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#### *Music Theory and Composition*

As one of the final projects in the theory and composition course sequence, Professor Harmon I. Zashun chose “Variations” to challenge his students to synthesize their understanding of historical style principles. He selected a well-known folk song melody and asked students to arrange it as a short keyboard piece in the style of any one of the following composers: Bach, Mozart, Beethoven, Chopin, Debussy, Bartok, or Ives.

#### *Christian Thought and Church History*

Professor Zeke N. Yeshallfind wanted students to understand more deeply the significance of theological differences in the Christian church.



*For the Reformation, he asked students, “What do you think would have happened had Martin Luther not been excommunicated as a heretic?” He believed that by challenging students to look at the events from this imagined perspective, they developed greater appreciation and understanding of the importance of these critical incidents.*

He selected several defining moments in the two-thousand-year history of the Christian church (for example, the Council of Nicaea, the coronation of Charlemagne, the schism between East and West, and the Reformation) and used these as a topical framework of entry points into the context for theological differences. After they had studied the issues and events surrounding each defining moment, he organized students into groups of five and had each group imagine what would have happened had these events occurred differently.

### 5.2.3 Online Implementation

This SET is easily implemented online as an assignment. If the assigned variation involves something other than text (such as a three-dimensional model), students can hand deliver or mail their projects or upload filmed or photographed images of their work.

### 5.2.4 Variations and Extensions

- Students can do this project in pairs or in small groups.
- Instead of a single variation, use the concept of “theme and variations,” in which students create multiple versions altering different components. For example in music, in which theme and variations is a well-established compositional form, one variation might be to change the harmony from major to minor mode, another variation might change the rhythmic organization, and a third variation might change the texture from homophonic to polyphonic.
- Have students share their variations with each other as a presentation during class, uploaded to a Web site, or a class book or in a poster or exhibit.
- Instead of creating a variation, students can look at a stimulus from varied perspectives. For example in a process called “Cubing”, students respond to a topic from six different directions (analogous to the six sides of a cube):
  - Describe it.
  - Compare it.

#### Keyword

**Assignment** is a legal term used in the context of the law of contract and of property.

- Associate it.
- Analyze it.
- Apply it.
- Argue for and against it.

### 5.2.5 Observations and Advice

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Students who feel that they are not creative may resist this **assignment**. Explain that creativity requires taking a risk, and that ideas will flow more freely if they quiet their internal judgmental voice.

Use brainstorming techniques to help students generate ideas for variation.

Consider providing students with additional support by encouraging them to work with a partner or by scaffolding this technique and breaking the process down into manageable parts.

## 5.3 LETTERS

Students assume the identity of an important or famous person in the discipline and write a letter explaining their thoughts on an issue, theory, or controversy to another important or famous person who holds a different perspective. The letter can be to a contemporary or it can be an imaginative juxtaposition between people of different eras.

This SET requires students to draw from their knowledge of the ideas and historical/social context of both people and to capture the essence of the personality and opinions of the person whose identity they are assuming. It is a challenging activity that can help develop students' ability to draw inferences from or conclusions about material they are studying and then synthesize and present their insights in an interesting and creative manner.

### 5.3.1 Step-By-Step Directions

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- Select an issue, theory, decision, or set of beliefs in your discipline that represents a "big idea" and is important to your course.
- Identify two famous people associated with different perspectives and jot down the defining characteristics that distinguish each person's views.
- Choose one of the personalities and write a letter expressing his or her viewpoint, starting the letter with a brief summary of the addressee's perspective or ideas. Although this is not a required step, writing your own letter can help you uncover unexpected problems or challenges with the assignment and provide



a model for assessing your students' letters.

- Create a handout that includes directions and assessment and evaluation criteria.
- Distribute the handout and explain the assignment, allowing time for questions.

### 5.3.2 Examples

#### *Honors Institute Seminar in Science*

In this course designed for students who had demonstrated strong academic motivation and ability in the sciences, Professor Al Kali wanted to incorporate an assignment that would be fun, interesting, and challenge students' higher-order thinking skills. He asked students to choose two scientists from any of the science disciplines who had different theories or viewpoints and write a letter assuming the perspective of one of the scientists. As an example, he assumed the identity of Jean-Baptiste Lamarck and wrote a letter to Charles Darwin arguing his theories of transmutation within a generation to oppose Darwin's theory of **gradualism**. When students had completed the assignment, he formed them into small groups and asked each individual to bring sufficient copies of their letter to distribute to each group member. Students took turns reading their letter to the group, explaining the thinking and research underlying their letter, and answering group members' questions regarding the represented scientists' views.

#### Keyword

**Gradualism** is a hypothesis, a theory or a tenet assuming that change comes about gradually or that variation is gradual in nature and happens over time as opposed to in large steps.

#### *History of Constitutional Law*

To help students internalize and personalize the controversies underlying the development of constitutional law, this professor formed students into pairs and asked them to research and choose a famous or historically significant court decision about constitutional law that had not already been covered in class. Student As were to write a letter to the editor of a national news magazine such as *Time* or *Newsweek* that represented the plaintiff's perspective, and Student Bs were assigned to write a letter representing the defendant's perspective. When both letters were written, the professor formed groups of 8–10 students and had pairs take turns reading their letters to the group, followed



by a brief Q & A period in which group members were encouraged to make comments or ask questions. Each group was asked to vote for the set of letters they found most interesting and persuasive, and then the authoring dyads were asked to read these to the whole class. She found that the activity challenged students to investigate and think about the historical cases in an engaging, novel way and that reading the letters in groups and to the whole class exposed students to the ideas underlying important constitutional law cases in a memorable manner.

### 5.3.3 Online Implementation

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Consider using the collaborative variation and form student pairs, with one student assigned to writing the original letter and the other writing the response. Set a deadline for Student As to send the original letter to their partner as an e-mail attachment, and set a subsequent deadline for Student Bs to send the response. The letters can be submitted to the instructor for assessment and evaluation.

### 5.3.4 Variations and Extensions

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- Divide the class in half and form students into pairs. Have one student assume one identity and write the original letter and the second student assume the second identity and write a response.
- Instead of a letter, have students invent a dialogue between two people. Students create the dialogues by selecting and weaving together actual quotes from primary sources, or by inventing reasonable quotes given the student's knowledge and understanding of the speakers and con-text. Angelo and Cross (1993) offer several examples of dialogues. To illustrate contemporary but opposing perspectives, they suggest a dialogue between an abolitionist and a slaveholder in the United States in 1855. To illustrate a dialogue between people of different eras, they suggest a conversation between Alexander, Caesar, and Napoleon on the leadership skills required to conquer an empire and those needed to maintain one.

### 5.3.5 Observations and Advice

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This activity helps teachers assess students' understanding of the fundamental differences between different theories, historical epochs, genres, and so forth. It can be motivating because it gives students the opportunity to be creative. On the other hand, because it requires high-order thinking skills, it may be overwhelming and frustrating to students who do not feel creative or do not yet understand the material deeply enough to write a convincing and interesting letter.

## 5.4 ROLE PLAY

Students apply course concepts as they assume fictional identities or envision themselves in unfamiliar situations.

“Role Play” is a creative, participatory activity that provides the structure for students to experience the emotional and intellectual responses of an assumed identity or imagined circumstance. The word *role* indicates that students actively apply knowledge, skills, and understanding to successfully speak and act from an assigned perspective. The term *play* indicates that students use their **imagination**s and have fun, acting out their parts in a nonthreatening environment.

### Keyword

**Imagination** is the ability to produce and simulate novel objects, sensations, and ideas in the mind without any immediate input of the senses.

### 5.4.1 Step-By-Step Directions

- It is critical to spend thoughtful time designing the scenario for your role play. Appropriate scenarios require interaction from stakeholders with multiple perspectives. Therefore, identify the perspectives and define the type and number of characters and the framework for their actions.
- In addition to the roles for the scenario, you may also want to assign group-process roles such as Moderator (who can, for example, intervene if a person falls out of character) and Observer (who interprets and comments on the action).
- As you craft the basic story line, it is best to initiate the action through a critical event that the players must respond to, such as a comment by one of the actors or an incident that has just occurred.
- Identify resources (if any) for each of the play’s roles, and decide how the activity will end. For example, will you set a time limit, or will you let the scenario end naturally?
- Ask students to form groups with enough members in each group to assume each stakeholder role.
- Present the scenario and allow time for discussion of the problem situation. It is important to allow sufficient time for students to ask questions on any aspects of the scenario that are unclear.



**Remember**

The role play should run only until the proposed behavior is clear, the targeted characteristic has been developed, or the skill has been practiced.

- Assign or ask students to assume a stakeholder role. If you have decided to assign group-process roles such as Moderator and Observers, make sure students are clear on their tasks.
- Inform students of the time limit or other parameters that will signify the end of the activity.
- Follow the role play with a discussion within the small groups or with the whole class, or both. Discussion should focus on the students' inter-pretations of the roles and the motivations for and consequences of their actions.

### 5.4.2 Online Implementation

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Chat sessions or Virtual Reality Environments (VREs) offer frameworks for implementing role-playing online. Chat sessions occur in real time, whereas VREs offer the option of either synchronous or asynchronous interaction. Because teachers can provide students with the option of assuming roles anonymously, the self-consciousness that sometimes accompanies face-to-face role play is eliminated. If this SET fits well with your teaching goals, investigate the considerable number of software products that have been developed for designing and delivering online role plays. To find them, conduct a search online starting with simple keywords such as "role play" + "teaching." Or consult the technology advisors for teaching on your campus.

### 5.4.3 Examples

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#### *Psychology of Prejudice*

The purpose of this course is to help students understand the complex psycho-logical patterns that develop among different majority and non-majority groups as a result of the effects of overt and covert discrimination. In order to increase his students' awareness of the nature of prejudiced interactions as well as to help them identify appropriate ways to respond, this professor uses "Role-Play" frequently in his class. He typically organizes his students into groups of three and assigns group members one of three roles: Prejudiced Speaker, Responder, or Social Observer. Throughout the academic term, he crafts a variety



of simulated situations and creates characters representing different perspectives (for example, ethnic, racial, gender, socioeconomic background, physical disability). One situation is a business-meeting scenario in which the Prejudiced Speaker is a manager who makes an offending racist remark, the Responder is a subordinate representing the targeted race and must determine an appropriate response, and the Social Observer describes his or her feelings when watching the scene. At the end of the activity, the students share their reactions first with their group and then with the whole class, critiquing the response and the reaction. The class then participates in a post-exercise discussion that focuses on a range of topics that emerged from the exchange.

### *Oral Communication Skills I*

Professor Ann Glishlerner knew that many of the students in her beginning ESL class were extremely self-conscious about speaking up. As nonnative speakers, they came from many countries around the world and feared that they would make mistakes and that other students would not understand them. Yet it was essential that they practice extensively in order to develop vocabulary, grammatical accuracy, and clear pronunciation. Professor Glishlerner discovered that if she asked students to pretend they were someone else, it reduced some of their anxiety. Furthermore, if the scenario was based on an everyday situation, it motivated them because they immediately saw the usefulness of the exercise. She created scenarios such as ordering dinner at a restaurant or asking for directions to the main campus library that emphasized everyday English. She then formed small groups so that students had more opportunities to practice speaking and so that the context would be less threatening than speaking before the whole class.

### *History of the Vietnam War*

In this hybrid class on the Vietnam War, the professor believed it was important to use classroom time for lecture, but he also wanted his students to understand the war's complexity and to be able to empathize with the viewpoints of the war's various stakeholders. This goal was particularly important to him since he knew that his class attracted many students who had had personal experience with the war. His students included Vietnam vets, immigrant students from Vietnam, returning adult students who had actively protested the war, and parents whose children had died or been injured in the war. Thus many of his students came into the course with strong feelings and beliefs about the war's issues. He worked with his institution's technology department to establish a Virtual Reality Environment for his class and then created scenarios that correlated with his lecture topics. Rather than establishing individual roles, he developed generic role categories, such as American Soldier and South Vietnamese Villager. Each student selected a role and then adopted an appropriate name. He retained for himself the role of Moderator so that he could intervene if exchanges become too emotional or



inappropriate. He provided students with the option of entering the VRE anonymously, but if they wished to earn participation credit, they messaged him privately with the moniker they had assumed in the role play. At regular, scheduled intervals throughout the term, he devoted class time to discussion of the themes that emerged.

### *Management Practices*

A professor teaching an online course decided to use a role play to teach concepts and content. He formed six groups with four students each, with each group representing a company and with each student assuming one of the following roles: CEO, Financial Officer, Operations Chief, or Marketing Executive. The companies competed against each other for three phases of the companies' life cycles (start-up, growth, and independence). The game simulated nine years during nine weeks of the course. For each year the students in each company established crucial input data, such as prices, advertising, purchase, production, and size of sales force. The instructor collected data and compiled them for the game, creating output data for each company that consisted of units sold, back orders, market share, operating income, income tax, net income, and so forth. The professor evaluated the companies based on results after nine years. Each company met in regular conference, during which the employees discussed data. In another conference called "Managers' Corner," the students participated in management-related discussions.

#### **5.4.4 Variations and Extensions**

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- Allow students to help determine the scenario, identify the major stakeholders, and create the roles.
- Give students time to practice and then have student groups perform the role play in front of the class. Or instead of having multiple groups participating in multiple role plays, have one group role-play in front of the rest of the class. Assign Observers specific tasks for interpreting the action and dialogue of the role play.
- After the initial performance is finished, re-enact the role play, changing characters or redefining the scenario.
- Combine this activity with a "Fish Bowl," by having one group perform the role play while another group watches, and then have the groups trade places.
- Especially in VREs, consider creating roles for students to manipulate the environment. For example, a Manipulative Devil sets up obstacles and creates challenges for the characters, or an Improvising Storyteller creates extensions to the scenario adapting to unforeseen twists in the action. The Australian University Teaching Committee's "Learning Designs" Web site describes these and other roles as well as aspects of effective online role play design.



### 5.4.5 Observations and Advice

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Spend sufficient time before the activity to ensure that students understand the purpose of the role play. If they don't understand your learning goals, students may get off track or the role play may fall flat and seem artificial.

Students must also understand the nature and character of the roles they are assuming. If they know who they are, then they will be more effective in the role. If the role is a complicated one, then they may need time to reflect or conduct research prior to enacting their role.

Although many students will be drawn to this SET with enthusiasm, others will feel self-conscious and uncomfortable about assuming a role. They may resist this activity, protesting that it seems silly. To reduce their dis-comfort, take care to create a nonthreatening environment and consider preparing students earlier in the term with icebreaker activities. Also, reassure students that although acting is important, you are not trying to develop acting ability but rather to achieve specific learning goals. Finally, consider allowing these students to assume Observer roles.

The closure stage of this activity is very important. Take time to debrief on the lessons learned through the experience. Don't expect students to develop deep understanding of human situations after a limited exposure in a single role play. Help students relate the role play to their own lives.

The real value of "Role Play" occurs when students form general opinions about course concepts that they developed and internalized as a consequence of assuming a new identity or acting in a new situation.

This SET can be effective, but as with any teaching strategy, be careful not to use it excessively. If it is overused, it can become tedious and feel artificial or silly.

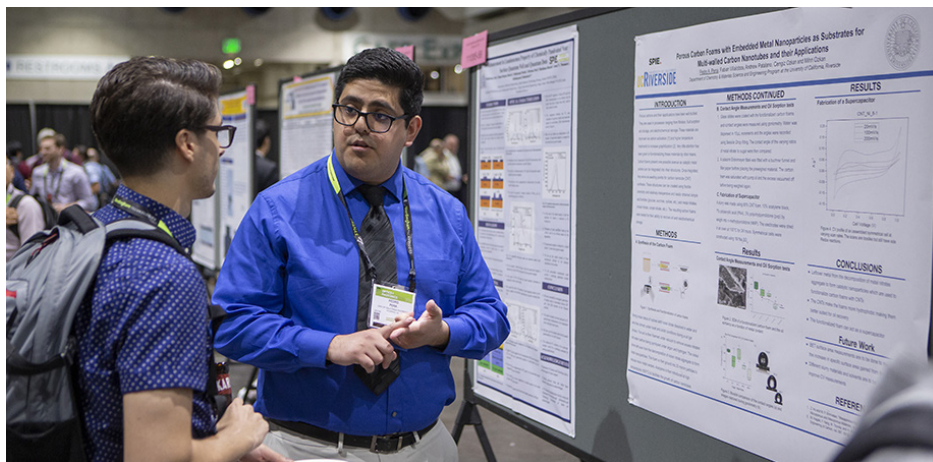
To assess or grade "Role Play," consider videotaping the role plays or having students create their own videotape. Groups can view the videotape and discuss the specific problems or general principles revealed in the tapes, perhaps summarizing and synthesizing their observations into an essay.

## 5.5 POSTER SESSIONS

Students create posters or exhibits that illustrate their understanding of key course topics, issues, or ideas. On presentation day, the class divides and half the students walk around and view displays while others stay with their display to explain and answer questions.



This SET engages students on multiple levels. Students must (1) do an initial activity (such as constructing a model, researching a topic, or analyzing an issue) well enough to produce something to exhibit; (2) be creative as they generate possible ways to represent and display their idea or product; (3) evaluate possibilities and choose their best display design; (4) devise a workable implementation plan; (5) carry out their plan and construct the poster or exhibit; and (6) reflect upon what they learned so that they are able to summarize, synthesize, and share their learning with others on presentation day. In addition, “Poster Sessions” provides teachers and students with an alternative to conventional written reports, thus meeting the needs of a wider range of learners. Finally, this activity can help students deepen their knowledge and understanding as they view and discuss the exhibits of their peers.



### 5.5.1 Step-By-Step Directions

- Determine topic, content and design parameters, and how exhibits will be displayed.

- Choose the exhibit day (or days). If projects are complex, consider working backward to schedule check points and creating a rubric to guide students in their thinking and to use to submit a plan to you.
- Create a handout that includes directions as well as evaluation criteria.
- Have students brainstorm potential topics that fit within your parameters and generate a prioritized list of two or three ideas that they submit to you. (Having students present multiple ideas allows you to review all topics, ensure that topics support class learning goals, and prevent duplication.)
- Review the lists and work with students to select the topics.
- Discuss design parameters and exhibit day logistics with students.
- Give students time to organize their efforts and (if appropriate) prepare a prospectus in which they will formulate their core idea, identify goals and the resources they will need, and create a schedule for completion of the tasks.
- Prepare for exhibit day by organizing a display schedule that allows at least half of the students to view the exhibits while the other half remains with the display to explain and answer questions. Allow for sufficient time for students to then switch roles.

## 5.5.2 Examples

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### *Advanced Ceramics*

This class enrolled students with a wide range of skills. Professor Sarah McGlaire wanted students to practice articulating their artistic visions verbally and to learn creative ideas and technical solutions from each other regarding glazing and hand-built, wheel-thrown, and combination forms. At regular intervals through-out the term, she used the “Poster Session” strategy and had students select two or three works that they felt represented both their successful and unsuccessful attempts to grapple with artistic or technical challenges and share these with their peers.

### *Introduction to Physics*

To help students gain a deeper understanding of the principles of gravitation, Professor Moe Shunenforse formed students into teams of five to design and build a “hot-air balloon” out of flat pieces of tissue paper. To share results, students were asked to create an exhibit that included the following components:

- **Design:** All equations and data used for calculating balloon size, including the formulas used for volume and surface area, the data students collected about different types of materials, estimates about size and mass, “slop” factors,

additional load parameters, and so forth **Construction:** The steps used to construct the sphere, including an initial prototype model

- **Test and analysis:** Atmospheric data measured on launch day, predictions of flight from the buoyancy equation and gas laws, final temperatures (inside and outside the balloon), and a report of what happened at the launch, including why it worked if it worked, and what might have happened if it did not work

Students were encouraged to include photographs, graphs, preliminary models, video clips, and any other information they believed would best communicate what they had learned to their fellow students. On exhibit day, each team was given space for their exhibit and asked to determine a schedule that would allow them to take turns walking among exhibits or remaining with the exhibit to serve as spokesperson. Spokespeople were instructed to be prepared to reflect on whether the team felt the design was a good one and why or why not, what things they would do differently to improve the design, and so forth.

### *Music of Multicultural America*

In this online class, the professor wanted her students to be able to recognize the influence of historical genres such as blues, jazz, Cajun, and gospel on the popular music to which they listened. She also wanted students to understand how their favorite musician's individual style had been shaped by the social, historical, racial, and ethnic context in which the musician had grown up. Students were asked to choose a musician and then design and construct a Web page "portrait" that would be part of the course's online "Portrait Gallery." The Web page was to contain the following components:

- **Visual representation:** A visual identity such as a copyright-free photo or a student drawing
- **Personal significance:** A serious, fresh, substantive but concise explanation of why the student chose this musician and why this musician is (or will be) important for others to know about
- **Biography:** A narrative section that addresses the social/historical context in which the musician grew up, musician-specific information including ethnic/racial roots, the styles and artists that had influenced the musician, and the musician's influence on subsequent artists
- **Discography:** An annotated list of recordings
- **Music examples:** Three representative listening excerpts converted for delivery on the Internet
- **Critical commentary:** An analysis of listening examples for structural components (rhythm, melody, harmony, and so forth), genre and/or genre influences (blues, jazz, gospel, folk, and so forth), and ethnic influences (Latin clave rhythms,

African melodic ornamentation, and so forth). If the selection is a song with lyrics, inclusion of the lyrics and the student's interpretation of the lyrics.

- **For more information:** 3–5 Web sites that provide additional information either on the artist, genre, or historical and social context
- **Bibliography:** A list of books, articles, and Web sites consulted

She found that the project motivated students, provided a framework for bringing together several aspects of the course, and made a significant contribution to the learning repository for the class because the “Portrait Gallery” was cumulative, with new artists added each term.

### 5.5.3 Online Implementation

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Have students create a Web page as their presentation medium. The Web page can contain text, images, or video and links to other sites. How you display the multiple Web pages will depend upon your course-delivery software and may range from students' posting the URL for their page along with an explanation on a threaded discussion to sophisticated pro-grams that allow for multimedia streaming with mechanisms for viewers to submit comments.

### 5.5.4 Variations and Extensions

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Make this a collaborative activity by forming teams to create exhibits. Give teams time to organize their efforts such as preparing a prospectus in which they formulate their research questions, identify goals and the resources they will need to carry out their investigation, choose their methods of investigation, and divide up and assign the tasks. On exhibit day, at least one student can stand by the exhibit and answer questions as other students walk around and view the exhibits of their peers.

### 5.5.5 Observations and Advice

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“Poster Session” is a presentation strategy, with two characteristics distinguishing it from the typical manner in which students present to the class. First, students display their work simultaneously (which is more efficient than a series of presentations), and second, during the viewing and exhibiting, students interact informally in small groups to discuss the exhibits. This can be less intimidating and may result in more candid, individually relevant discussion than would be generated in a formal presentation with Q & A involving the whole class along with the teacher.

Although elaborate science fair exhibits with the attendant organizational issues may come to mind, “Poster Sessions” can be implemented very simply, with 3-D material displayed on a designated subset of desks and 2-D material tacked or taped to the walls



**Keyword**

**Media** are the communication outlets or tools used to store and deliver information or data.

at locations around the room. Dis-played items vary based on course content and instructional goals, but they might include written documents (such as letters, content summaries, quotes), visual documents (charts, photographs, art reproductions), objects (models, cultural artifacts, biological specimens), and **media** (audio and film recordings).

## 5.6 CLASS BOOK

Toward the end of a course, individual students submit an essay assignment that they believe represents their highest quality work. Submissions are collected and bound together as a “Class Book” that will be available to future students in the same course. This SET offers an opportunity for students to create a record of their cumulative course experience, motivates students to strive for personal excellence, and provides students in subsequent classes with models of quality work done by their peers.

### 5.6.1 Step-By-Step Directions

- Choose what kinds of assignments will be used in the class book and develop guidelines or rules for submission that specify content, format, and quality expectations.
- Decide on the scope and quality of the final product (for example, simple stapled copies or a more elaborate, bound document using desktop publishing software) and whether you will produce it yourself or assign production to students.
- Determine a production schedule that is late enough in the term so that students have a reasonable number of assignments from which to choose their best work, yet also allows sufficient time to produce the class book.

### 5.6.2 Example

#### *Composition, Critical Reading, and Thinking*

This course provides students with techniques and practice in expository and argumentative writing based on critical reading and thinking about nonfiction texts. Professor S. A.



Rider incorporates collaborative activities extensively in order to help students at this commuter college feel part of a community and because he believes it is the best pedagogical approach for his learning goals. To motivate and challenge students to do their personal best, Professor Rider informs students on the first day of the term that two weeks before the semester ends, they will select what they consider to be their best essay for publication in a class compilation called *Showcase*. He explains that *Showcase* will provide them with a keepsake to remind them of their course experience, and it will give future students models of exemplary work. He asks for volunteers to serve on the production committee who, for extra credit, will be responsible for organizing, editing, and printing the compilation.

Although the first time he implemented the assignment the students produced a simple, spiral-bound document, subsequent classes were motivated to outshine the previous classes and used desktop publishing software to produce high-quality, hard-covered editions that included a preface and photographs with short bios of the students. The cumulative *Showcase* editions are displayed in the English department office.

### 5.6.3 Online Implementation

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There are many ways to implement this SET in an online course. One of the simplest ways is to have students submit their assignments as portable document files (PDFs) and create a list of links on a Web page or forum. A more sophisticated approach would be to create an online magazine, some-times referred to as a zine, ezine, webzine, or cyberzine. There are several software packages that streamline the production process for online magazines, and they can be located by using a simple search with words such as “ezine publishing.”

### 5.6.4 Variations and Extensions

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- Ask students to volunteer or vote on a group of in-class peers to serve as an editorial board responsible for vetting what goes into the class book.
- Have students develop a class memoir that is included as the preface or introduction to the book. This memoir can encourage students to reflect on their learning experiences, build class community, and offer advice to subsequent students on how to learn the most and be successful in the course.
- Instead of a hard-copy class book, create a Web-based magazine, with each class creating the next edition of the online publication.
- This SET is well-suited to courses in the visual and performing arts, with students submitting film clips, images, or music compositions that are compiled on a class CD or DVD.

- In addition to selecting and submitting the assignment, ask students to write a few paragraphs that comment or explain the submission (for example, why they feel it was their best work, the challenges they faced and overcame as they created the work, or analysis and interpretation of the work).
- Have students create individual portfolios out of which they select their best work for the course portfolio.

### 5.6.5 Observations and Advice

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Emphasize that intellectual quality is the criterion for inclusion in the book and that the goal is to produce a book of high-quality work, not just a pretty book.

Students may get too focused on the production of the class book, losing sight of the basic goal of doing excellent work on all their assignments and using evaluation skills to choose their best individual assignment.

## 5.7 WEBQUESTS

Student teams participate in an inquiry-oriented activity in which most or all of the information is drawn from the Internet. Using primarily instructor-specified Web sites, team members investigate an open-ended question and participate in a highly structured group process that aims to help them synthesize and apply their understanding to a task that replicates real-world challenges.

“WebQuests” helps students learn to use the Web for research in ways that encourage analysis and judgment rather than simply copying or summarizing information. Because the task is authentic—a scaled-down version of things adults do as citizens or workers—“WebQuests” creates a bridge between what is learned in the classroom and the world outside of the classroom, demonstrating how and why classroom-based knowledge is important.

### 5.7.1 Step-By-Step Directions

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- Decide on a topic that connects course material to current events or select an area that is inadequately covered in available texts.
- Design a task that utilizes Web information to achieve a specified goal. Dodge and March’s WebQuest Design Patterns page (<http://webquest.sdsu.edu/designpatterns/all.htm>) describes dozens of categories of tasks.
- For example, in the category “Analyzing for Bias,” students analyze sources of information for bias and use their analysis to articulate a point of view and demonstrate its impact. An example of a topic is “Botox: Effects, Risks, and Truths.”

- In the category “Time Capsule,” students investigate, evaluate, and select a number of artifacts that capture the essence of a particular period of history. An example of a topic is “The Rise of the Civil Rights Movement in the 1950s: The Contradiction between American Idealism and Racism.”
- Identify the roles students will assume and the steps they’ll follow to complete the activity.
- Identify the online resources available on the topic by brainstorming a list of related words and using the list to search for relevant sites. As you search, create a list of current, accurate, engaging, and task-appropriate sites that can be used to guide students in their inquiry. San Diego State University’s WebQuest page Four Nets for Better Searching provides strategies for searching for such sites (<http://webquest.sdsu.edu/searching/fournets.htm>).
- Develop a comprehensive grading rubric that specifies how each component of the WebQuest will be evaluated. San Diego State University’s WebQuest portal provides rubrics that can be used to assess the pedagogical soundness of the assignment as well as student performance (<http://webquest.sdsu.edu/webquestrubric.html>).
- Create a Web page or hard-copy document that provides assignment details.

### 5.7.2 Examples

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#### *Organic Chemistry*

One of the aims of the chemistry program at this university is to provide opportunities for scientific study and creativity within global contexts that will stimulate and challenge students. To help achieve this goal in an organic chemistry course, Fiona Clark, a chemistry professor at International Baccalaureate World School, created a WebQuest titled “Organic Chemistry in the News.”

She gives students a memo (supposedly) written by the editor-in-chief of the local newspaper, in which he tells students that he is being bombarded with questions regarding four topics that have recently been in the news: a proposed pipeline for carrying natural gas, trihalomethanes (THMs) in the local water supply, chemical warfare, and the use of various man-made organic chemicals. He informs students that the paper’s science editor is out of town on another project and the newspaper needs credible local experts to investigate the topics. He asks students to research the topics and write an editorial that he can publish by a specified date. He also explains that in order to satisfy the local scientific community, he needs students to prepare a laboratory experiment that could be used to test their findings. The professor assigns students to groups that will focus on one of the four topics. First, they are asked as individuals to divide a piece of paper into two columns and write everything they

already know about the topic in Column A, and what they think they still need to learn in Column B. They then discuss what they wrote with their group and select a role such as Reporter/ Editor, Lab Technician, and Graphic Designer. Each group is given a list of 6–8 Web sites to begin their investigation. The results of their investigation are summarized in an essay written as a newspaper editorial.

### *Advanced Spanish*

This is an adaptation of a WebQuest titled “Cuba en Crisis” developed by Chris-ten Savage and Daniel Woolsey (n.d.) for advanced Spanish students. Students are organized into teams of five and presented with the following fictional scenario based on the death of Fidel Castro and the assassination of Raúl Castro:

With the recent deaths of both Fidel and Raúl Castro, Cuba is in crisis. A prominent news magazine wants to run a special edition on Cuba and take an in-depth look at the current situation. This will involve researching not only the present, but also the history of Cuba and why the nation is in this predicament. Your team of reporters is assigned to the story and requested to make a prediction about Cuba’s future based on your findings.

Students are given one week to gather information and one week to organize their findings. They then give a final group presentation that includes data as well as a prediction as to what will happen next in Cuba. Following is a step-by-step process:

- **Class discussion:** As a whole class, students read and discuss articles in Spanish that provide contrasting views on the two Castro regimes.
- **Individual expert:** Students are organized into teams of five. Each team member is responsible for one of the following five areas: history, politics, economy, human rights, and public opinion.
- **Research:** Team members choose from a list of Web sites provided by the instructor for each expertise area as well as general Web sites and additional video/audio resources (such as tapes of Castro’s speeches). Students are required to read a minimum of three articles, with only one in English.
- **Individual paper:** Each student writes a summary of his or her research and provides this to other group members and to the instructor.
- **Group discussion:** Groups reconvene and use their summary papers as the basis for discussing and coming to a conclusion regarding the future of Cuba.
- **Group presentation:** Each group presents their findings to the whole class. Presentations are oral and in Spanish, but may take the form of computer presentation slides, a creative skit, a news report, a Web magazine, a documentary, and so forth. Each student takes on a specific role for the

presentation. Roles include Group Summarizer, Issues Reporter (Pros), Issues Reporter (Cons), Artistic Director, and Materials Expert.

- **Reflection paper:** Students individually write a paper reflecting on the way in which their opinion has or has not changed since the beginning of the activity. The paper also includes a self-assessment on their personal contribution to the information-gathering process, group discussion, and class presentation.

Students are provided with a comprehensive grading rubric that specifies how each component of the WebQuest will be evaluated.

### Remember

Groups must prepare and provide a handout for the rest of the students.

## 5.7.3 Online Implementation

To be successful with online students, WebQuests must be highly structured. Form groups and assign each group its own threaded discussion area so that members can communicate aspects of the investigation privately. Break the process into its various parts and outline tasks so that students are clear on their responsibilities. Establish a time frame with clear deadlines. Have final text reports or Web pages posted in a public forum for all members of the class to view. For closure, consider creating an assignment that requires all students to view the various reports and, for example, to answer specific content questions or compare and evaluate the investigation results.

## 5.7.4 Variations and Extensions

WebQuests are complex, highly scaffolded activities. Teachers can simplify any of the components to make them less elaborate. For example, rather than making the WebQuest a group project in which group members adopt different roles, Deanya Lattimore, a professor at Syracuse University, has individual students look at information through different “frames.” The WebQuest she designed is called “Literacy and the Person,” and students look at what it means to be “a person” from the perspectives of metaphysics, anthropology, psychology, sociology, and philosophy as preparation for an essay.



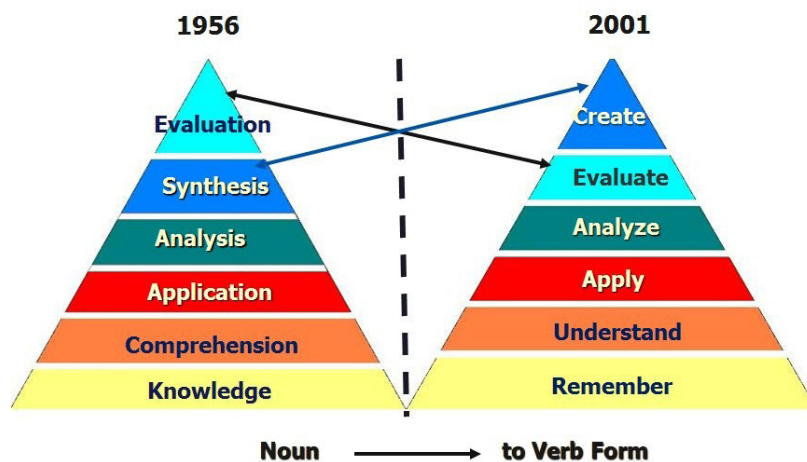
### 5.7.5 Observations and Advice

WebQuests are based on the research of Bernie Dodge and Tom March at San Diego State University. Just as they are complex and challenging for students to do, they are complex and challenging for teachers to create. Dodge and March's comprehensive site (<http://webquest.org>), hosted by the Educational Technology Department at San Diego State University, provides a wealth of information and advice, including a discussion blog, design templates, and WebQuest examples with a search tool that sorts WebQuests by discipline and educational level.

Because WebQuests were originally designed for K–12 students, there is limited information on how to apply this technique within a college environment.

## 5.8 THE RETURN OF SYNTHESIS: CONNECTING CRITICAL AND CREATIVE THINKING

When Lorin Anderson and David Krathwohl (2001) revised the cognitive categories of Bloom's Revised Taxonomy, we might have gained a simpler way to teach, but our students lost an essential skill to learn.



Anderson and Krathwohl completely revamped this instructional framework we educators we have traditionally used to establish our learning goals and outcomes. The key shifts in their revised taxonomy were the following:

- The Cognitive Domain was split into two dimensions - the Knowledge Dimension and the Cognitive Process Dimension.
- *Knowledge* was replaced with the cognitive action *remember*. The subcategories of *Knowledge* from the original taxonomy were combined into four categories within



the Knowledge Domain: factual, conceptual, procedural, and metacognitive. In 2014, Walkup and Jones expanded this domain by adding three more levels - relevant, deep, and communicative - as part of their definition of the concept of cognitive rigor.

- The names of the categories of the Cognitive Process Domain from conceptual nouns to cognitive verbs. *Comprehension* became *Understanding*. *Synthesis* was renamed *Creating*. In addition, *Creating* became the highest level in the classification system, switching places with *Evaluating*. The revised version is now *Remembering*, *Understanding*, *Applying*, *Analyzing*, *Evaluating*, and *Creating*, in that order. They also shifted the order of the categories, moving down a level and making *create* the pinnacle of the taxonomy.

The revised version of Bloom's Taxonomy is truly a much more effective and user-friendly model. It is more directive and explicit. It also is much more applicable in developing benchmark standards that clearly state *what the student will be able to do* by the end of a particular grade level. It also is beneficial in setting performance objectives for what *the student will do* as part of a learning experience. It also can be used in setting encouraging and personal learning targets that state what *I can* and what *we will* do by the end of a unit or lesson.

However, the drawback of the revision is that it removed a key cognitive category that is essential for our students to demonstrate and communicate as part of their learning.

*Synthesis* was the cognitive category in the original taxonomy that addressed how students can put new information together to produce an original work - a plan, a product, or a project. It was also the category which we educators addressed and referred when we wanted our students to demonstrate their ability to *create*. When we tasked our students to build, create, design, develop, draw, plan, produce, or write something, we would state how *The learner will demonstrate synthesis* of whatever concept or procedure they were learning and complete the objective by stating what exactly they would do.

However, synthesizing is actually more synonymous with *understanding* and *applying* than *creating*. *Synthesis* involves combining ideas and allowing an evolving understanding of text (Fries-Gaither, 2010). Students are challenged to put pieces together and seeing them in a new way. Essentially, synthesizing is understanding and applying at a higher level.

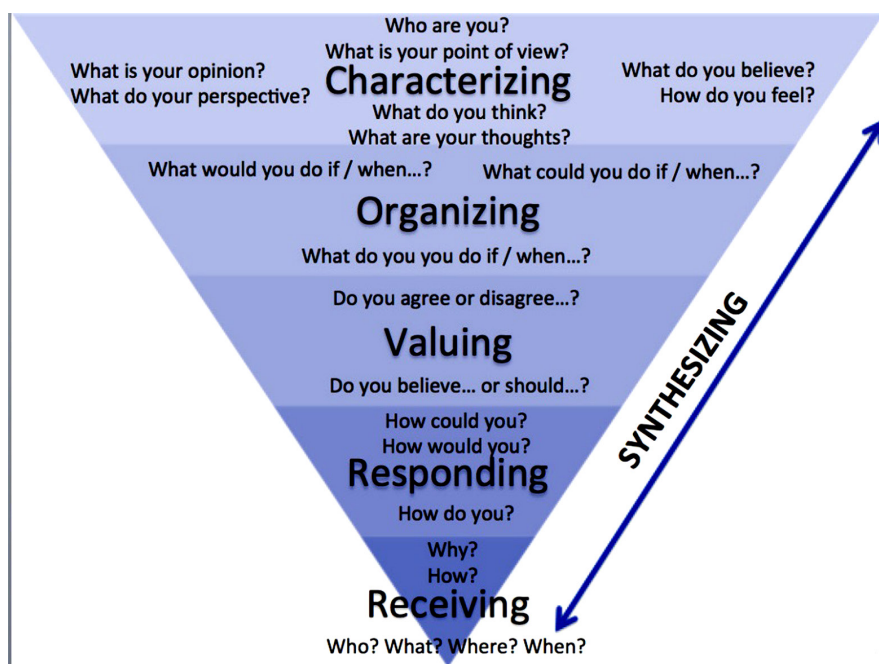
Synthesizing involves both critical and creative thinking. It involves students in processing what they have learned to form a new idea, perspective, or opinion or to generate insight (Bumgarner, 2016). However, what distinguishes *synthesizing* from *analyzing* and *evaluating* is that the knowledge and thinking they demonstrate and communicate is more metacognitive and personal. These are the conclusions, decisions,



opinions, perspectives, and thoughts they have developed and drawn based upon the information they have learned. They use the factual, conceptual, and procedural knowledge they have acquired and gathered as examples and evidence to strengthen and support their thinking.

*Synthesizing*, however, is not the same as *creating*. *Creating* involves designing, developing, or doing something physical that reflects and represents students' skills and talents. For example, develop and use a model or produce a plan, project, or product. Students *synthesize* by processing what they have learned into a personal argument, choice, claim, conclusion, decision, opinion, perspective, or point of view they can defend with credible information. They *create* something to that will reflect and represent not only their thinking but also their talent.

*Synthesizing* is *affective* as well as *cognitive* in that involves processing learning to produce opinions, perspectives, or thoughts fueled by evidence, examples, and emotion. In fact, *synthesizing* is what engages students in the affective actions of the Affective Domain of Bloom's Revised Taxonomy. The following graphic shows how synthesizing guides students through how we internalize what we are learning into personal insight.

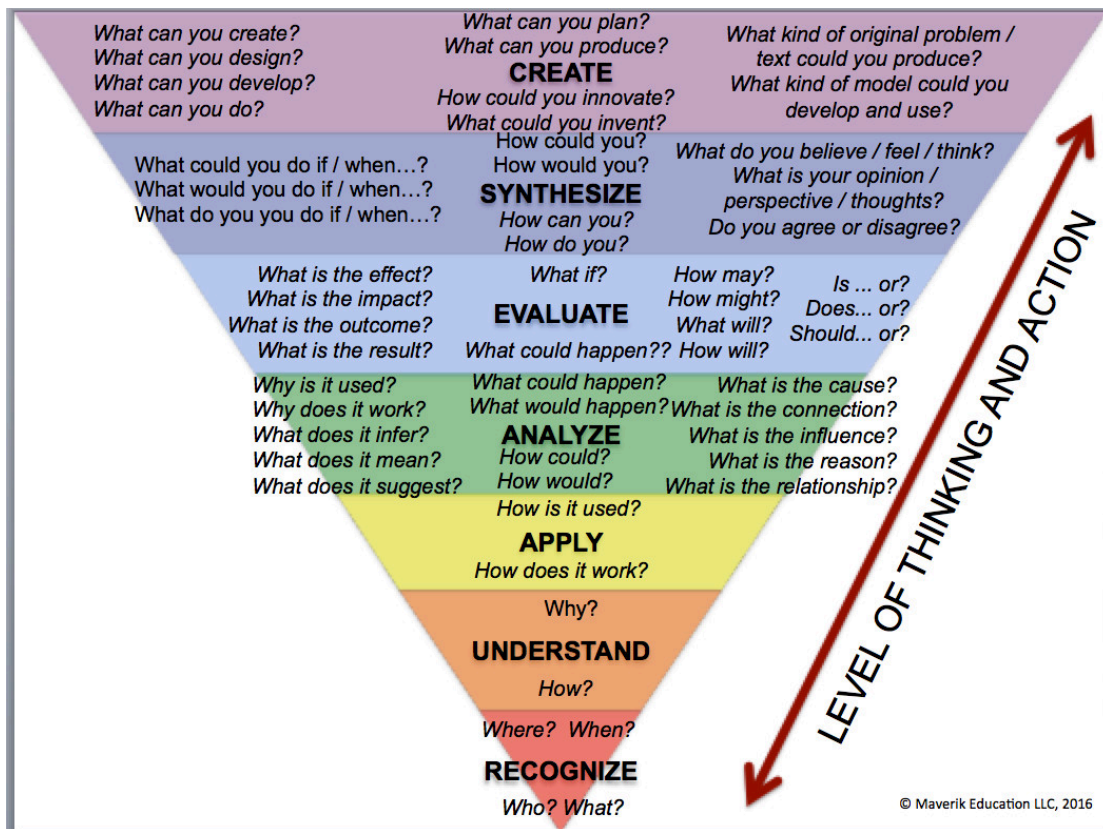


- **Receiving:** Students receive factual, conceptual, and procedural information about *who*, *what*, *where*, *when*, *how*, and *why*. This occurs as they demonstrate and communicate the ability to and *evaluate* the ideas, information, texts, techniques, themes, and topics they are reading and reviewing.

- **Responding:** Students process the information into personal or self-knowledge when they show and tell *how do you* transfer and use what they have learned to attain and explain answers, outcomes, results, and solutions. They also engage in strategic thinking and problem solving by showing and telling *how would you* and what they have learned to address and respond to academic and real world circumstances, issues, problems, and situations.
- **Valuing:** Students use what they have to make and defend decisions using the personal or self-knowledge they have developed. This is when students engage in argumentative thinking, establishing claims and conclusions about *do you think.... or should...* and making choices about whether *do you agree or disagree...* This is an essential category within the Affective Domain - and with synthesizing - because it engages students to develop and demonstrate disciplinary literacy, the ability to examine, explore, and explain ideas and information in the subject areas.
- **Organizing:** Students show and tell how they can use the personal knowledge and thinking they have acquired and developed in different hypothetical scenarios, settings, and situations. They demonstrate and communicate conditional and contextual thinking by addressing and respond *what do you do when*. They also demonstrate and communicate creative thinking by showing and telling *what would you do if*. This is also when students begin to develop and demonstrate expert thinking, showing and telling how they would personally use what they have learned in any context.
- **Characterizing:** This is the highest level of synthesizing, where their knowledge and thinking defines and describes a student's identity as a learner and a scholar. They take what they have learned and express *what do you believe, feel, or think*. They share *what is your opinion, perspective, or thoughts*. Most importantly, they take what's academic and even abstract and use it to explain *who are you* as a learner in a particular subject area.

Since college and career readiness is marked and measured by cognitive rigor and cognitive rigor challenges and engages students to demonstrate higher order thinking and communicate depth of knowledge, perhaps it is a wise decision to bring synthesis back as a separate cognitive category within Bloom's Revised Taxonomy. It should be positioned between the categories of *evaluate* and *create*. This will be the cognitive category where students will write and present argumentations and express and share their attitudes, beliefs, and feelings about what they are learning.

Here is a redesign of the Bloom's Questioning Inverted Pyramid that can be used to develop good questions that promote cognitive rigor. Notice where is placed and what distinguishes its question stems from the ones that challenge and engage students. This establishes a more definitive connection and progression between critical and creative thinking.



## SUMMARY

- Synthesis is the process by which pre-existing ideas, influences, or objects are combined in such a manner as to make a new, unified whole.
- In Team Concept Maps, student teams draw a diagram that conveys members' combined ideas or understanding of a complex concept, procedure, or process.
- Variations challenges students' creativity as they imagine and evaluate alternatives to a given stimulus in order to build something new.
- Students create an altered version of the original, such as rewriting the ending of a story, imagining the consequences of a changed event in history, composing a different conclusion to a famous musical composition, or using an iconic art image as the basis for a new work of art.
- Students assume the identity of an important or famous person in the discipline and write a letter explaining their thoughts on an issue, theory, or controversy to another important or famous person who holds a different perspective. The letter can be to a contemporary or it can be an imaginative juxtaposition between people of different eras.
- Role Play is a creative, participatory activity that provides the structure for students to experience the emotional and intellectual responses of an assumed identity or imagined circumstance. The word *role* indicates that students actively apply knowledge, skills, and understanding to success-fully speak and act from an assigned perspective. The term *play* indicates that students use their imaginations and have fun, acting out their parts in a nonthreatening environment.
- Poster Sessions provides teachers and students with an alternative to conventional written reports, thus meeting the needs of a wider range of learners.
- WebQuests helps students learn to use the Web for research in ways that encourage analysis and judgment rather than simply copying or summarizing information. Because the task is authentic—a scaled-down version of things adults do as citizens or workers—"WebQuests" creates a bridge between what is learned in the classroom and the world outside of the classroom, demonstrating how and why classroom-based knowledge is important.
- WebQuests are complex, highly scaffolded activities. Teachers can simplify any of the components to make them less elaborate.



## MULTIPLE CHOICE QUESTIONS

1. Creative synthesis is an important aspect of the \_\_\_\_\_ method of creative problem solving.
  - a. brainwriting
  - b. forced association
  - c. attribute listing
  - d. parameter analysis
2. A teacher can encourage creative learners in her classroom by
  - a. emphasizing convergent thinking.
  - b. discouraging divergent thinking.
  - c. encouraging multiple perspectives and appreciating original ideas.
  - d. discouraging the students from taking risks and undertaking challenges.
3. Which is not the element of creativity?
  - a. Fluency
  - b. Flexibility
  - c. Originality
  - d. Memorizing
4. Which one is not an important factor of creativity?
  - a. Originality
  - b. Fluency
  - c. Flexibility
  - d. None of the above
5. The intervention needed for creative and talented children in the classroom rests on -
  - a. use of customized and stimulating instructional methods by the teacher
  - b. giving extra time to them
  - c. being affectionate towards them
  - d. giving them the responsibility of teaching other children
6. A creative child has the following characteristic:
  - a. rigid in approach to problem-solving
  - b. ability to rote memorize
  - c. conformity to the given rules and norms
  - d. original thought and expression



7. **To develop creativity in a child, the teacher should not:**
  - a. restrict the activities of the child
  - b. respect the views of the child
  - c. satisfy the anxieties of the child
  - d. lead the child to novel thinking.
8. **Which one of the following group of characteristics is not related to creative thinking?**
  - a. Guessing, fluency and flexibility
  - b. Originality, fluency and flexibility
  - c. Guessing, conventionality and fluency
  - d. Originality, elaboration and fluency
9. **The ability to do things differently and use new techniques is called**
  - a. creativity
  - b. personality development
  - c. newness
  - d. awareness
10. **Which of the following is NOT one of the characteristics found in a creative thinker?**
  - a. Enjoys challenge
  - b. Sees problem as interesting
  - c. Gets easily demotivated
  - d. Seeks problem

## REVIEW QUESTIONS

1. What do you understand by team concept maps?
2. Describe the history of constitutional law
3. What kind of activity is role play?
4. What are the benefits of webquests?
5. What is a concept map used for?

## Answer to Multiple Choice Questions

- |        |        |        |        |         |
|--------|--------|--------|--------|---------|
| 1. (d) | 2. (c) | 3. (d) | 4. (d) | 5. (a)  |
| 6. (d) | 7. (a) | 8. (c) | 9. (a) | 10. (c) |

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**PROBLEM**

**SOLUTION**

## CHAPTER 6

## PROBLEM SOLVING

### LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Discuss the concept of problem solving
2. Understand problem-solving process
3. Explain problem solving method
4. Describe the term think-aloud-pair-problem solving (TAPPS)
5. Define creative problem solving tools and skills for students and teachers

*"Too often we give our children answers to remember rather than problems to solve."*

*–Roger Lewin*

### INTRODUCTION

Problem solving consists of using generic or ad hoc methods in an orderly manner to find solutions to problems. Some of the problem-solving techniques developed and used in philosophy, artificial intelligence, computer science, engineering, mathematics, medicine and societies in general are related to mental problem-solving techniques studied in psychology and cognitive sciences.



The term problem solving has a slightly different meaning depending on the discipline. For instance, it is a mental process in psychology and a computerized process in computer science. There are two different types of problems: ill-defined and well-defined; different approaches are used for each. Well-defined problems have specific end goals and clearly expected solutions, while ill-defined problems do not. Well-defined problems allow for more initial planning than ill-defined problems. Solving problems sometimes involves dealing with pragmatics, the way that context contributes to meaning, and semantics, the interpretation of the problem. The ability to understand what the end goal of the problem is, and what rules could be applied represents the key to solving the problem. Sometimes the problem requires abstract thinking or coming up with a creative solution.

**Problem solving** in psychology refers to the process of finding solutions to problems encountered in life. Solutions to these problems are usually situation or context-specific. The process starts with problem finding and problem shaping, where the problem is discovered and simplified. The next step is to generate possible solutions and evaluate them. Finally a solution is selected to be implemented and verified. Problems have an end goal to be reached and how you get there depends upon problem orientation (problem-solving coping style and skills) and systematic analysis. Mental health professionals study the human problem solving processes using methods such as introspection, behaviorism, simulation, computer modeling, and experiment. Social psychologists look into the person-environment relationship aspect of the problem and independent and interdependent problem-solving methods. Problem solving has been defined as a higher-order cognitive process and intellectual function that requires the modulation and control of more routine or fundamental skills.

Developing students' ability to solve problems efficiently and effectively is a goal almost all teachers share. Problems can be generally described as puzzles that exercise the mind, but what constitutes a problem varies widely across the disciplines. For example, when we think about a math problem, we are thinking about a statement or proposition that is amenable to being analyzed and solved with the methods of mathematics. When we think about a social problem, we are thinking about a particularly difficult situation in society such as poverty, violence, injustice, or discrimination. Problems can be well defined and have correct answers, or they can be loosely defined "confusing messes incapable of technical solution". Whether the problems we want students to grapple with are straightforward tasks designed to produce a specified result or complex quandaries that seem incapable of resolution, problem solving is fundamental to most disciplines.

### Keyword

**Problem solving** is the process of finding solutions to difficult or complex issues.

## 6.1 PROBLEM SOLVING

Problem-solving is a process of solving any kind of problem. This process is acted upon in some steps. These steps start from identifying the problem and determining the cause of the problem. After the problem and its cause are identified, the next step is to select alternatives for the solution and implement the solutions.

Defining the problem means that you are diagnosing the situation. This helps take the further steps for solving the problem. This is not just as simple as defining the problem. Here you take effective measures to keep track of the situation of the problem.

Problem solving theory and practice suggest that thinking is more important in solving problems than knowledge and that it is possible to teach thinking in situations where little or no knowledge of the problem is needed. Such an assumption has led problem solving advocates to champion content-less heuristics as the primary element of problem solving while relegating the knowledge base and the transfer or application of conceptual knowledge to secondary status. Yet if one analyzes the meaning of problem solving, the knowledge base and the transfer of that knowledge are the most essential elements in solving problems.





### Keyword

**Thinking skills** are the mental activities you use to process information, make connections, make decisions, and create new ideas.

Problem solving is only one type of a larger category of thinking skills that teachers use to teach students how to think. Other means of developing thinking skills are problem-based learning, critical thinking skills, creative thinking skills, decision making, conceptualizing, and information processing. Although scholars and practitioners often imply different meanings by each of these terms, most **thinking skills** programs share the same basic elements:

- (1) the definition of a problem,
- (2) the definition of problem solving,
- (3) algorithms,
- (4) heuristics,
- (5) the relationship between theory and practice,
- (6) teaching creativity,
- (7) a knowledge base, and
- (8) the transfer or the application of conceptual knowledge

### *The Problem with Problem Solving*

The main problem with problem solving lies in the fourth element listed: problem solving is a heuristic. Recall that a heuristic is a guideline that may or may not yield success but, unlike an algorithm, it does not depend on knowledge of the



problem to be successful. Heuristic is a method of thought that does not pertain to any specific problems or content. The element is problematic because it contradicts three other elements within the theory: the definition of problem solving, successful problem solving requires a knowledge base, and problem solving enables learners to transfer knowledge. Each of these three elements implies that learned knowledge of the problem is necessary to solving the problem, whereas use of a heuristic assumes no knowledge is necessary.

### *The Elements of Problem Solving Revised*

Each of the elements of problem solving will be reviewed again in light of the relationship between thinking and knowledge and the research base on problem solving. Element one, the definition of a problem, implies that one must have some knowledge of the problem to solve it. How can one solve a problem without first knowing what the problem is? In fact, identification of the problem is what is called for in the first two steps, Read and Explore, of the heuristic. In this step, the student first becomes aware of the problem and then seeks to define what it is or what the problem requires for its solution. Awareness and definition comprise the knowledge that is essential to solving the problem. Consider the effectiveness of students relative to their respective experiences with a given problem. The student more familiar with the problem will probably be better able to solve it. In contrast, the student new to the problem, who has only studied the heuristic, would have to re-invent the solution to the problem.

So the first two steps of the heuristic imply that one needs a great deal of knowledge about the problem to be an effective problem solver. In fact, if one wants to solve the problem for the long term, one would want to thoroughly study the problem until some kind of principles were developed with regard to it. The final outcome of such an inquiry, ironically, would yield the construction of an algorithm.

#### **6.1.1 Problem-Solving Activities for the Classroom**

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Problem-solving skills are necessary in all areas of life, and classroom problem solving activities can be a great way to get students prepped and ready to solve real problems in real life scenarios. Whether in school, work or in their social relationships, the ability to critically analyze a problem, map out all its elements and then prepare a workable solution is one of the most valuable skills one can acquire in life.

Educating your students about problem solving skills from an early age in school can be facilitated through classroom problem solving activities. Such endeavors encourage cognitive as well as social development, and can equip students with the tools they will need to address and solve problems throughout the rest of their lives.



Here are five classroom problem solving activities your students are sure to benefit from as well as enjoy doing:

### 1. *Brainstorm bonanza*

Having your students create lists related to whatever you are currently studying can be a great way to help them to enrich their understanding of a topic while learning to problem-solve.



*If you are studying a historical, current or fictional event that did not turn out favorably, have your students brainstorm ways that the protagonist or participants could have created a different, more positive outcome. They can brainstorm on paper individually or on a chalkboard or white board in front of the class.*



## 2. Problem-solving as a group

Have your students create and decorate a medium-sized box with a slot in the top. Label the box “The Problem-Solving Box.” Invite students to anonymously write down and submit any problem or issue they might be having at school or at home, ones that they cannot seem to figure out on their own. Once or twice a week, have a student draw one of the items from the box and read it aloud. Then have the class as a group figure out the ideal way the student can address the issue and hopefully solve it.

## 3. Clue me in

This fun detective game encourages problem-solving, **critical thinking** and cognitive development. Collect a number of items that are associated with a specific profession, social trend, place, public figure, historical event, animal, etc. Assemble actual items (or pictures of items) that are commonly associated with the target answer. Place them all in a bag (five-10 clues should be sufficient.) Then have a student reach into the bag and one by one pull out clues. Choose a minimum number of clues they must draw out before making their first guess (two- three). After this, the student must venture a guess after each clue pulled until they guess correctly. See how quickly the student is able to solve the riddle.

### Keyword

**Critical thinking** is the analysis of facts to form a judgment. The subject is complex, and several different definitions exist, which generally include the rational, skeptical, unbiased analysis, or evaluation of factual evidence

## 4. Survivor scenarios

Create a pretend scenario for students that requires them to think creatively to make it through. An example might be getting stranded on an island, knowing that help will not arrive for three days. The group has a limited amount of food and water and must create shelter from items around the island. Encourage working together as a group and hearing out every child that has an idea about how to make it through the three days as safely and comfortably as possible.

## 5. Moral dilemma

Create a number of possible moral dilemmas your students might encounter in life, write them down, and place each item



folded up in a bowl or bag. Some of the items might include things like, “I saw a good friend of mine shoplifting. What should I do?” or “The cashier gave me an extra \$1.50 in change after I bought candy at the store. What should I do?” Have each student draw an item from the bag one by one, read it aloud, then tell the class their answer on the spot as to how they would handle the situation.

Classroom problem solving activities need not be dull and routine. Ideally, the problem solving activities you give your students will engage their senses and be genuinely fun to do. The activities and lessons learned will leave an impression on each child, increasing the likelihood that they will take the lesson forward into their everyday lives.

## 6.2 THE PROBLEM-SOLVING PROCESS

In order to effectively manage and run a successful organization, leadership must guide their employees and develop problem-solving techniques. Finding a suitable solution for issues can be accomplished by following the basic four-step problem-solving process and methodology outlined as follows:

Step	Characteristics
<b>1. Define the problem</b>	<ul style="list-style-type: none"> <li>• Differentiate fact from opinion</li> <li>• Specify underlying causes</li> <li>• Consult each faction involved for information</li> <li>• State the problem specifically</li> <li>• Identify what standard or expectation is violated</li> <li>• Determine in which process the problem lies</li> <li>• Avoid trying to solve the problem without data</li> </ul>
<b>2. Generate alternative solutions</b>	<ul style="list-style-type: none"> <li>• Postpone evaluating alternatives initially</li> <li>• Include all involved individuals in the generating of alternatives</li> <li>• Specify alternatives consistent with organizational goals</li> <li>• Specify short- and long-term alternatives</li> <li>• Brainstorm on others' ideas</li> <li>• Seek alternatives that may solve the problem</li> </ul>

<b>3. Evaluate and select an alternative</b>	<ul style="list-style-type: none"> <li>• Evaluate alternatives relative to a target standard</li> <li>• Evaluate all alternatives without bias</li> <li>• Evaluate alternatives relative to established goals</li> <li>• Evaluate both proven and possible outcomes</li> <li>• State the selected alternative explicitly</li> </ul>
<b>4. Implement and follow up on the solution</b>	<ul style="list-style-type: none"> <li>• Plan and implement a pilot test of the chosen alternative</li> <li>• Gather feedback from all affected parties</li> <li>• Seek acceptance or consensus by all those affected</li> <li>• Establish ongoing measures and monitoring</li> <li>• Evaluate long-term results based on final solution</li> </ul>



### 1. Define the problem

Diagnose the situation so that your focus is on the problem, not just its symptoms. Helpful problem-solving techniques include using flowcharts to identify the expected steps of a process and cause-and-effect diagrams to define and analyze root causes. We explain key problem-solving steps. These steps support the involvement of interested



parties, the use of factual information, comparison of expectations to reality, and a focus on root causes of a problem. You should begin by:

- Reviewing and documenting how processes currently work (i.e., who does what, with what information, using what tools, communicating with what organizations and individuals, in what time frame, using what format).
- Evaluating the possible impact of new tools and revised policies in the development of your “what should be” model.

## ***2. Generate alternative solutions***

Postpone the selection of one solution until several problem-solving alternatives have been proposed. Considering multiple alternatives can significantly enhance the value of your ideal solution. Once you have decided on the “what should be” model, this target standard becomes the basis for developing a road map for investigating alternatives. Brainstorming and team problem-solving techniques are both useful tools in this stage of problem solving.

Many alternative solutions to the problem should be generated before final evaluation. A common mistake in problem solving is that alternatives are evaluated as they are proposed, so the first acceptable solution is chosen, even if it's not the best fit. If we focus on trying to get the results we want, we miss the potential for learning something new that will allow for real improvement in the problem-solving process.

## ***3. Evaluate and select an alternative***

Skilled problem solvers use a series of considerations when selecting the best alternative. They consider the extent to which:

- A particular alternative will solve the problem without causing other unanticipated problems.
- All the individuals involved will accept the alternative.
- Implementation of the alternative is likely.
- The alternative fits within the organizational constraints.

## ***4. Implement and follow up on the solution***

Leaders may be called upon to direct others to implement the solution, “sell” the solution, or facilitate the implementation with the help of others. Involving others in the implementation is an effective way to gain buy-in and support and minimize resistance to subsequent changes. Regardless of how the solution is rolled out, feedback channels should be built into the implementation. This allows for continuous monitoring and testing of actual events against expectations. Problem solving, and the techniques



used to gain clarity, are most effective if the solution remains in place and is updated to respond to future changes.

One of the first steps in good problem solving is being able to correctly and purposefully identify what kind of problem one is dealing with in order to determine the appropriate principles and techniques needed to solve the problem. To do this, students must be able to look beyond surface differences among problems and perceive underlying similarities. In this activity, students work in pairs, looking at examples of common problem types in order to identify the particular type of problem each example represents. In this way, students support each other as they try to increase their efficiency and effectiveness in problem solving by learning to generalize problem types instead of seeing problems as isolated exemplars.

1. Identify two or more types of problems that students find difficult to directions distinguish.
2. Choose or craft several examples of each type.
3. Depending upon your teaching goals and the skill level of your students, decide on the complexity of the task. Will you provide them with information about the types of problems and ask them simply to match type with example? Will you provide them only with the examples and ask them to name the problem type?
4. Consider trying out your examples on a colleague or an advanced student to see whether he or she agrees that your examples are clear representatives of a particular problem type. This can help you assess how difficult the task is and how long it will take students to complete. (As a general rule, allow students two to three times as long as it took your colleague to do the task.)
5. Make a handout, or a presentation slide, or an overhead-projector transparency containing the problem examples.
6. Form students into pairs and explain the directions, allowing time for questions.
7. Students work through the examples, identifying the type of problem each example represents.

## 6.3 PROBLEM SOLVING METHOD

A problem is a task for which problem-solving may be a purely mental difficulty or it may be physical and involve manipulation of data, the person confronting it wants or needs to find a solution because the person has no readily available procedure for finding the solution. The person must make an attempt to find a solution. Problem solving is the act of defining a problem; determining the cause of the problem; identifying, prioritizing and selecting alternatives for a solution; and implementing a solution.

In a problem solving method, children learn by working on problems. This enables the students to learn new knowledge by facing the problems to be solved. The students are expected to observe, understand, analyze, interpret find solutions, and perform applications that lead to a holistic understanding of the concept. This method develops scientific process skills. This method helps in developing brainstorming approach to learning concepts.



Problem-solving is a process—an ongoing activity in which we take what we know to discover what we do not know. It involves overcoming obstacles by generating hypo-theses, testing those predictions, and arriving at satisfactory solutions.

Problem-solving involves three basic functions:

1. Seeking information
2. Generating new knowledge
3. Making decisions

### 6.3.1 Objectives of Problem-Solving

- Willingness to try problems and improve their perseverance when solving problems.
- Improve pupils' self-concepts with respect to the abilities to solve problems.
- Make pupils aware of the problem-solving strategies.
- Make pupils aware of the value of approaching problems in a systematic manner.
- Make pupils aware that many problems can be solved in more than one way.
- Improve pupils' abilities to select appropriate solution strategies.
- Improve pupils' abilities to implement solution strategies accurately.

- Improve pupils' abilities to get more correct answers to problems
- The appreciation of the existence of a problems and a desire to solve it
- The accumulation of the facts and data which are pertinent to the problem.
- Logical interpretation of the data supported by adequate valid experience.

### 6.3.2 Steps of Problem Solving Method

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Here is a five-stage model that most students can easily memorize and put into action and which has direct applications to many areas of the curriculum as well as everyday life:

1. **Understand the problem:** It is important that students understand the nature of a problem and its related goals. Encourage students to frame a problem in their own words.
2. **Describe any barriers:** Students need to be aware of any barriers or constraints that may be preventing them from achieving their goal. In short, what is creating the problem? Encouraging students to verbalize these impediments is always an important step.
3. **Identify various solutions:** After the nature and parameters of a problem are understood, students will need to select one or more appropriate strategies to help resolve the problem. Students need to understand that they have many strategies available to them and that no single strategy will work for all problems. Here are some problem-solving possibilities:
  - *Create visual images:* Many problem-solvers find it useful to create “mind pictures” of a problem and its potential solutions prior to working on the problem. Mental imaging allows the problem-solvers to map out many dimensions of a problem and “see” it clearly.
  - *Guesstimate:* Give students opportunities to engage in some trial-and-error approaches to problem-solving. It should be understood, however, that this is not a singular approach to problem-solving but rather an attempt to gather some preliminary data.
  - *Create a table:* A table is an orderly arrangement of data. When students have opportunities to design and create tables of information, they begin to understand that they can group and organize most data relative to a problem.
  - *Use manipulatives:* By moving objects around on a table or desk, students can develop patterns and organize elements of a problem into recognizable and visually satisfying components.
  - *Work backward:* It is frequently helpful for students to take the data presented at the end of a problem and use a series of computations to



arrive at the data presented at the beginning of the problem.

- *Look for a pattern:* Looking for patterns is an important problem-solving strategy because many problems are similar and fall into predictable patterns. A pattern, by definition, is a regular, systematic repetition and may be numerical, visual, or behavioral.
  - *Create a systematic list:* Recording information in list form is a process used quite frequently to map out a plan of attack for defining and solving problems. Encourage students to record their ideas in lists to determine regularities, patterns, or similarities between problem elements
4. ***Try out a solution:*** When working through a strategy or combination of strategies, it will be important for students to:
- Keep accurate and up-to-date records of their thoughts, proceedings, and procedures. Recording the data collected, the predictions made, and the strategies used is an important part of the problem solving process.
  - Try to work through a selected strategy or combination of strategies until it becomes evident that it's not working, it needs to be modified, or it is yielding inappropriate data. As students become more proficient problem solvers, they should feel comfortable rejecting potential strategies at any time during their quest for solutions.
  - Monitor with great care the steps undertaken as part of a solution. Although it might be a natural tendency for students to "rush" through a strategy to arrive at a quick answer, encourage them to carefully assess and monitor their progress.
  - Feel comfortable putting a problem aside for a period of time and tackling it at a later time. For example, scientists rarely come up with a solution the first time they approach a problem. Students should also feel comfortable letting a problem rest for a while and returning to it later.
5. ***Evaluate the results:*** It is vitally important that students have multiple opportunities to assess their own problem-solving skills and the solutions they generate from using those skills. Frequently, students are overly dependent upon teachers to evaluate their performance in the classroom. The process of self-assessment is not easy, however. It involves risk-taking, self-assurance, and a certain level of independence. But it can be effectively promoted by asking students questions such as "How do you feel about your progress so far?" "Are you satisfied with the results you obtained?" and "Why do you believe this is an appropriate response to the problem?"

Teacher's has a very important role in Teaching Learning Process. He or She has the duty to provide proper guideline to the students in the completion of their work.

Some important roles are given as follows:

1. Give suggestions not answers
2. Offer a problem solving heuristic
3. Teach a variety of problem solving strategies
4. Allow time for the students to struggle with the problem
5. Choose problems that require time to think through a solution
6. Provide a variety of problems
7. Allow students time to practice a heuristic and strategies
8. Give similar or the same problem in different ways
9. Ask questions that encourage students to:
  - think divergently
  - explain how they are thinking.
  - to share strategies
  - think of other ways that the same problem could be asked
  - think of real life problems that are or relate to the problem
  - discover different problems that can be solved with the same strategy
  - discover multiple ways to solve the problem
  - reflect or check their solutions
  - reflect and discuss how they imagined a certain strategy might be possible
  - explain why they have confidence in their solutions
10. Provide encouragement and appreciation:
  - appreciate different solutions and strategies
  - encourage students to find multiple solutions to a problem
  - encourage students to take time to solve problems
  - compliment students on good problem solving strategies whether they reach a solution or not
  - make sure students know what a compliment or praise specifically relates to about the problem and problem solving

### Did You Know?

In 1971, Thomas D’Zurilla and Marvin Goldfried published a comprehensive review of the relevant theory and research related to real-life problem solving that cut across a wide range of related academic and professional fields, including creativity, abnormal behavior, experimental psychology, education, and industry.



- encourage students to keep trying and to learn by correcting mistakes
- let students know that problem solving is difficult and rewarding
- share and discuss attitudes and dispositions that are conducive to problem solving

### 6.3.3 Advantages and Disadvantages of Problem Solving Method

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#### *Advantages of Problem Solving Method*

1. Development of Long-Term Knowledge Retention - Students who participate in PBL activities can improve their abilities to retain and recall information. This is because, while learning about something, open discussion between peers reinforces understanding of subject matter.
2. Use of Diverse Instruction Types - Grouping students together for PBL allows them to tackle tangible problems and enjoy team-based learning. You can also provide content such as videos, news articles and more.
3. Continuous Engagement - It's not hard to see the potential for engagement, as students collaborate to solve real-world problems that directly affect or heavily interest them.
4. Development of Transferable Skills - Using PBL to present tangible contexts and consequences can allow learning to become more profound and durable, helping students apply skills they develop to other real-world scenarios.
5. Improvement of Teamwork and Interpersonal Skills - Completing a PBL challenge hinges on interaction and communication, meaning students should also build skills related to teamwork and collaboration.

#### *Disadvantages of Problem Solving Method*

1. Potentially Poorer Performance on Tests - Because standardized tests typically reward fact-based learning with multiple choice and short answer questions, PBL activities may not effectively prepare students.
2. Student Unpreparedness - Many students may not be prepared to participate in a PBL exercise due to immaturity, unfamiliarity with broad questions and lack of prerequisite knowledge.
3. Teacher Unpreparedness - You may have to adjust some habits, such as overtly correcting students and teaching to promote the fast recall of facts. Instead, give hints and ask questions to encourage independent thought.
4. Time-Consuming Assessment - If you choose to give marks, assessing a student's performance throughout a problem-based learning exercise demands constant monitoring and note-taking.



5. Varying Degrees of Relevancy and Applicability - It can be easy for students to divert from the challenge's objectives, possibly missing pertinent information. Running into unanticipated obstacles when solving the problem is another possibility.

Thus the problem solving method is based on the principles of active learning. The student gets totally involved in the activity which helps in enhancing his/her knowledge, understanding and skills in real life situation and ultimately in developing a holistic personality. Since all the activities are related to the real life experiences, each of such activities is meaningful to the student. Therefore, meaningful learning is always associated with this method.

## 6.4 THINK-ALOUD-PAIR-PROBLEM SOLVING (TAPPS)

In “Think-Aloud-Pair-Problem Solving” student pairs receive a series of problems as well as specific roles—problem solver and listener—that switch with each problem. The problem solver thinks aloud, talking through the steps of solving a problem, while the partner listens, following the steps, attempting to understand the reasoning behind the steps, and offering suggestions if there are missteps.

TAPPS places the emphasis on the problem-solving process rather than the product. Articulating one's own process and listening carefully to another's process helps students practice problem-solving skills and learn to diagnose errors in logic. Depending upon the problems used, it can also help increase student awareness of the range of successful (and unsuccessful) approaches to problem solving. TAPPS improves analytical skills by helping students to formalize ideas, rehearse concepts, understand the sequence of steps underlying their thinking, and identify errors in someone else's reasoning. Since it requires students to relate information to existing conceptual frameworks and to apply existing information to new situations, it can also promote deeper understanding. Finally, it can help foster metacognitive awareness, as it provides a structure for students to observe both their own and another's process of learning.

### *Step-by-Step direction*

1. Spend sufficient time developing an appropriate set of field-related problems that students can solve within a limited time frame. The problems should engage students in basic problem-solving skills such as identifying the nature of the problem, analyzing the knowledge and skills required to reach a solution, identifying potential solutions, choosing the best solution, and evaluating potential outcomes.
2. Create a worksheet with a series of problems.
3. Ask students to form pairs and explain to students the roles of problem

**Remember**

To be most effective, the problems should challenge students, requiring them to concentrate and focus their attention, whether they are solvers or listeners.

solver and listener. The role of the problem solver is to read the problem aloud and talk through the reasoning process in attempting to solve the problem. The role of the listener is to encourage the problem solver to think aloud, describing the steps to solve the problem. The listener may also ask clarification questions and offer suggestions, but should refrain from actually solving the problem.

4. Ask students to solve a set of problems, alternating roles with each new problem.
5. Call completion when students have solved all problems

*Online Implementation*

The need for synchronous communication between pairs makes this SET cumbersome online. However, if you believe that modeling and receiving feedback on problem solving is important to your course, consider asking students to teleconference. An alternative would be to organize students into pairs, have them individually work through a problem (or problem set), explain their thinking at each step, and then send their assignment for feedback either as an e-mail attachment or a post on a discussion board.

*Examples**English as a Second Language*

An English professor was teaching a course in grammar to ESL students. He decided to use sentence diagramming to help students understand the relationship of the various parts of speech. First he explained diagramming to the students, demonstrating the process by parsing and graphing several sample sentences on the board. When students indicated that they understood the steps, he formed pairs and gave each pair a set of several sentences. He asked students to take turns diagramming the sentences, talking out loud to explain why they were making their choices while their partner listened and offered suggestions when necessary. The professor closed the activity by asking each pair to select the most challenging



sentence from the set and go to the board, sharing both their diagramming and the reasoning behind the diagramming with the whole class.

### *Elementary Statistics*

Professor Marge N. O’Vera decided to use TAPPS in an introductory statistics class to have students practice regression analysis. She prepared a handout that included a scenario with an attached printout of data. She then asked students to use this data to solve ten problems. Professor O’Vera asked students to pair with the student sitting next to them. She explained the roles of problem-solver and listener. The students worked on the problems, alternating between problem-solver and listener until all of the problems were completed. She then held a full class discussion to review the answers and to clarify questions regarding the problem-solving process.

### *Programming in BIOPERL*

The purpose was to teach students to create utility software programs using a specific scientific programming language. To achieve this goal, students needed to become competent in a complex problem-solving process of retrieving, manipulating, and analyzing sequences from a variety of databases. The instructor noticed that some of his students caught on and were able to go through the steps relatively easily. Others tended to make process mistakes that resulted in programming errors that were time-consuming and frustrating to find later. Historically, these struggling students simply dropped the course at this point, so the instructor was searching for ways to reduce attrition and alleviate student anxiety. He decided to use TAPPS to structure practicing the problem-solving process with a peer, and to use recent quiz scores to partner a student who was having difficulties problem solving with a student who was doing well. The result was that students not only gained competence sooner than in the previous semester when they had worked independently, but it also significantly reduced student attrition.

### *Variations and Extensions*

- This SET is typically used for a series of close-ended problems, but it can also be used for more open-ended problem solving. The activity may take more time, so plan for fewer problems.
- If all pairs have worked on the same problem set, select pairs at random to report out their solution, or take a vote on the most challenging problems and share and examine solutions along with tips for improvement as a class.

## Observations and Advice

Many students, especially new students, will not have highly developed problem-solving skills. Consider preparing students by having students practice problem solving as a class prior to this activity.

Student problem-solvers may not be comfortable having their logic exposed to other students. Student listeners may not be trained in logic so they may not be able to note difficulties. Because of the level of risk students may feel, it is important to have established a high level of trust in your class prior to using this activity. Thus, it may also be a good idea to use this technique with pairs who work together throughout the term or at least over several sessions.

Students will solve problems at different speeds. In this SET, it is particularly important to have an additional problem (an “extension”) on hand for students who complete the problems quickly so that they do not sit around bored waiting for the other students to finish. Consider crafting a particularly challenging bonus question for extra credit.

Monitor students to ensure they are reinforcing correct information and problem-solving processes.

Either to get a rough measure of students’ problem-solving ability prior to implementing TAPPS, or as a follow-up activity to assess how much they have learned, provide students with a few examples of common problem types and ask them to recognize and identify the particular type of problem each example represents. This activity can help you assess how well your students can recognize various problem types, which is the first step in matching problem type to solution method.

If you are most interested in assessing how students solve problems and how well they understand and can describe problem-solving methods, have them individually track the steps that they took in solving the problem in TAPPS and submit this to you for review. Angelo and Cross also suggest ideas for adapting and extending the assessment.

- Give students two problems: one of low and the other of medium difficulty. The results of their efforts to solve the problems can help you to gauge the best level at which to begin whole-class or small-group instruction.
- Ask students with elegant, well-documented responses to explain their solutions to a partner, a small group of students, or even to the whole class.
- Since most students have little or no experience reflecting on their own problem-solving processes, you may have to help them learn how to do this. Also, to ensure that peers give each other thoughtful and thorough responses, you may need to give students credit for this activity.

To grade this SET, students can submit a record of the solutions with the solver for each problem identified (for example, by initials). You may also wish to have the listener identified and to have the listener include his or her suggestions for problem-solving improvement.

## 6.5 PROCLAMATIONS

Student teams identify and analyze a problematic situation in the local community. They then write a speech for a government official that persuades others of the urgency of the problem and offers strategies for solving the problem.

Researching and proposing solutions to problems helps students develop critical and creative thinking skills. Working on a real problem in the community can deepen understanding of theoretical concepts, demonstrate the relevance and importance of academic work, and help foster a greater sense of social and civic responsibility. Since students present their analysis and solution strategies in a persuasive speech, this SET can also help students develop **communication skills**.

### Keyword

**Communication skills** are the ability to send messages that are properly and entirely received and understood by the target audience.

1. Spend time thinking through the parameters of this assignment. What kinds of community problems do you want students to identify? For example, can the problems be general (graffiti, reckless driving, noise, ethnic conflict, and so forth) or should they be discipline specific (art related community problems might include insufficient amateur artist exhibit opportunities, lack of information on how and where to dispose of art-related hazardous waste materials, and artists' sense of social isolation). Will you determine, or will you allow students to determine, the type of government official and audience for which the speech will be written
2. Determine how students will report out (will you ask the team to submit the speech as a written document or require a team representative to actually give the speech to the class?).
3. If the skill level of your students is such that they require more scaffolding, consider identifying sample problems and writing a model speech yourself to help clarify your expectations.



4. Ask students to use newspapers, media, the Internet, personal experience, and other sources to identify two or three local community problems that they would like to investigate.
5. Select the problems yourself by choosing from the lists submitted by students, or have students participate in the process. One method is to type out or write on the board all of the potential choices and then ask individuals to vote for their top three choices. The class's most popular topics can then be designated as the available choices.
6. Form teams based on topic interest.
7. Give teams time to organize their efforts such as preparing a prospectus in which they state the problem, give specific examples of the problem, and identify possible reasons for the problem.
8. Allow time for students to analyze the problem, identify solutions, and decide on the central idea they are trying to convey. Consider providing them with guidance on writing speeches, such as suggesting that they create an outline, number points so audience members can follow, and after each point return to the main theme.

Since there is no official definition of community problem, consider establishing parameters such as “the problem should have two or more of the following criteria: it occurs frequently, has lasted for a while, affects many people, is disturbing and possibly intense, deprives people of legal or moral rights, or is perceived as a problem by a significant number of people”.

Encouraging students to work on problems that are authentic and relevant to them is refreshingly different from just reading about problems and issues, thus engaging students in working for solutions that they find important and interesting

Real community problems are often complex, resisting clear analysis and solution and persisting despite concerted efforts. Encourage students to take the time and make the effort to think hard about the problem and untangle its varied components; the many dimensions may involve multiple reasons for the problem, the costs of solutions, multiple solutions with different types of actions, the stakeholders, opposition to proposed solutions, and so forth. It is also possible that problems are too complex and involve factors that are beyond a community's control. Recognizing what is within one's control and what is not is an important life lesson.

## 6.6 SEND-A-PROBLEM

In “Send-a-Problem,” groups of students each receive a problem, try to and purpose solve it, and then pass the problem and solution to a nearby group. Without looking at the previous group's solution, the next group works to solve the problem. After as



many passes as seem useful, groups analyze, evaluate, and synthesize the responses to the problem they received in the final pass and report the best solution to the class.



“Send-a-Problem” thus involves two activity stages: solving problems and evaluating solutions. The purpose of the first stage is to provide students with an opportunity to practice together and learn from each other the thinking skills required for effective problem solving. The purpose of the second stage is to help students learn to compare and discriminate among multiple solutions.

### *Step-by-step Directions*

1. Determine the number of problems you will need in order to have all groups working simultaneously.
2. Decide how you will present the problem. Consider attaching each problem to the outside of a file folder or an envelope into which groups can then insert their solutions.
3. Think carefully about the instructions you will give to students regarding time limits and the order in which they should pass the problem (such as clockwise). Being clear with students can help to reduce any confusion.
4. Form groups of 4–6 students, describe the activity, give instructions, and answer questions.
5. Distribute a different problem to each group, asking each group to discuss the problem, generate possible solutions, choose the best solution, and record and place their response in the folder or envelope.
6. Call “Time,” and instruct teams to pass to the next group; each group receives a new folder or envelope. Upon receiving new problems, students again

- brainstorm responses and record results until time is called and they again pass the problem to a new group.
7. Repeat the process for as many times as seems useful and appropriate for the problem.
  8. Students in the final group review and evaluate the responses to the problem, adding any additional information they wish.
  9. The activity concludes as teams report on the responses contained in the envelope or folder they evaluated. As groups report out, add any points that groups missed and reinforce correct processes and solutions.

### Online Implementation

An adaptation of this SET can be effective in the online environment. Determine problems and organize students into as many groups as you have problems. Create a protected-access forum for each group. Post problem prompts and ask students to solve the appropriate problem as listed in Table 1 for Stage 1. During Stage 2, permit forum access to all students to respond to the solutions that were posted in the preceding two weeks.

**Table 1.** Stages of problem solving

	<b>Stage 1: Problem Solving</b>		<b>Stage 2: Solution Evaluation</b>
	<i>Time frame 1</i>	<i>Time frame 2</i>	<i>Time frame 3</i>
Group A	Solve problem 1	Solve problem 2	Evaluate solutions for problem 3
Group B	Solve problem 2	Solve problem 3	Evaluate solutions for problem 1
Group C	Solve problem 3	Solve problem 1	Evaluate solutions for problem 2

### Variations and Extensions

- Allow students to generate their own list of problems that they would like to see the class solve. For example, individuals may wish to have additional coverage of a certain type of problem that they find consistently confusing. Or perhaps there are issues in a reading assignment that they found particularly intriguing and would like to hear what other students think. While you may have specific topics that you must cover, giving students some control over the problems/topics can generate more engagement and investment in this SET.
- Consider using this SET as a review before an examination. Bring in copies of old tests for students to take and compare their answers.

- For closure, have groups write the numbers of the problems on the board, and ask the evaluating teams to report which group's solution they determined was best, recording the team's name under the problem's number. Then ask the evaluating team to summarize the winning team's solution and state why they felt that solution was best. Offer the winning team the opportunity to add any additional comments.

### *Observations and Advice*

Interpret problem to include a variety of complex questions and issues (such as text, diagnosis, and identification of a physical element).

"Send-a-Problem" is most effective for developing several thoughtful solutions for more complex problems that do not have a single right answer. In some situations, it may be effective for close-ended problems that students just learned in a lecture or reading assignment. In this way, it can replace traditional drill-and-practice exercises by adding in higher-order thinking skills during the second solution-evaluation stage.

Prepare the problems and work through the solutions yourself so that you can determine the amount of time it will take groups to solve the problems. Depending on the complexity of the problem, you will need to estimate how long each stage of this activity will take to allow enough time for thinking and reflection. Try to select problems that are roughly equal in complexity and that take approximately the same amount of time to solve.

If you are teaching a large class, you may want to have several groups work on the same problem, but you will find that this works better if groups with the same problems are not seated next to each other.

Be fairly specific about time limitations and be thorough in the instructions introducing the activity. This will give students an idea of how much thought they can give to their responses and it will help ensure that the activity proceeds smoothly. Be prepared to extend the time limit if the majority of the groups seem to still be on task or to call time sooner than you anticipated if the majority of the groups seem to be wrapping up.

Despite your best efforts at developing comparable problems and setting time limits, groups may well work at different rates, and they need sufficient flexibility to do that. In order to prevent any group from having to sit idle or from having to pass the problem before they are ready, have several extensions (additional problems) ready to fill in. Final groups can report on more than one problem, or you can pick up the additional problems and respond.

Having participated in "Send-a-Problem," students should be relatively skilled at solving specific problem types and evaluating problem-solving processes. If students

have been working on different types of problems, provide them with a few problems and ask them to state the principle that best applies to each problem. This will help you to evaluate their ability to associate specific problems with the general principles used to solve them and to determine their skill at transferring what they have learned to new problem situations.

## 6.7 CREATIVE PROBLEM SOLVING TOOLS AND SKILLS FOR STUDENTS AND TEACHERS

**Creative problem solving**, or CPS, refers to the use of imagination and innovation to find solutions to problems when formulaic or conventional processes have failed.

Despite its rather dry definition - creative problem-solving in its application can be a lot of fun for learners and teachers alike.

### Keyword

**Creative problem-solving** is the mental process of searching for an original and previously unknown solution to a problem.



### *Why Are Creative Problem-Solving Skills Important?*

By definition, creative problem-solving challenges students to think beyond the conventional and to avoid well-trodden, sterile paths of thinking.

Not only does this motivate student learning, encourage engagement, and inspire deeper learning, but the practical applications of this higher-level thinking skill are virtually inexhaustible.

For example, given the rapidly changing world of work, it is hard to conceive of a skill that will be more valuable than the ability to generate innovative solutions to the unique problems that will arise and that are impossible to predict ahead of time.

Outside the world of work, in our busy daily lives, the endless problems arising from day-to-day living can also be overcome by a creative problem-solving approach.

When students have developed their creative problem-solving abilities effectively, they will have added a powerful tool to attack problems that they will encounter, whether in school, work, or in their personal lives.

Due to its at times nebulous nature, teaching creative problem-solving in the classroom poses its own challenges. However, developing a culture of approaching problem-solving in a creative manner is possible.

### 6.7.1 The Underlying Principles of CPS

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Before we take a look at a process for implementing creative problem solving, it is helpful to examine a few of the underlying principles of CPS. These core principles should be encouraged in the classroom.

They are:

#### *Assume Nothing*

Assumptions are the enemy of creativity and original thinking. If students assume they already have the answer, they will not be creative in their approach to solving a problem.

#### *Problems are Opportunities*

Rather than seeing problems as difficulties to endure, a shift in perspective can instead view problems as challenges that offer new opportunities. Encourage your students to shift their perspectives to see opportunities where they once saw problems.

#### *Suspend Judgment*

Making immediate judgments closes down the creative response and the formation of new ideas. There is a time to make judgments, but making a judgment too early in the process can be very detrimental to finding a creative solution.

### *Cognitive Approaches: Convergent vs. Divergent Thinking*

The terms divergent and convergent thinking, coined by psychologist J.P. Guilford in 1956, refer to two contrasting cognitive approaches to problem-solving.

- Convergent Thinking can be thought of as linear and systematic in its approach. It attempts to find a solution to a problem by narrowing down multiple ideas into a single solution. If convergent thinking can be thought of as asking a single question, that question would be 'Why?'
- Divergent Thinking focuses more on the generation of multiple ideas and on the connections between those ideas. It sees problems as design opportunities and encourages the use of resources and materials in original ways. Divergent thinking encourages the taking of creative risks and is flexible rather than analytical in its approach. If it was a single question, it'd be 'Why not?'

While it may appear that these two modes of thinking about a problem have an essentially competitive relationship, in CPS they can work together in a complementary manner.

When students have a problem to solve and they are looking for innovative solutions, they can employ divergent thinking initially to generate multiple ideas, then convergent thinking to analyze and narrow down those ideas.

Students can repeat this process to continue to filter and refine their ideas and perspectives until they arrive at an innovative and satisfactory solution to the initial problem.

Let's now take a closer look at the creative problem-solving process.

### **6.7.2 The Creative Problem-solving Process**

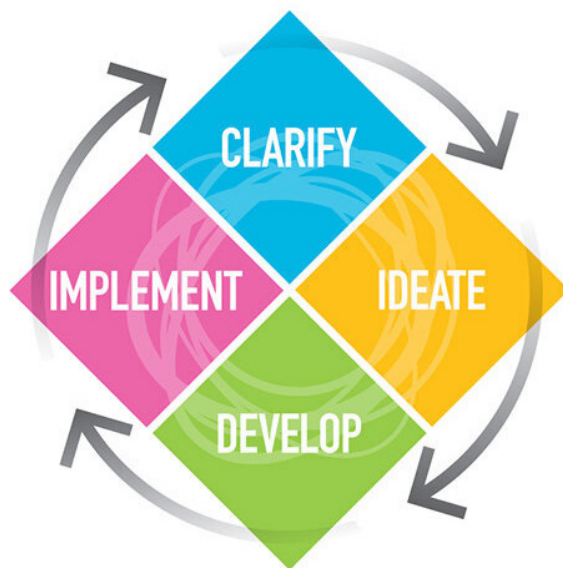
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CPS helps students arrive at innovative and novel solutions to the problems that arise in life. Having a process to follow helps to keep students focused and to reach a point where action can be taken to implement creative ideas.

Originally developed by Alex Osborn and Sid Parnes, the CPS process has gone through a number of revisions over the last 50 or so years and, as a result, there are a number of variations of this model in existence.

The version described follows is one of the more recent models and is well-suited to the classroom environment.





However, things can sometimes get a little complex for some of the younger students. So, in this case, it may be beneficial to teach the individual parts of the process in isolation first.

### *1. Clarify*

Before beginning to seek creative solutions to a problem, it is important to clarify the exact nature of that problem. To do this, students should do the following three things:

#### *Identify the Problem*

The first step in bringing creativity to problem-solving is to identify the problem, challenge, opportunity, or goal and clearly define it.

#### *Gather Data*

Gather data and research information and background to ensure a clear understanding.

#### *Formulate Questions*

Enhance awareness of the nature of the problem by creating questions that invite solutions.

## 2. Ideate

Explore new ideas to answer the questions raised. It is time to get creative here. The more ideas generated, the greater the chance of producing a novel and useful idea. At this stage in particular, students should be engaged in divergent thinking as described.

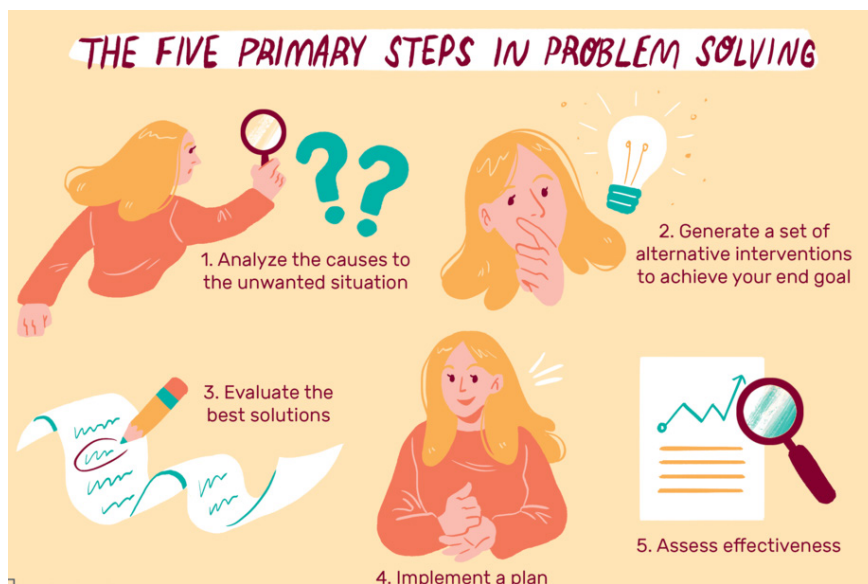
## 3. Develop

The focus here shifts from ideas to solutions. Once multiple ideas have been generated, convergent thinking can be used to narrow these down to the most suitable solution. The best idea should be closely analyzed in all its aspects and further ideas generated to make subsequent improvements. This is the stage to refine the initial idea and make it into a really workable solution.

## 4. Implement

Create a plan to implement the chosen solution. Students need to identify the required resources for the successful implementation of the solution. They need to plan for the actions that need to be taken, when they need to be taken, and who needs to take them.

In each stage of the CPS Process, students should be encouraged to employ divergent and convergent thinking in turn. Divergent thinking should be used to generate multiple ideas with convergent thinking then used to narrow these ideas down to the most feasible options. We will discuss how students go about this, but let's first take a quick look at the role of a group facilitator.



## *The Importance of Group Facilitator*

CPS is best undertaken in groups and, for larger and more complex projects, it's even more effective when a facilitator can be appointed for the group.

- The facilitator performs a number of useful purposes and helps the group to:
- Stay focused on the task at hand
- Move through the various stages efficiently
- Select appropriate tools and strategies

A good facilitator does not generate ideas themselves but instead keeps the group focused on each step of the process.

Facilitators should be objective and possess a good understanding of the process outlined, as well as the other tools and strategies.

### **6.7.3 The Creative Problem-Solving Process: Tools and Strategies**

There are a number of activities available to help students move through each stage. These will help students to stay on track, remove barriers and blocks, be creative, and reach a consensus as they progress through the CPS process.

The following tools and strategies can help provide groups with some structure and can be applied at various stages of the problem-solving process. For convenience, they have been categorized according to whether they make demands on divergent or convergent thinking.

## *Divergent Thinking Tools*

### *Brainstorming*

Defined by Alex Osborn as “a group’s attempt to find a solution for a specific problem by amassing ideas”, this is perhaps the best-known tool in the arsenal of the creative problem solver.

You may also set a quota on the number of ideas to generate or introduce a time limit to further encourage focus. When completed, members of the group can share and compare all the ideas in search of the most suitable.

### *5 W’s and an H*

The 5 W’s and an H are Who, What, Where, Why, and How. This strategy is useful to effectively gather data. Students brainstorm questions to ask that begin with each of

the question words above in turn. They then seek to gather the necessary information to answer these questions through research and discussion.



### *Reverse Assumptions*

This activity is a great way to explore new ideas. Have the students begin by generating a list of up to 10 basic assumptions about the idea or concept. For each of these, students then explore the reverse of the assumption listing new insights and perspectives in the process.

The students can then use these insights and perspectives to generate fresh ideas. For example, an assumption about the concept of a restaurant might be that the food is cooked for you. The reverse of that assumption could be a restaurant where you cook the food yourself. So, how about a restaurant where patrons select their own recipes and cook their own food aided by a trained chef?

### *Convergent Thinking Tools*

#### *How-How Diagram*

This is the perfect activity to use when figuring out the steps required to implement a solution.

Students write the solution on the left-hand side of a page turned landscape. Working together, they identify the individual steps required to achieve this solution and write these to the right of the solution. When they have written these steps, they go through each step one-by-one identifying in detail each stage of achieving that step. These are written branching to the right of each step.

Students repeat this process until they have exhausted the process and ended up with a comprehensive branch diagram detailing each step necessary for the implementation of the solution.

### *The Evaluation Matrix*

Making an evaluation matrix creates a systematic way of analyzing and comparing multiple solutions. It allows for a group to evaluate options against various criteria to help build consensus.

An evaluation matrix begins with the listing of criteria to evaluate potential solutions against. These can then be turned into the form of a positive question that allows for a Yes or No answer. For example, if the budget is the criteria, the evaluation question could be 'Is it within budget?'

Make a matrix grid with a separate column for each of the key criteria. Write the positive question form of these criteria as headings for these columns. The different options can then be detailed and listed down the left-most column.

Students then work through each of the criteria for each option and record whether it fulfills, or does not fulfill, each criteria. For more complex solutions, students could record their responses to each of the criteria on a scale from 0 to 5.

### *Pair and Share*

- This activity is suitable to help develop promising ideas. After making a list of possible solutions or questions to pursue, each individual student writes down their top 3 ideas.
- Once each student has their list of their 3 best ideas, organize students into pairs. In their pairs, students discuss their combined 6 ideas to decide on the top 3 out of the 6. Once they have agreed on these, they write the new top 3 ideas on a piece of paper.
- Now, direct the pairs of students to join up with another pair to make groups of 4. In these groups of 4, students discuss their collective 6 ideas to come up with a new list of the top 3 ideas.
- Repeat this process until the whole class comes together as one big group to agree on the top 3 ideas overall.

### *Establish a Culture of Creative Problem Solving in the Classroom*

- Approaching problems creatively is about establishing a classroom culture that welcomes innovation and the trial and error that innovation demands. Too often our students are so focused on finding the 'right' answer that they miss opportunities to explore new ideas.
- It is up to us as teachers to help create a classroom culture that encourages experimentation and creative playfulness.

- To do this we need to ensure our students understand the benefits of a creative approach to problem-solving.
- We must ensure too that they are aware of the personal, social, and organizational benefits of CPS.
- CPS should become an integral part of their approach to solving problems whether at school, work, or in their personal lives.





## CASE STUDY

### A CASE STUDY OF PROBLEM-BASED LEARNING IN A MIDDLE SCHOOL SCIENCE CLASS: LESSONS LEARNED

In winter, 1995, in response to the wishes of our primary funders and to numerous reports about the low quality of science and math education in this country, the EduTech Institute embarked on a project to enhance middle school science, math, and technology education. We formed a partnership with nine teachers from three local schools and with science and engineering faculty at Georgia Tech. Faculty at Tech provide expertise in science, math, and technology; teachers provide expertise on students, the curriculum, teaching, and the classroom; and EduTech provides expertise in the cognition of learning and problem solving, models of educational practice, software design and development, and assessment. Our goals were to help students learn science and math more deeply and effectively, to help students understand the roles science and math play in the world, and to encourage more students to go into science and engineering careers.

Based on Georgia Tech's strengths and on what we know about learning, we decided to address these goals in combination by developing design projects for the curriculum that introduce students to technology and engineering and provide them the opportunity to better learn math and science. In short, our proposal was that students learn science and math by working on engineering-related problems that require use of the math and science concepts that are already part of the curriculum. Parts of the curriculum would be covered by working on design problems, situating learning in realistic problem-solving activity. We would develop software to support the endeavor as well.

The central tenets guiding our effort come from cognitive science and educational technology research and the wisdom of teachers we are working with: (1) learning by solving complex realistic design problems; (2) integrating (as much as possible) education in sciences, math, and technology; (3) integrating learning of concepts, skills, and critical thinking; (4) focus on collaborative learning and doing; (5) fostering reflection and articulation to enhance learning; (6) software-realized scaffolding of collaboration, complex problem solving, and learning; and (7) providing on-line information resources and tools in an integrated software environment.

We adopted problem-based learning as a classroom methodology. As an approach that situates learning in problem solving activity, it incorporates many of these principles and is consistent with our own approach to learning drawn from case-based reasoning. In problem-based learning, as done in medical schools, students learn science by solving authentic clinical problems. Together, they summarize what they know, what their hypotheses are, and what they still need to know; plan their next steps; and

separately do whatever research is needed to continue solving the problem; coming back together when that research is done and continuing with their deliberations. Students are taught a methodology for going about solving problems that scaffolds the solving of hard problems and promotes the acquisition of self-directed learning skills. To enable students to successfully solve hard problems, they work in collaborative groups, where they can build on each other's strengths and knowledge. Working in collaborative groups also promotes learning how to articulate and justify; one cannot work successfully in groups without being able both to understand others and to make oneself clear to others. Facilitators assigned to each work group help students to manage their collaborations well, to stay on track in solving problems, and to reflect on their experiences in such a way that they learn the broad range of knowledge and skills that can be learned from these experiences.

The goals of PBL correspond with the goals of our project and those of the teachers we are working with. Over the summer of 1995, we organized training sessions for our teachers to help them learn how to carry out PBL methodology, and we worked together with them, with Georgia Tech faculty, and with experts on problem-based learning to develop problems appropriate for middle school and to adapt PBL to the constraints of the middle school classroom. With one teacher and thirty students, PBL small-group methodology is not possible, but our teachers decided that they could use large-group discussions to get students started in solving problems and for sharing between groups and have students work in small groups after large-group discussions had provided them with focus.

It became clear, after teachers returned to their classrooms in August, however, that they were not completely comfortable with carrying out PBL methodology. Most are now (in January) trying PBL or about to get started. They have become comfortable by trying out its pieces, first, on small problems that they were already familiar with and finding out that their students would respond. It became clear to us that if what we were developing were to have a broad impact, we would have to learn what it takes for teachers to become comfortable with the new roles they need to take on.

To better understand the processes of change that take place in middle-school classrooms when PBL is used, EduTech is conducting a series of qualitative studies of science and math teachers as they implement PBL modules. This paper reports on the first ethnographic case study involving one teacher, Ms. J, and her 8thgrade science classroom, as she uses "The Gold Problem." The problem was developed during the summer 1995 PBL workshop and modified by this teacher to augment an earlier unit on rocks and minerals that included a field trip to Dahlonega, the site of Georgia's own 19th-century gold rush. The report is based on field notes of daily participant observation in two classes throughout the 7-day unit, informal interviews with the teacher, and classroom artifacts. We've identified some of the issues teachers must face as they implement this new classroom methodology and some of the ways students

must adapt to the changes, and from those, we make some recommendations about how to facilitate teacher learning and development.

### *The Classroom*

Ms. J is a veteran classroom practitioner, a conscientious and reflective educator who establishes her goals in advance, plans each class carefully, and keeps a journal to record thoughts about students, curriculum, activities, and teaching effects. She is not afraid of innovation and believes the best way to find out what is still needed in this PBL approach is to simply try it and see what happens. She is intrigued by the challenge of PBL and enthusiastic about the potential benefits of her partnership with the EduTech team, particularly

the increased availability of technological support. Many of the features of PBL are already a part of this teacher's repertoire: she uses collaborative learning, encourages student independence and self-direction, is accomplished at guiding students through questions and suggestions rather than merely giving them information, has experience with alternative assessment, and is a skilled classroom manager. Her interest in the subject matter is manifested in her enthusiasm for the topics at hand, and she conveys the clear impression that in this class, serious work is both possible and expected. Ms. J treats students as respected co-investigators of indisputably fascinating fields of knowledge. There is no time to waste in her classroom; every minute is valuable, and students come to class expecting to work continuously.

### *Classroom Implementation*

On the first day of the unit the students are presented with the problem statement:

A thirteen year-old boy in North Carolina recently found a sapphire worth \$33,000 in an abandoned mine. Georgia has riches too. "There's gold in them thar hills". And much of this gold is in the Atlanta area. Maybe we can get lucky too. Where might we find gold ,and what areas would be worth mining? You will make a presentation to potential investors.

As a class, and using the PBL "white board" format to brainstorm, the students make lists of FACTS (what we know), IDEAS (related thoughts and hypotheses), LEARNING ISSUES (what we need to know more about), and ACTIONS (what we need to do), recording their thoughts both on large sheets of poster paper tacked to the classroom wall. After identifying a number of items in each category, they break off into small groups of 4-5 students, refine their lists, and begin independent research using materials the teacher has placed on a table at the front of the room. The teacher facilitates the large-group brainstorming sessions to keep students focused and to guide them to resources that will answer their questions. She does not give

prepared lectures about the content, nor does she structure the material presented. Students discover and record pertinent information through their own exploration of the resources, and they discuss findings with their group members to compile the growing list of evidence that will form the basis of their argument in the final group presentation. For this unit, students also perform a lab experiment demonstrating the chemical process of reclaiming copper from a solution, an activity Ms. J adds to get students thinking about the environmental impact of mining.

However, as students work through the gold problem, a number of unanticipated difficulties become evident. In daily interviews, Ms. J talks of her frustrations. First, she is perplexed that what she calls the “wording” of the problem statement leads students to focus on economic rather than environmental questions, and that the availability of mineral resource maps enables them to “find” the gold without having to learn about the geological processes that determine the types and locations of mineral deposits. Furthermore, the research materials she and the EduTech staff have gathered do not provide details about the geological processes, but instead steer students to consider mining techniques and legal issues. She feels that the content goals she identified in planning this unit have been replaced by tangential issues, and that the customary authority she has as teacher to redirect students’ attention is not available in her role as PBL facilitator. She is uncomfortable with this loss of control, explaining that she is accustomed to “chunking off” bits of each topic so that students are introduced to concepts gradually and can build new knowledge on the old. “I need some more help or input with how to tier the problem, to find a way to make those two or three major facets of the problem more obvious,” she says.

Her discomfort with the unintended direction of students’ research leads her to abandon the PBL white boards, intended ideally as an ongoing record of student learning and reflection. She feels that the entries students made during the first brainstorming session were too far afield of her original goals for the gold problem, and so opts not to continue using the white boards because she “does not feel confident” in her facilitation of the problem and worries that students might get even further off-track. Her ambivalence about what she perceives as a surrender of control in the facilitator’s role and her lack of confidence in students’ ability to identify key issues create ambivalence in her commitment to what she calls “pure PBL.” If time were not an issue, she says, the students might eventually arrive at the curricular goals on their own, but the current grading period is ending and a long list of county-defined topics remains to be covered during the school year. She chooses practicality over idealism when she asserts, “I may have to feed them more [information] than I should, but I will if I have to.”

The students also encounter difficulties with the PBL approach. The most noticeable issue is their initial uncertainty about the problem statement and what is expected of them. Though the teacher carefully explains the steps they will undertake, the open-

endedness of the problem is daunting, and many students are either passive or openly resistant. An essential element of PBL is to “bring the problem home” to students, to make a connection with their real-world experience, but these eighth-graders have seen the abandoned gold mines in north Georgia and have heard their tour guide tell them there’s not enough gold to warrant further efforts at extraction. Thus the gold problem is an exercise in fantasy, not a potential real-world puzzle, and their primary goal becomes to satisfy the teacher with the minimal effort required.

In addition, the small-group collaborations cause problems for many students. Though Ms. J felt that the collaborative process worked well overall and that students seemed able to adjust to their group situations, there were numerous conflicts with the gathering, sharing, analysis and presentation of information, and also with interpersonal dynamics within groups. The students’ general lack of research skills meant that they spent their time aimlessly flipping through pages of texts and journal reprints without knowing what information they were looking for, taking notes on easily recognizable data but failing to ask questions that would lead them to a deeper understanding of the issues. Virtually every group, for example, tediously copied lists of counties where gold has been found in Georgia, but none attempted to analyze the quantity or quality of this regional distribution of gold deposits. In addition, rather than dividing research issues among group members, students tended to duplicate each other’s work.

Issues of gender and leadership also arose, with boys tending to push for decisions early in the process (often before doing much research) and girls assuming the passive role of group recorder. In two groups, acrimonious disputes ensued when the boys dominated the discussion and forced the girls on the team to acquiesce to their preferred conclusion, despite a lack of solid evidence. Finally, a number of groups had difficulty completing their assignment because of the uncooperative or inattentive behavior of one or two members who sabotaged the group’s efforts. With thirty or more students packed into her small classroom, the task of maintaining order and concentration among these teenagers is intimidating. “It’s really an art,” Ms. J tells me, referring to the challenge of arranging groups to maximize cooperation and learning amongst the members.

### *Teacher Coping Strategies*

Both teacher and students make adjustments in their expectations about the classroom as they learn to cope with the demands of the PBL approach. Ms. J is a skilled teacher who uses many practices such as defining, clarifying, restating, reinforcing, summarizing, and recapitulating information to guide students’ learning. Yet PBL asks her to assume the less familiar role of facilitator, not provider of information, and encourage students to construct knowledge from their own investigations rather than from her condensation of text-based facts. As she attempts to take on this role, she improvises several techniques, none of which are specifically part of the PBL



approach, but all of which seem to enhance its use, at least in this classroom and with this beginning PBL teacher.

*Jump-starting:* When students seem unable to move forward in their work, Ms. J offers a barrage of questions to stimulate their thinking. When she finds one group sitting passively rather than working, she sits down with them: “OK, How are you going to start?” she asks. They shrug listlessly. “What is the problem?” More shrugs. “Where might you find it?” One lifts the brainstorming handout tentatively. “What does it say? Read it,” she encourages. She keeps up this rapid-fire questioning until the group seems ready to continue working on its own.

*Check-ups:* To keep students focused on the stages of their work, Ms. J checks to see if they’re on-target for the schedule of activities. For example, when she finds several members of one group working on pictures for the presentation, she reminds them of their primary goal: “Are you also thinking about making an argument?” she asks them. You need to put together the evidence to make a good argument, that’s the meat of your presentation.”

*Dropping hints:* The teacher mentions information and implies that it might be helpful to students. For example, when she wants students to notice some coincidences between geological regions and gold deposits, Ms. J introduces some maps. “Here’s one about geology occurrences in the West Central Piedmont,” she tells them. “Where do we live?” (answer: the Piedmont.) “Yes,” she confirms. “These might be useful to you.”

*Spotlighting:* The teacher focuses on a previously unremarked aspect of some new information, or points out inherent conflicts in the facts students are developing. When a student finds an article staunchly opposed to mining, Ms. J asks who authored the article: it turns out to be a publication of the Sierra Club. “What is the Sierra Club?” she asks, and someone tells her it’s an environmental group. “So you would expect them to oppose mining, would not you, because of the harmful effects on the environment,” she says. She suggests that they look for other articles by potentially pro-mining authors such as business leaders or politicians, and reminds them they must make up their own minds in weighing the evidence about what they believe.

*Ratcheting up:* Each day Ms. J recaps what they’ve done so far and sets a new challenge. For example, when the groups discover mineral resource maps that show them exactly where Georgia’s gold mines are located, several seem to feel that they’ve solved the problem: here’s the gold, all we have to do is go get it. “Well, you have some good ideas about the first part of the problem, but so far you do not have any information about how to respond to the second part,” she reminds them. She reads the titles and short summaries of several articles from the resource table, suggesting ways to think about how the geographic information they’ve found might be related.





### *Stepping back*

This is a way of providing meta-structure for solving the problem, of reminding students of the “big picture” they’re trying to address. At the beginning of each class, she reminds students to break the problem statement down into its parts: first, they have to find the gold; second, they have to decide whether it will be worth the effort to mine it; and third, they have to plan a presentation to a group of potential investors. She repeats this outline several times over the course of the unit.

### *Student Coping Strategies*

The students also encounter difficulties in adjusting to the PBL approach. Most noticeable is their initial level of uncertainty about the problem statement and what they are really expected to do; another problem is to find ways to work with --or around--members of their collaborative groups. The case study identified several coping strategies adopted by students, here omitted due to space constraints. Some help them move forward despite the frustrations; other strategies allow them to look busy without really participating.

### *Discussion and Conclusions*

A critical need in effectively shifting from one teaching methodology to another is for teachers to reflect on their own beliefs about classrooms and learning and to understand the philosophy that underlies the new approach. Recent research has explored the links between teachers’ beliefs and attitudes and their adaptability to changing classroom conditions and methodologies. Studies of teacher knowledge have identified two categories, pedagogical knowledge and content knowledge, showing that both kinds are essential to good teaching. Louden, in a classroom-based ethnography, found his teacher-subject to be most successful at instituting changes that were congruent with her pre-existing beliefs and practices. Narrative studies of teachers’ lives and their stories about teaching and learning have explored the effects of background and context on classroom practices. The constructivist framework underlying these studies views the teacher as an active subject and agent for change whose teaching is a creative, humanistic endeavor, adapting methods to suit particular settings, students and goals.

Teachers must make adjustments and find ways to integrate their own personal style and philosophy of teaching with any new approach. In adopting PBL, Ms. J has found this adjustment to be fairly unproblematic, in large part because the characteristics of PBL are consonant with her own teaching practices. Probably the two biggest changes for her under the PBL approach are, first, that she has to give up her customary control over which content to teach and when to teach it, and secondly, that she has to adjust to the PBL view of the teacher as facilitator and coach. Her conflicting beliefs about what’s best and most efficient in the classroom are evident in some of her practices during this unit, including her decision to abandon the PBL

white boards and her ambivalence about how much background information to give students when she introduces the PBL problems. She also feels uncomfortable about the lack of structure available in PBL and feels constrained from refocusing students when they drift into curricular tangents. Yet she is intrigued by the interdisciplinary promise of the approach and eager to add the technological component as computers become more available to her students. She is anxious to give the white boards another chance and to incorporate more ongoing reflection into the PBL process during her next attempt; she now sees the white boards as a way to encourage in-progress adjustments in students' thinking, a potential solution to restructuring the problem student focus seems misdirected.

Ms. J's first experience with PBL has been one of growth and discovery for her pedagogically, expanding her own knowledge of teaching as her students explored content issues. Her example serves as a reminder that teachers must be allowed time to grow into new teaching approaches, to try them on and make alterations so that the approach becomes a good fit with the teacher's own beliefs and practices. This initial analysis suggests several kinds of support that teachers need during this process: they need like-minded mentors and colleagues to talk with, for clarification and reassurance and renewed commitment; they need assistance with the details of planning and carrying out PBL units, such as designing curriculum-sensitive real-world problems and gathering materials appropriate to the abilities and interests of their students; and they need training in the skills of facilitation, collaboration and authentic assessment to help them move away from the tempting familiarity of traditional teacher-centered instruction. Most importantly, they need support in learning to infuse the teaching and learning process with ongoing reflection, which leads to deeper understanding of both content knowledge and knowledge about teaching and learning and provides the key to retention and transfer of knowledge.

The case study also suggests that students also need time and support as they adjust to the new ways of learning through PBL. Having been convinced through prior schooling practices that knowledge resides in texts and is filtered through teachers, they must now be persuaded that they possess both the ability and the authority to construct knowledge on their own using a full range of resources. They need to learn research skills: where and how to look for information and how to figure out what information to look for. They need guidance as they learn to think critically; questioning and analyzing information and looking for potential bias in their sources does not come naturally. They need help acquiring the skills and specialized language of collaboration and learning to acknowledge the unique benefits of group diversity.

Learning all of this is probably not possible in one problem-solving session. Nor can it be "taught" prior to working on problems. Rather, the case study suggests the necessity of giving students numerous opportunities to learn from problem-solving experiences, allowing them to learn these skills over time, by carrying them out and

reflecting on them over numerous applications. As they gain confidence in solving complex problems, we hope they will learn, as medical PBL students do, to reflect on and value the process of discovery. This will lead, we hope, to students taking the initiative to hone their skills and will motivate and prepare them for life-long learning. We are following up this case study with others that shed more light on teacher development, on student development, and on adapting PBL-like methods for the constraints of middle school.



## SUMMARY

- Problem solving consists of using generic or ad hoc methods in an orderly manner to find solutions to problems.
- Problem-solving is a process—an ongoing activity in which we take what we know to discover what we do not know. It involves overcoming obstacles by generating hypo-theses, testing those predictions, and arriving at satisfactory solutions.
- Problem solving theory and practice suggest that thinking is more important in solving problems than knowledge and that it is possible to teach thinking in situations where little or no knowledge of the problem is needed.
- Problem-solving skills are necessary in all areas of life, and classroom problem solving activities can be a great way to get students prepped and ready to solve real problems in real life scenarios.
- Brainstorming and team problem-solving techniques are both useful tools in this stage of problem solving.
- In “Think-Aloud-Pair-Problem Solving” student pairs receive a series of problems as well as specific roles—problem solver and listener—that switch with each problem
- Student teams identify and analyze a problematic situation in the local community. They then write a speech for a government official that persuades others of the urgency of the problem and offers strategies for solving the problem.
- In “Send-a-Problem,” groups of students each receive a problem, try to and purpose solve it, and then pass the problem and solution to a nearby group.
- Interpret problem to include a variety of complex questions and issues (such as text, diagnosis, and identification of a physical element).
- Creative problem solving, or CPS, refers to the use of imagination and innovation to find solutions to problems when formulaic or conventional processes have failed.
- “Send-a-Problem” is most effective for developing several thoughtful solutions for more complex problems that do not have a single right answer.

## MULTIPLE CHOICE QUESTIONS

1. **The first step in problem-solving and decision-making is**
  - a. Identify causes of the problems
  - b. Find creative alternatives
  - c. Evaluate the choice
  - d. Awareness of the problem
2. **Which of the following is not true regarding cognitive thinking styles?**
  - a. They are mental guides which help us process information
  - b. They are mental guides which help us problem solve in specific contexts
  - c. They are an accurate way to measure intelligence and problem solving skills
  - d. They are important to the way we think, perceive, and organize information in our daily social interactions
3. **Creativity is likely to occur when three components come together: expertise, creative thinking skills, and**
  - a. The right type of motivation
  - b. Proper lighting in the work environment
  - c. Stable economic conditions
  - d. Extrinsically motivating conditions in the work environment
4. **A major challenge in developing creative thinking skills is to learn how to think ..... in addition to .....**
  - a. Emotionally; rationally
  - b. Vertically; rationally
  - c. Logically; laterally
  - d. Laterally; vertically
5. **All of the following are steps in the decision-making process except**
  - a. Finding creative alternatives
  - b. Identifying causes of the problem
  - c. Getting rid of the competition
  - d. Evaluating the choices



## REVIEW QUESTIONS

1. Explain the term problem solving.
2. Focus on problem-solving activities for the classroom.
3. Write short note on problem-solving process.
4. What are the advantages and disadvantages of problem solving method? Explain.
5. Give a detailed overview on creative problem solving tools and skills for students and teachers

### *Answer to Multiple Choice Questions*

1. (d)      2. (c)      3. (a)      4. (d)      5. (c)





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# CHAPTER 7

## ATTITUDES AND VALUES

### LEARNING OBJECTIVES

After studying this chapter, you will be able to:

1. Understand values, beliefs and attitudes
2. Explain autobiographical reflections
3. Describe circular response
4. Focus on ethical dilemmas
5. Discuss about connected communities

*“Values are related to our emotions, just as we practice physical hygiene to preserve our physical health, we need to observe emotional hygiene to preserve a healthy mind and attitudes”*

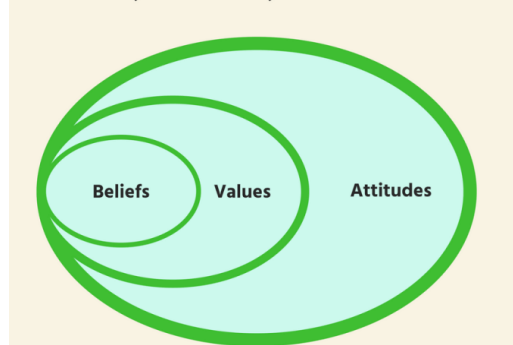
*–Dalai Lama*

### INTRODUCTION

Attitudes and values are a key component of the learning techniques, which helps students navigate towards well-being and the future we want. They refer to the principles and beliefs that influence one’s choices, judgements, behaviours and actions on the path towards individual, societal and environmental well-being. Strengthening and renewing trust in institutions and among communities hinges on developing core shared values of citizenship (respect, fairness, personal and social responsibility,

integrity and self-awareness) at school in order to build more inclusive, fair, and sustainable economies and societies.

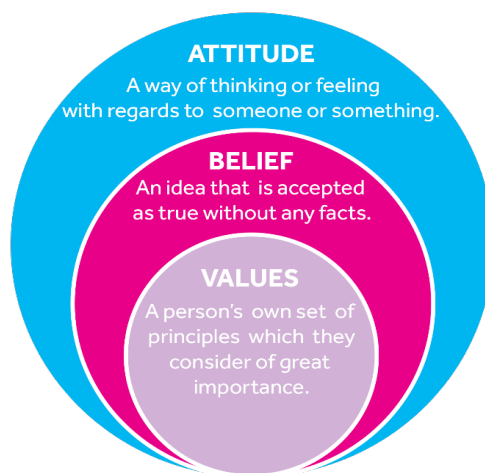
### Beliefs, Values, and Attitudes



Knowledge, skills, attitudes and values are not competing concepts; they are developed interdependently. As schools, workplaces and communities become more ethnically, culturally and linguistically diverse, it will be more important than ever to emphasise the inter-relatedness of knowledge, skills, attitudes and values.

## 7.1 VALUES, BELIEFS AND ATTITUDES

People's values, beliefs and attitudes are formed and bonded over time through the influences of family, friends, society and life experiences. So, by the time you're an adult, you can hold very definite views on just about everything with a sense of "no one is going to change my mind".



**Figure 1:** Definitions of values, belief and attitude.

The combination of your personal values, beliefs and attitudes are your moral principles that guide you in life and affect your behaviour. However, your views can wildly differ to others and in an institution such as a school, these beliefs may be counter to the values of the school, **child development** or indeed the law. Here are some examples:

### Keyword

**Child development** refers to the sequence of physical, language, thought and emotional changes that occur in a child from birth to the beginning of adulthood. During this process a child progresses from dependency on their parents/guardians to increasing independence.

## 7.1.1 Values that clash with child development

You believe that boys need more help and are less able to look after themselves than girls, because of your experience with your children. At home you fuss around your son much more than your daughter. In school, there's an approach of equality of opportunity, and the expectations of girls and boys are that they equally behave well, clear up and help each other. However, you don't believe this can happen. In class, you pay more attention to the boys by making sure they have all they need, getting them paper, pencils and resources while trusting the girls to already be organised. Do you think it's fair to make this assumption? What messages are you sending to the boys and the girls?



## 7.1.2 Values that clash with effective child management

Some pupils are brought up in households where swearing is the norm and they bring that view into school. You, however, vehemently hate swearing and when a pupil does swear you



hand out the worst possible punishment. Have you considered whether the punishment fits the 'crime'? Or even linked to the issue? Is the punishment more to do with swearing than what the pupil has done? It could be that the pupil has been provoked so much they've lashed out by swearing. If you don't deal with the underlying issues and simply punish the swearing, then your moral compass – not the school's moral compass – is prevailing.

Everyone has their own view about education and what it should involve, which can lead to healthy debates and ideas. However, it needs to be acknowledged that a personal view will remain just that – unless it's supported by sound evidence.



### Remember

By following the rules and values of the school you are not compromising your own values and beliefs.

When working in schools, you must be prepared to adjust your belief system to fit the education and school system. If you refer to the previous Step as an example, even though you may disagree with sex and relationships education for all ages – if it's the law – you'll have to teach and support the subject. It's a bit like having a light switch – you have to turn your values off while in school. It can be hard but it isn't fair on pupils if they are expected to be taught something, and it is then not taught, or taught badly.

### 7.1.3 Significance of Values and Attitudes

Values are beliefs about what is good and desirable. This includes what we consider good and desirable for ourselves, for others and for the wider community.



Each worker has a unique perspective on the world and has their own set of values. These can often be traced back to our experiences as children and the messages that we get from our parents, friends and society as we grow into adults. As we mature we develop our own attitudes towards life. We discard some parts of our value system and adopt new values.

We bring to the workplace a whole range of life experiences that define who we are. It is neither possible nor desirable to separate ourselves into a 'work' self and another 'social' or 'family' self. We may modify our behaviour to fit work or social situations, but it is not psychologically healthy to alter our whole personality or to split our psyches into separate selves.



Our identity is not fixed but is constantly evolving as a result of our interactions with friends, family, co-workers and clients. We are also influenced by our interactions with employers and with social institutions. For example, people who work in a health environment might absorb ideas about harm minimisation. These ideas are gradually absorbed into our value system and become part of who we are.

#### 7.1.4 Cultivation of Values and Attitudes

Values are qualities that students should develop as principles underpinning behaviour and decision-making, whereas attitudes support cognitive functioning. Both are personal qualities that students should develop. In the process of learning and teaching, values and attitudes mutually affect each other. By means of different modes of assessment, the effects of learning and teaching can be reviewed and improved. The following are examples of related learning and teaching activities and their assessment criteria:

Values and Attitudes	Examples of Learning and Teaching Activities	Examples of Assessment Criteria
National Identity	Through aquatic events, students learn the achievements of Chinese athletes and so develop their sense of national identity. For example, at the time of hoisting the national flag and playing the national anthem, students will feel pride in identifying themselves as Chinese nationals.	<ul style="list-style-type: none"> <li>• Get to know about famous swimmers of China</li> <li>• Get to know swimming news related to China</li> <li>• Get to know China's success in Asian and international swimming events</li> <li>• Take pride when Chinese athletes win international competitions</li> </ul>
Responsibility	Through different modes of practice, competition and related activities, students come to realise the importance of responsibility. For example, using both hands to hold partner's hands when practising leg-kicking and taking care of partner all the way	<ul style="list-style-type: none"> <li>• Keep the surroundings clean</li> <li>• Join all activities punctually</li> <li>• After using kickboards, putting them away as instructed</li> <li>• Assess each other seriously</li> <li>• Abide by rules and prevent injuries to one self/fellow students</li> <li>• Assist students in need</li> <li>• Take care of fellow students' learning and safety</li> <li>• Achieve the targets in swimming lessons</li> <li>• Complete assigned tasks</li> <li>• Make great effort to finish competitions disregarding winning or losing</li> </ul>
Commitment	Through different modes of practice, competitions and related activities, students come to realise that they have to be positive and committed, and to try their best to find solutions when they face difficulties.	<ul style="list-style-type: none"> <li>• Help arrange and pack up equipment</li> <li>• Make good use and take care of sports equipment and facilities</li> <li>• Help maintain order</li> <li>• Help fellow students who are confronted with difficulties</li> <li>• Take up the role of a junior instructor for the swimming group</li> <li>• Act as junior leaders in organising activities</li> </ul>

Respect for Others	Through activities, students learn to respect others including teammates, teachers, referees and other competitors.	<ul style="list-style-type: none"> <li>• Respect order in class</li> <li>• Listen carefully to others' instructions</li> <li>• Be open to comments and guidance</li> <li>• Respect the performance of fellow students</li> <li>• Respect teachers, referees, team members and other competitors</li> <li>• Respect the judgements of referees</li> <li>• Be sincere about helping partners' practice</li> <li>• Take the initiative to shake hands with opponents after competition as a gesture of thanks regardless of winning or losing</li> </ul>
Perseverance	In the process of strenuous practice, students develop determination and perseverance.	<ul style="list-style-type: none"> <li>• Try to attain the target of swimming 10 metres or further</li> <li>• Try one's best to overcome difficulties in breathing when swimming front crawl</li> <li>• Work hard to learn</li> <li>• Work hard to achieve targets</li> <li>• Insist on working hard even in difficult circumstances</li> <li>• Try one's best in competitions and persevere to the end</li> </ul>

Remark: When assessing values and attitudes, one may consider awarding grades according to the expected standard so that assessors may apply the assessment criteria to promote student learning. An example is given below for reference.

Assessment Criteria	Put a "✓" in the appropriate boxes.							
	First observation				Second observation			
	1	2	3	4	1	2	3	4
Get to know swimming news related to China								
Complete assigned tasks								
Help fellow students who are confronted with difficulties								

1 - Not willing to show the behaviour

2 - Willing to show the behaviour

3 - Take the initiative to show the behaviour

4 - Eager to show the behaviour

### 7.1.5 Role of Teachers

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- Teachers should have a good grasp of the learning targets and the progression of skills in various strokes, and the relevant generic skills, values and attitudes when developing a school-based curriculum.
- Teachers should design co-curricular activities that match with daily PE lessons. In this way, students may enrich their learning experience, have more opportunities to join activities and develop their interests. For example, students may be encouraged to participate in water sports workshops and swimming training courses, or to assist teachers in outside school competitions.



- Teachers need to set clear learning objectives for each lesson and help the majority of or the whole class to master related skills, knowledge, values and attitudes.
- When designing teaching activities, teachers have to consider the levels, abilities and interests of students, school/community resources and safety matters. Through organising simple activities and games, they can help students develop basic swimming techniques, and, at the same time, an interest in swimming and other aquatic sports.
- When teaching aquatic sports, teachers may make use of technology such as motion analysis computer software to enhance learning. They may also ask students to work on projects for enquiry study. Such learning activities can help students develop generic skills and better understand aquatic sports.



## 7.2 AUTOBIOGRAPHICAL REFLECTIONS

Planning students and practitioners need tools and strategies to build critical self-awareness, foster communication and radical empathy across difference, and facilitate emotionally and politically sensitive and constructive discussions in communities. This need is acute within our profession, considering planners' historic contributions toward reproducing place-based racial inequalities and exclusions. The study, "Integrating Critical Autobiography to Foster Anti-Racism Learning in the Urban Studies Classroom," recently published in the *Journal for Planning Education and Research*, examines one potential tool for engaging in this reflexive, sometimes painful work: critical autobiographical writing.



The study uses a longitudinal, mixed method approach to ask and answer the following question: can structured autobiographical writing help individuals (in the case of this study, undergraduate students) cultivate critical awareness in ways that encourage them to locate their own experiences within patterns and structures of inclusion/exclusion, and in ways that inspire longer-term commitments to anti-racism and social justice praxis? To answer this question, combine a critical interpretation of a sample of students' essays with the results of a post-course survey and interviews, designed to assess potential longer-term impacts of the assignment.

The analysis revealed a number of trends relevant to planners and planning educators. First, despite students' highly diverse cultural, socioeconomic, and geographic backgrounds, their

### Did You Know?

The Human Values Foundation was established in 1995 to make available worldwide, a comprehensive values-themed programme for children from 4 to 12 years entitled "Education in Human Values". Its fully resourced lesson plans utilise familiar teaching techniques of discussion, story-telling, quotations, group singing, activities to reinforce learning and times of quiet reflection.



stories of personal racial identity formation shared common narrative arcs. Regardless of race, most followed a similar format of naivety—encounter—cognitive dissonance—epiphany. Surveyed several years later, some students reported that sharing their testimonies in class had allowed them to find common ground with their peers and form lasting bonds.

Second, the study revealed that students used thirty distinct identity markers to describe their personal racial identities. Related, students identified more than eighty social, and a dozen geographic, factors influencing their personal identity formation and understandings of race and racism. These perspectives suggest individuals' identities are more complex and multifaceted than standard public discourse and demography afford. Supplementing community-level race and ethnicity data with autobiographical testimony can help bring census data to life.

### Keyword

**Self-confidence** means trusting in your own judgment, capacities and abilities.

Third, students' essays and follow-up responses underscored the significance of interpersonal encounters in shaping these understandings. This was especially true for students' families, close friends, classmates, and teachers. Related, daily environments, especially school settings, where highly influential. The assignment had prompted students to connect to their personal stories with theoretical and discussions of race and place. Students who connected their personal experiences with established conceptual frameworks (for example, Jewish anti-racist scholar George Lipsitz), reported higher levels of sustained engagement with social justice issues following the class. Importantly, many students reported the assignment had helped them build **self-confidence** to discuss emotionally and politically charged topics, such as local legacies of racism.

So what are the takeaways for planning education and practice? Certainly, planning schools are where professionals-in-training have historically grappled with these sorts of questions, and the academy will no doubt continue to play critical roles convening spaces to discuss race, place, and planning in structured and substantive ways. However, critical autobiography writing is also useful outside the classroom, where it can be incorporated into strategic planning and community engagement processes on the local, neighborhood, or organizational levels.

Autobiography writing allowed participants to go beyond standard identity markers of race and cultural belonging, and





explore how personal experiences, environments, and social influences shaped them as unique individuals. During a follow up interview, one student summarized this succinctly, stating that the exercise reminded her that even though she was “training to be a planner, I am a person with a story, and I have an obligation to listen to the stories of the people I work with and serve. Planning is about trying to understand the complexity of identity in place, which goes way deeper than the standard checkbox definitions of race”.

In short, behind every checked box on a census or community engagement form is a person, an individual with a complex racial identity and story of belonging. To the extent planners can tap into these emotional and value-based attachments, and leverage them to strengthen social bonds and foster common ground across diverse populations, the better off our profession, and by association, the communities we serve, will be.

## 7.3 CIRCULAR RESPONSE

Developed by the adult educator Eduard Lindeman in the 1930s, this exercise is designed to help groups narrow the range of possible topics and drill down into a deeper exploration of one or two important themes. It puts a premium on careful listening and informed responding. Because of the anxiety this exercise often produces, we advise against using it at the start of a group’s time together.

### 7.3.1 The Circle of Voices

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The circle of voices is an activity revered in Native American, First Nation, and Aboriginal cultures. It describes the very simple procedure of giving each person an equal chance to contribute to the discussion. The circle of voices can be introduced in the middle of discussion to allow those who haven’t yet spoken some time designated for their voices alone. When we use it to open a discussion, we do it in the following way.

Four or five students form a circle. They are allowed up to three minutes of silent time to organize their thoughts. During this time, they think about what they want to say on the topic once the circle of voices begins. Then the discussion opens, with each student having up to three minutes of uninterrupted time. During the three minutes each person is speaking, no one else is allowed to say anything.

Students can take their turns to speak by going around the circle in order or volunteering at random. Although the latter arrangement sounds relaxed and informal, we have found that the opposite is often the case. Moving sequentially around the circle removes the stress of having to decide whether or not to try to jump in after another student has finished speaking. An important benefit of using the circle of voices at the start of a discussion is that it prevents the development early on of a pecking



order of contributors. Introverted or shy students, those whose experience has taught them to mistrust academe, or those who view discussion as another thinly veiled opportunity for teachers to oppress or offend will often stay silent at the beginning of a course. The longer this silence endures, the harder it is for these individuals to speak up. By contrast, in the circle of voices, everyone's voice is heard at least once at the start of the session.



After the circle of voices has been completed and everyone has had the chance to speak, the discussion opens out into a more free flowing format. As this happens, a second ground rule comes into effect. Participants are allowed to talk only about other people's ideas that were expressed in the circle of voices. A student cannot jump into the conversation to expand on his own ideas; he can only talk about his reactions to what someone else has said. The only exception to this rule is if someone else asks him directly to expand on his ideas. We like this simple ground rule because it short circuits the tendency towards "grandstanding" that sometimes afflicts a few articulate, confident individuals.

### 7.3.2 Circular Response Discussions

One of the habits students find most difficult to acquire is the habit of attentive listening. The circular response exercise is a way to democratize participation, promote continuity, and give people some experience of the effort required in respectful listening. In this process, students sit in a circle so that everyone can see everyone else, and each person in turn takes no more than three minutes to talk about an issue or question that the group has agreed to discuss.

Speakers are not free, however, to say anything they want. They must make a brief summary of the preceding speaker's message and then use this as a springboard for their own comments. In other words, what each speaker articulates depends on listening well to the preceding speaker as much as on generating new or unspoken ideas. We often tell students they must respect the following six ground rules:

- No one may be interrupted while speaking.
- No one may speak out of turn in the circle.
- Each person is allowed only three minutes to speak.
- Each person must begin by paraphrasing the comments of the previous discussant.
- Each person, in all comments, must strive to show how his or her remarks relate to the comments of the previous discussant.
- After each discussant has had a turn to speak, the floor is opened for general reactions, and the previous ground rules are no longer in force.

Through this exercise, all participants must demonstrate that they heard and understood what the preceding speaker said and that their own ideas are at least partly prompted by someone else's. In circular response, no one can prepare remarks ahead of time because what each person says depends on paying careful attention to the words of the preceding speaker. Everyone is under the same expectation to speak clearly and listen attentively. This activity gives students practice participating in discussions where collective and cumulative understanding is more important than the contribution of anyone individual: The downside is that under the ground rules of circular response, there is really no obligation to absorb and review critically what anyone except the previous speaker has said or to keep track of the general direction of the discussion. So although this exercise is a valuable way to enhance listening skills, it has only limited value in fostering conversational continuity.

Circular response can be altered, however, to give at least a few students experience in tracking and summarizing the discussion and in identifying recurring themes. The adaptation is simple. The ground rules remain the same except that two or three students are designated as summarizers before the exercise begins. Their job is to listen carefully to all participant contributions, taking notes where necessary, and to end the exercise with a synthesis of the discussion's highlights. They recount key points and recurring themes, giving everyone involved some sense of the whole.

### 7.3.3 Snowballing

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One way to make a discussion developmental and increasingly inclusive is to use a process called "snowballing" or "pyramiding". Students begin this activity by responding to questions or issues as individuals. They then create progressively larger

conversation groups by doubling the size of these groups every few minutes until the large group has been re-formed. Here are the instructions students follow:

We are going to try something a little different today. It's called "snowballing," and it gives you a chance to think and talk about issues in a variety of configurations. Notice that there are some questions at the bottom of this sheet. Begin this activity by gathering your thoughts on these questions in private reflection. Jot down some of these reflections if you wish. After five minutes of solitary thought, you will begin a dialogue on the questions with one other person. After another five minutes, you and your partner should join another pair to form a group of four. You will continue the discussion for ten minutes and then merge with another foursome to create a group of eight. The discussion proceeds for twenty minutes this time, after which two groups merge again the-process continues in twenty minute intervals until the whole class has been brought together at the end of the session. The discussion can end when the class is reunited, or continue for a final twenty minutes (or however much time is available).

On the one hand, this exercise gets a lot of people talking to each other while retaining much of the value of small groups. It also contributes a festive quality to the class. People mill about excitedly and greet each other warmly as they meet in new configurations. On the other hand, snowballing can sometimes have a frenetic, disjointed feel. But sometimes the regular change of group membership is just the thing needed to shake students up a little.

### Keyword

**Ethical standards** are a set of principles established by the founders of the organization to communicate its underlying moral values. This code provides a framework that can be used as a reference for decision making processes.

## 7.4 ETHICAL DILEMMAS

Ethics are the moral standards and principles by which entities (individuals and organizations) govern their behaviors and decision-making. When these standards and principles conflict with each other in a decision-making situation, an ethical dilemma may occur.

An ethical dilemma takes place in a decision-making context where any of the available options requires the agent to violate or compromise on their **ethical standards**.

We observe that ethical dilemmas can be characterized by the following three elements:

- The agent must be faced with a choice or the need to make a decision.
- The agent must have more than one course of action available.
- The agent recognizes that all available courses of action require them to compromise on some personally held ethical standard or value.

Ethical standards are the moral frameworks that individuals and organizations use to guide their decision-making and differentiate between right and wrong. Companies and professional organizations may adopt their own ethical standards and require that employees/members adopt those standards as part of their personal business ethics.

Common ethical practices in the workplace include:

- Telling the truth
- Taking responsibility for one's actions
- Following company policies
- Fulfilling professional obligations
- Following through on commitments
- Following the law
- Acting in the best interests of shareholders
- Acting in the best interests of customers
- Acting in one's own best interests
- Treating others equally
- Conducting sustainable business practices
- Maximizing profits
- Avoiding layoffs

Ethical dilemmas happen because ethics are inherently contradictory. Students may face situations where compromising on telling the truth or following the law seems to serve other valued goals, such as maximizing profits or avoiding layoffs.

### 7.4.1 Types of Ethical Dilemma

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There are several different types of ethical dilemmas that agents may encounter in the course of performing their roles and responsibilities:

- Epistemic dilemmas take place in a decision-making context where moral standards conflict and the agent cannot readily determine which ethical principle should take precedence over the other.

- A self-imposed dilemma is one created by the agent's own errors in judgment, such as making competing promises to multiple organizations that cannot be fulfilled simultaneously. In contrast, a world-imposed dilemma is caused by circumstances outside the agent's control.
- An obligation dilemma is one where an agent has multiple options and more than one of them is obligatory, while a prohibition dilemma occurs when all available options are prohibited.

### 7.4.2 An Example of an Ethical Dilemma

Ethical dilemmas occur regularly in the business environment where employees make decisions that impact the success and profitability of organizations.

#### Keyword

**Loyalty**, in general use, is a devotion and faithfulness to a nation, cause, philosophy, country, group, or person.

Employees may experience an ethical dilemma when deciding whether to report an incident of workplace harassment or declare a conflict of interest. In the first case, the employee might understand that the harassment is wrong, but feel guilty about getting their colleague in trouble. In the latter case, the employee might recognize their fiduciary duty to the organization, but feel a sense of **loyalty** to their family and friends that makes it difficult to do the right thing.

### 7.4.3 Identifying an Ethical Dilemma

Experts agree that identifying an ethical dilemma starts with recognizing your gut reaction to a problematic situation. If a decision seems to challenge your moral compass, it's time to take a step back and investigate further.

You might proceed by writing down:

- The decision you need to make.
- The various options or courses of action available.
- The ethical pros and cons of each available action.

### 7.4.4 Resolving an Ethical Dilemma

An ethical dilemma does not always offer a clear solution that



conforms with ethical norms. Here's how entities can cope with the most challenging ethical dilemmas:

- **Talk it Out** – The best way to determine whether a dilemma exists is to discuss it with other people. A collective analysis of the situation can shed light on whether a dilemma really exists and the moral implications of each available option. This might involve reporting the incident to your company's hotline so that you may discuss the situation with the compliance team and get proper guidance.
- **Understand Duties & Obligations** – A great way to approach any ethical dilemmas is from the standpoint of understanding the agent's duties in the situation. In a business context, a fiduciary duty to the organizations legally obligates the agent to act in the best interests of shareholders. Contractual obligations can also play a role in determining how to resolve an ethical dilemma.
- **Maximize the Good & Minimize the Bad** – When a problem has no perfect solution, the best approach is to analyze the outcomes of each potential action and choose the action with the greatest positive impact and least negative impact.

### Remember

Deciding how to best resolve difficult moral and ethical dilemmas is never easy especially when any choice violates the societal and ethical standards by which we have been taught to govern our lives.

## 7.4.5 Ethical Dilemmas of College Students

Classes are not the only challenge facing a college students. College classes are, in many ways, similar to high school classes, even if they move faster and involve a bigger vocabulary.

Relations with other students can also be provoking, especially for students living with roommates whom they scarcely know, whom they may not like very well, and whose background may be quite different from their own.

The behavior of these characters would not make them proud, but the stories are, alas, plausible and perhaps useful to think with. It is useful in some form or other during freshman orientation or a similar occasion.

So presented here, thought-provoking discussion material for a new college student, professor, or even dean.



Each story involves ethically challenging behavior and asks some “hard questions” about it, but does not provide answers. And each has a coda at the end which may change the reader’s evaluation of the ethical situation.

- The Case of the Reality Check
- The Case of the Curious RA
- The Case of the Additional Digit
- The Case of the Race to the Bottom

### *The Case of the Reality Check*

Fred was Jason’s roommate. Fred was okay, George figured, if you overlooked his vile taste in music. His father was a dentist who seemed more interested in Fred’s teeth than in his spending habits. A simple call home filled Fred’s bank account with no questions asked. Fred could afford pretty much anything. He just wrote a check and that was that. Fred didn’t even bother to balance his checkbook. And he was actually pretty generous. Loans to Jason and the other guys in the suite didn’t seem to bother him at all. And a pizza here and a movie there were his treat if somebody didn’t remember to bring along any money.

It wasn’t that he was trying to put other people in his debt. Fred wasn’t some nut case trying to “buy” other people’s love. He really just didn’t care. There was plenty of money, and it really wasn’t worth keeping track of it. “Spread the wealth,” he would say, and that would be the end of the discussion.

That sure wasn’t Jason’s condition. Jason’s mother had taken an extra job to help pay his expenses at college, and she never stopped reminding him of her sacrifice. Jason earned the rest of his college money himself working part time and summers, but somehow his mother never thought of that as a sacrifice. It was Jason’s education, after all.

Jason hated asking his mother for money; when he asked for money, it usually came, but it came with a sigh from his mother, and with a whole lot of guilt on Jason’s part.

Jason’s cell phone bill was almost \$200 this time. His mother didn’t approve of cell phones, not since Jason’s sister had gone deep in debt because of one. But the cell phone Jason had quietly signed up for during Welcome Week was almost a necessity, given that everyone else had them. Suddenly the cell phone seemed like a real pain. Who could have foreseen that college would be so expensive?

Two hundred dollars. Jason stared at the bill. He thought about asking Fred for a loan. But he knew he wouldn’t be able to pay it back. Fred was generous, but it was humiliating always to be asking him for money. And Jason just couldn’t bring himself

to ask for that much money anyway. An occasional slice of pizza was one thing. Two hundred dollars, well, that was something else entirely.

Just then Fred came in.

“Hi, Jason,” he said. “Janet and I are going to the mall to get a frame for that poster she bought. Want to come along?”

“No,” replied Jason. “I’ve got a lot of studying to do. Miller assigned a longer problem set than usual, and I think it’s going to take a long time.”

But Fred wasn’t really listening. He rummaged around in his desk drawer, found his car key, and headed out the door, leaving the drawer open.

On the top of the messy heap in the open drawer was Fred’s checkbook. Jason picked it up. He had no idea how much money was in the account. Neither did Fred, probably. But there would be plenty. There was always plenty.

Jason took a deep breath. He hated himself for what he was about to do, but somehow reason told him it was the best solution to his problem. He tore a check out of the checkbook and went back to his desk and made it payable to the cell phone company and carefully wrote his cell-phone number on it. A little more time spent in Fred’s drawer pulled up his zoo membership, with his sloppy signature scrawled across the line at the bottom. Carefully Fred copied the signature onto the check. He stamped the envelope, and put it into his backpack to mail. Then he carefully pulled three checks from different places in Fred’s checkbook, just in case he needed them some time in the future, and he set the checkbook back on top of the pile of stuff in the open drawer, and then turned to his books.

Fred and Janet came in about nine and showed Jason the picture frame. It was a huge metalwork thing, and it exactly fit the poster.

“It was more expensive than I expected,” said Janet. “But it sure was worth it. It’s beautiful.”

“Yeah,” said Jason. “It looks really great.”

### *Some Hard Questions:*

- Assuming Jason was never caught, was anybody hurt in this theft? Who? How?
- What do you think Jason did when his next cell phone bill came?
- If Jason were to tell his girlfriend what he did, what should she do?
- How, if at all, would answers be different if the story continued the following way?

### *Coda: Now What?*

Carl, who lived in the suite across the hall, was a victim of identity theft. Somebody in France had somehow used his credit card number to make a whole lot of purchases from an on-line electronics company, and Carl had suddenly become a missionary for fiscal responsibility, or anyway fiscal suspicion.

Fred didn't imagine anything like that could ever happen to him. But when his next bank statement arrived, he looked it over. He couldn't remember the \$200 check in the list, so he called the bank. The bank produced a copy of the check, made out to Jason's cell phone company, complete with Jason's cell phone number written on it.

Fred was furious. Jason as a poor roommate who needed a little help now and then was one thing, but Jason as a thief was another. Fred went to the Res Dean and explained what had happened and asked how to file charges, and whether Jason could be made to move out.

### *The Case of the Curious RA*

Linda and Gretchen were Resident Assistants in Eureka Hall, a well-worn building constructed many years ago, when budgets were tight, as always, and the naming committee even less imaginative than usual. The place tended to have odd smells and leaky faucets, and fuses seemed to blow a lot. Still, the rooms in Eureka were bigger than in other campus dorms, giving the building a well-earned reputation for better-than-average parties.

One afternoon Linda dropped in on Gretchen to find out whether anybody had come to try to deal with the leak outside Suite 204. Nobody had, so far as Gretchen knew, but Gretchen hadn't been up to check for a while. She had been running late all day because she had overslept after breaking up a late-night party the previous evening.

"Look at this," she said. Going to the refrigerator, she pulled out a bottle of Benedictine.

"What is it?" asked Linda.

"It's Benedictine," said Gretchen. "I think it's a kind of whiskey or gin or something like that. I've never tasted it, but I know it's really, really expensive. My father loves it. He says it is what they drink in heaven."

"That's a pretty strong recommendation," Linda said, sniffing it. It smelled slightly spicy, like some kind of expensive barbecue sauce, maybe laced with paint thinner. "What are you going to do with it?"

Gretchen looked uncertain. “I don’t know,” she said. “The rules say we are supposed to dump it out, and I guess I should, but I know my dad pays, like, \$25 a bottle for this stuff, and the people I took the bottle from last night were really unhappy about losing it. One said it was like Liquid Gold. It all makes me kind of curious about it.”

They passed the bottle back and forth, sniffing it. It still smelled like expensive barbecue sauce. Or maybe paint thinner.

“Now you’re making me curious too,” said Linda at length. I think you’d better pour it out, but I would really like to taste some first.”

“Yeah, me too,” said Gretchen. “Just in the interest of knowing, you know, what it’s like and all. Oh hell, let’s just try a mouthful before we throw it away. Then we’ll know.” She got out two glasses and poured a small amount in each glass, and they sat down. Each woman sipped tentatively. It was very strong and slightly oily, with a complicated mix of odd, spicy flavors.

“I see why they call it Liquid Gold,” said Linda, thinking of the wood cleaner.

“It’s pretty strong, all right,” said Gretchen. “I wonder what my dad sees in it.”

At that moment Gretchen’s roommate Melissa came in.

“Hi! Do you know whether anybody came about the leak in 204?” She paused. “What are you drinking? Oh my God! Don’t you know you’re RAs?! You can’t drink that stuff. That’s *alcohol*. I have to turn you in or we’ll all be in trouble!”

Melissa did in fact turn them in. Drinking was prohibited in the housing unit, and was specifically prohibited by the contract the two RAs had signed when they took the job. The case came up before the Res Dean, who not only wrote them up for an alcohol violation, but also fired them.

“There is really nothing I can do about this,” said the Res Dean. You have been wonderful RAs up to now, but to overlook your actions would undercut the whole idea of the RA enforcing rules and being a role model for other students. I just can’t do that.” You both knew the rules, and you violated them. This just can’t be overlooked.

There was a waiting list for housing, and Gretchen and Linda had been allowed to live in Eureka Hall only because they were working as RAs. Therefore their firing also resulted in their eviction. “There really is nothing I can do about that, either,” said the Res Dean.

### Some Hard Questions

- Did anybody act unethically here? Who? Why do you think so?

- How, if at all, would the following addition change your assessment of the situation? Why?

### *Coda: Now What?*

When Gretchen and Linda's RA jobs were advertised, several students applied for them, including Melissa. In her interview, Melissa explained that she had been Gretchen's suite mate, so she already knew a lot about the job. She also pointed out that she had been the person who originally reported the case of alcohol abuse, and could therefore be depended upon to enforce the Res Life rules. She was hired.

### *The Case of the Additional Digit*

Professor Larring decided to pass the midterms back at the beginning of Adam Gorrin's two o'clock class, and then go over them in the class. And so it was that Adam knew by about five after two that he had gotten a B+ on his chemistry midterm, a grade that was bound to trigger a lecture from his father when the older Gorrin learned about it.

Adam looked through the returned exam to see if there was any mistake in totaling the points. There wasn't. Any way you added it up, he was 6 points short of the A-line. Father didn't much care about an A-. An A, any kind of A, was good enough to let him brag to his friends about his son being a "straight A" student at UCSD. A grade of B, however, would show that his son was a lazy and failing in his duty to his family and spending his school money "hanging out with losers." Adam's father had never gone to college, but he knew there were a lot of "social activities" on the campus that could tempt his son away from studying. This was why Adam had to live at home. His father was sure that, if he lived on campus, he would give in to temptation.

Desperately Adam looked through the exam for some grading error that could be used to argue for more points. There were 10 questions. He had not had time to finish question 8, and the TA had written a big red zero beside it. Somehow the way to do the problem seemed a lot clearer today than it had when he was taking the exam, and he carefully wrote in the rest of the answer. Then he took a red pen and added a one in front of the zero. Professor Larring finished reviewing the exam just as the class ended, and Adam was pleased to see that his new answer was essentially correct. Probably it was worth only 8 or 9 points, but that was more than the six he needed, and certainly more than zero.

After class, Adam came up to see Professor Larring. "I think there may have been an error totaling my points, professor," he said. And he handed over the paper. "I'll have a look," said Professor Larring, "and I'll get back to you about it next week." When he examined the paper back in his office, Professor Larring noticed that the



red pen used to write the number one was different from the red pen used to write the zero. He also noticed that the second part of question 8 had been written with a pencil that was not quite as sharp as the pencil used for the first half. And he noticed that the answer was not one that would ever have received the full ten points. So Professor Larring turned Adam in to his college dean for cheating.

That was Thursday. When Adam got home from school the following Monday, his mother told him that his father had opened a letter, addressed to Adam from the dean. She looked troubled, gave him a quick hug, and retreated to the other end of the house. Adam hated the fact that his father opened his mail, and this particular piece of mail was probably going to be worse than all the report cards in the world coming at once. He was right. His father stood in silence and handed him the letter, which asked him to appear “to discuss allegations of a breach of academic integrity.”

“What is this all about, Adam?” his father asked.

“It’s nothing. I didn’t do anything bad,” Adam replied, trying to sound convincing.

“I don’t know who the hell this dean is, but I’m going with you,” said his father simply.

“Please don’t,” answered Adam, knowing it wouldn’t do any good. “Please let me handle this. It’s nothing. I didn’t do anything bad. It’ll be okay.”

“I didn’t ask you,” said the older Gorrin. “I told you. I’m going with you.”

When Adam and his father met the dean, Professor Larring’s case was laid out before them. It was pretty obvious what had happened. Adam had to choose between denying that he cheated when the denial was not really believable, and admitting that he cheated and dealing with his father. The choice was clear.

“I didn’t do it!” Adam lied. “Honest! It was just the way he gave it back to me. It can’t possibly be a different pen. I didn’t change anything! I didn’t cheat. I didn’t! I swear to God!”

“Well, then that means there will have to be a hearing,” the dean explained.

“But I didn’t do it!” Adam whimpered miserably.

The older Gorrin was surprisingly quiet through most of the interview. When it was time to leave, he spoke to the dean in a low, measured voice.

“Nobody goes around saying my boy cheated. Not you, and not that bastard professor. NOBODY, gets away with insulting the name of Gorrin. We are going to have the best attorney money can buy for that hearing. The very best!”



"They don't allow attorneys in hearings of this kind," replied the dean. He was about to say something else ... maybe that they weren't too enthusiastic about outraged fathers either, but the Older Gorrin cut him off.

"Then we'll sue the school in court. And we'll sue Larynx or whatever his name is for trying to drag the name of Gorrin in the mud. In fact, I'll do better than that. I'll hire a detective to follow Larynx around and see how much *he's* cheating. We all know there isn't a professor out there who doesn't cheat on his wife and steal grant money and take bribes and God knows what else. And I bet he cheated plenty all through school. Whatever Larynx does, we'll find it. Wait till they see *that* in the newspaper. *Nobody* tries to smear the name of Gorrin! Nobody!" Adam's father turned and stalked down the hall.

Adam shuddered and felt terrible. His father may or may not have believed his stupid lie, and still didn't know about the B+ that was the cause of it all. But now everything just seemed to be getting worse.

### Some Hard Questions

- Are there any heroes in this story? Are there any villains?
- How many violations of the UCSD "Principles of Community" are there?
- The older Gorrin is emotional and jumps to conclusions, but is his behavior unethical?
- Would the following ending to the story change your assessment of the situation? Why or why not?

### Coda: Now What?

Adam knew that the evidence against him was strong, and that the chances of being judged innocent in a hearing were very poor. And he was afraid of what his father would do if he tried to get lawyers mixed up in all this. Father was always loud. There was no way the school paper wouldn't be there. And *UCSD Satires*. Oh God, *Satires*! As they drove back from seeing the dean, Adam tried to change the fate he seemed to be bringing on himself.

"Dad," he said. "I am really ashamed of myself. But they are right. I did cheat, just the way Professor Larring said."

His father looked shocked. "They have no right to accuse you of it. They have no right to drag the Gorrin name through the mud. And you have no right to let them do it." There was a long silence. Suddenly his father pulled over to the side of the road.

"Get out!" he said. "And don't come home."

## *The Case of the Race to the Bottom*

Ronald Choi's parents had migrated to Los Angeles from Hong Kong when he was three. His parents spoke English at home because they thought raising Ronald and his sister in English would eventually give them better job opportunities. And job opportunities were what it was all about, as Ronald's mother often said.

"The trouble with being Chinese-American is that people expect you to know Chinese," Ronald often thought. "And they expect you to like rice and to date only Chinese girls. And they think you can do well in school without studying because it is in your genes or something." He scowled. "And they make you major in engineering because it has 'good prospects.'"

Ronald Choi hated everything about engineering. The math was boring. The foreign professors were incomprehensible —especially the Chinese and Indian ones. And the students were dweebs. But there wasn't much hope of changing majors. Ronald's father was an engineer, and that was why his mother had married him: as an engineer, Father had had good prospects. (Sometimes Ronald hated his father too.)

Hatred for engineering was one of Ronald's most common thoughts as he trudged back from class. When he arrived at the res hall, his suite mate Herman was getting ready for a "civil rights" rally.

"Hey, it's Ronald McSoy-Sauce," said Herman. "How's it goin' Big Mac? Wanna come over to the student center? We're having a rally to protest the use of grades and test scores in admissions."

"What else would you use for admissions? What's the matter with grades and test scores?" asked Ronald wearily.

"'Comprehensive Read' is the order of the day," Herman told him. "It means they ignore your scores and you just tell them you worked in the John Paul Ghetto Center for the Blind and you're in."

"I didn't know there *was* a 'John Paul Ghetto Center for the Blind,'" said Ronald. "Besides, it's probably Getty, like the museum."

"Whatever. You just make something up like that and they let you in." Herman dropped into an exaggerated Black accent as he continued: "And anyway everybody knows us Black people don't do well on tests the way you Chineeeese do."

"No scores, just lies," said Ronald, annoyed. "You try to get everything by lying."

"Hey, man. We can't all be Chinese geniuses. Besides, we already have too many Chinese in the university. Comprehensive Read is how we are going to get in some Blacks and Latinos. But now the regents are talking about dumping it and just doing

grades and test scores again. That's what the rally's about. We want the return of Affirmative Action."

Over the past few months Ronald Choi had heard about as much as he needed to hear about Affirmative Action and the special value of this or that ethnic group. If somebody wanted affirmative action for Chinese-Americans he might get interested. Instead, all they wanted to do was to get Asians out of the place.

"I think you're disgusting," said Ronald. "If people are too damned stupid to get into the university on the basis of their test scores, they should stay the hell out."

"You think everything's disgusting, McSoy-Sauce. And besides, you're a racist. Sometimes you really piss me off."

"Say that again and I'll pour glue on your computer," Ronald answered.

"And then I'll have to break your ugly face." Herman's eyes narrowed. "And I'd really enjoy doin' it, too. I'm out of here now, McSoy-Sauce." Herman walked out and slammed the door.

"God, I hate that Black bastard," thought Ronald as he headed toward his room to begin his homework."

"God, I hate that Chinese bastard," thought Herman as he headed toward the student center.

Both students are misinformed about UC admissions. They also obviously don't agree with each other, and they don't seem to be communicating very well.

### *Some Hard Questions*

- Has either actually violated the UCSD Principles of Community? In what way? Is either one more at fault than the other? Is either of them a victim of the other?
- If you were trying to mediate their distaste for each other, how would you approach the matter? How would they probably respond? Why?
- Would the following ending to the story change your assessment of the situation? Why or why not?

### *Coda: Now What?*

The next day Ronald went to the Assistant Res Dean and filed a complaint that Herman kept using racist slurs, and that he found this offensive. And he asked if one of them could be moved to a different suite.

“Oh, get a life!” responded the Assistant Res Dean. “If you want to go around being offended by something, go be offended by the fact people are dying of preventable diseases in the slums because they can’t afford a dime for a treatment. Now *that’s* offensive! So your roommate’s a jerk. So what? There are bigger problems in the world.”

Having delivered that little speech — the standard response to roommate problems— the Assistant Res Dean turned back to the desk full of papers. Ronald headed toward the library.

## 7.5 CONNECTED COMMUNITIES

The Connected Communities Strategy is an approach that schools and communities can use to strengthen the educational outcomes for Aboriginal students and all students. It brings the community closer with the school, brings in Aboriginal culture, and allows the school to work with government and non-government groups to help support the education of the school’s students.

### Keyword

**Welfare** is a type of government support intended to ensure that members of a society can meet basic human needs such as food and shelter.

### 7.5.1 History of the Connected Communities Strategy

The Connected Communities Strategy began in 2013. It was created because it was clear that a new approach was needed to how we deliver education and training in our most vulnerable communities, and to how we link to other related services, such as health, **welfare**, early childhood education and care, and vocational education and training.

The Connected Communities Strategy was co-designed and co-constructed with the NSW Aboriginal Education Consultative Group (AECG) Inc.

### 7.5.2 How the strategy works

Just like the name – Connected Communities – it requires a school to build genuine partnerships with its community, and it highlights an Executive Principals expectation to work with their local communities in making changes to how education is delivered at the school, to suit their local needs.

It makes the school a 'community hub'. This means it brings the community and school leadership together. Many of the current schools have made formal agreements with local agencies, to bring much-needed government and non-government services inside the school setting, to support students and families. These can include health providers, TAFE and Universities.

Cultural awareness training is mandatory for all staff, as is the teaching of Aboriginal languages and culture, and there is a focus on pathways and transitions in to and out of school. The strategy has a flexible approach to service delivery at school. This means a school can use tailored strategies to re-connect students who are at risk, ensuring there is support for the student. These can include counsellor referrals, identification of a staff mentor, and links to community programs and staff.

### 7.5.3 Aims

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- Aboriginal children are increasingly developmentally ready to benefit from schooling - in their physical health, social competence, emotional maturity, language and cognitive skills and communication.
- Aboriginal families and community members are actively engaged in the school.
- Attendance rates for Aboriginal students are equal to the state average.
- Aboriginal students are increasingly achieving at or above national minimum standards and overall levels of literacy and numeracy achievement are improving.
- Aboriginal students are staying at school until Year 12 (or equivalent training).
- Aboriginal students are transitioning from school into post-school options such as training and/or employment.
- Aboriginal parents and carers report that service delivery from the school site is flexible and responsive to their needs.
- Aboriginal students and communities report that the school values their identity, culture, goals and aspirations.
- Staff report that professional learning opportunities build their capacity to personalise their teaching to meet the learning needs of all students in their class.
- Staff report that professional learning opportunities build their understandings and connections with the community.

### 7.5.4 Connection to Government

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The strategy is a big part of the government's work. The NSW Premier has made it a priority for Aboriginal people to reach their learning potential.



The NSW Government, including all the departments, are working to increase the number of Aboriginal students attaining Year 12 by 50 per cent by 2023, while maintaining their cultural identity.

At the commonwealth level, the recently agreed Closing the Gap targets – including achieving full learning potential, making pathways for further education, and being engaged in employment or education – are affected by the strategy because the strategy's aims include these things.



## CASE STUDY

### VALUE EDUCATION AT TAUPO-NUI-A-TIA COLLEGE IN NEW ZEALAND

In 2004, a questionnaire was sent to New Zealand institutions to demonstrate the effect of incorporating character education in schools. A similar questionnaire was sent in 2007 as a follow up study and from the combined response rate of 85%, the results demonstrated the enhancement in the overall qualities within each school due to character education. One institution which exhibited such improvements as a result of character education that it was adopted as a part of the curriculum was Taupo-Nui-A-Tia College. The responses of the students were noted in the years 2004, 2007 and 2009 respectively and score sheets were created on the basis of these responses. The score sheets were used to convert multiple response categories (improved, about the same, no improvement) into bivariate response (1= improved; 0= same/ no improvement) with respect to each specific attribute being measured). The use of score sheets in a longitudinal sense provided a visual representation as to the impact of character education in each of the sub categories. The key attributes that were measured included:

- Relationships: between principal and staff; between staff and students; between students and between college and parents
- Overall and playground student behaviour
- Discipline within the school
- Vandalism
- Student attendance
- School as a caring community
- Staff stability: including impact; reduction in staff turnover; improvement in staff morale and retention of good staff
- Enrolments

The key dimensions which demonstrated a continuous improvement as a result of the character education were in regard to relationships between staff and students, and relationships between students. Continued improvements were also observed in relation to student playground behaviour, discipline within the institution, staff stability, enrolments and the perception of the institution as a caring community. The results demonstrated that the impact of character education was significant in relation to the provision of a positive and supportive environment, positive influence on institutional culture, increased cooperation between staff and students, creation of an atmosphere conducive to teaching and learning, improved attributes of the students and attraction of the students to the institution.

## SUMMARY

- Values are beliefs about what is good and desirable. This includes what we consider good and desirable for ourselves, for others and for the wider community.
- Values are qualities that students should develop as principles underpinning behaviour and decision-making, whereas attitudes support cognitive functioning. Both are personal qualities that students should develop.
- Teachers should have a good grasp of the learning targets and the progression of skills in various strokes, and the relevant generic skills, values and attitudes when developing a school-based curriculum.
- Planning students and practitioners need tools and strategies to build critical self-awareness, foster communication and radical empathy across difference, and facilitate emotionally and politically sensitive and constructive discussions in communities.
- The circle of voices is an activity revered in Native American, First Nation, and Aboriginal cultures. It describes the very simple procedure of giving each person an equal chance to contribute to the discussion.
- Ethics are the moral standards and principles by which entities (individuals and organizations) govern their behaviors and decision-making. When these standards and principles conflict with each other in a decision-making situation, an ethical dilemma may occur.
- Ethical dilemmas occur regularly in the business environment where employees make decisions that impact the success and profitability of organizations.
- Classes are not the only challenge facing a college students. College classes are, in many ways, similar to high school classes, even if they move faster and involve a bigger vocabulary.
- The Connected Communities Strategy is an approach that schools and communities can use to strengthen the educational outcomes for Aboriginal students and all students. It brings the community closer with the school, brings in Aboriginal culture, and allows the school to work with government and non-government groups to help support the education of the school's students.



## MULTIPLE CHOICE QUESTIONS

1. Which of the following statements is not true?
  - a. Attitudes are inherently unstable.
  - b. Attitudes are learned.
  - c. Attitudes are a predisposition to behave in a particular way.
2. Which of the following is NOT a dimension of attitude?
  - a. cognition
  - b. conation
  - c. perception
3. The perceptual component of attitude is called \_\_\_\_\_.
  - a. cognition
  - b. conation
  - c. affect
4. The behavioural component of attitude is called \_\_\_\_\_.
  - a. cognition
  - b. conation
  - c. affect
5. Beliefs which cause someone to make a judgement about something are called \_\_\_\_\_.
  - a. conative beliefs
  - b. cognitive beliefs
  - c. salient beliefs
6. The subjective ability of the attitudinal object to attain the value in question is called \_\_\_\_\_.
  - a. perceived instrumentality
  - b. value importance
  - c. subjective importance
7. The view that people consciously evaluate the consequences of their behaviour is called \_\_\_\_\_.
  - a. the theory of considered responses
  - b. the theory of reasoned action
  - c. the theory of planned behaviour



8. **Accepting only that part of new information which does not cause an inconsistency is called \_\_\_\_\_.**
- attitude splitting
  - stimulus rejection
  - accommodation
9. **Which of the following is true?**
- Situational factors sometimes block conations.
  - Conations always lead to behaviour.
  - Situational factors are cognitive, not affective.
10. **Which of the following is NOT true?**
- Liking the advertisement usually means liking the brand.
  - Liking the advertisement and liking the brand are separate theoretical constructs.
  - Liking the advertisement leads to buying the brand.

## REVIEW QUESTIONS

- What is attitude in value education?
- What are the attitudes of students towards learning?
- What are values and attitudes?
- What are the students attitudes?
- What is an autobiographical reflection?
- How do you write an autobiographical reflection?
- What are some ethical dilemmas for students?

### *Answer to Multiple Choice Questions*

- |        |        |        |        |         |
|--------|--------|--------|--------|---------|
| 1. (a) | 2. (c) | 3. (a) | 4. (b) | 5. (c)  |
| 6. (a) | 7. (b) | 8. (a) | 9. (a) | 10. (c) |

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## Student Engagement Techniques

The concept of student engagement is multidimensional, meaning that there are different types of engagement. Behavioral engagement refers to students' academic involvement and participation in learning activities. It includes things such as effort, persistence, attention, asking questions, participation, following rules, and the absence of disruptive behaviors. Student engagement is a significant challenge for educators who are teaching students remotely. Getting students to engage in learning, not to mention show up for class, is something teachers are working hard to improve. Student engagement is vital to meaningful education and retention of knowledge. As we move into the final stretch of one of the most challenging school years in our history, teachers and students might be noticing a decline in stamina. No matter the learning context (remote, in-person, or hybrid) keeping students engaged in learning at this point in the year is a common challenge. Although numerous teaching obstacles remain, there are several small but significant things that schools and teachers can do to boost and maintain student engagement. Research has demonstrated that engaging students in the learning process increases their attention and focus, motivates them to practice higher-level critical thinking skills, and promotes meaningful learning experiences.

Comprised of seven chapters, this book will take you through a deeper dive into what student engagement really is and why it is so important. Then we discuss some practical approaches for keeping students interested and involved in lessons, activities, and discussions.