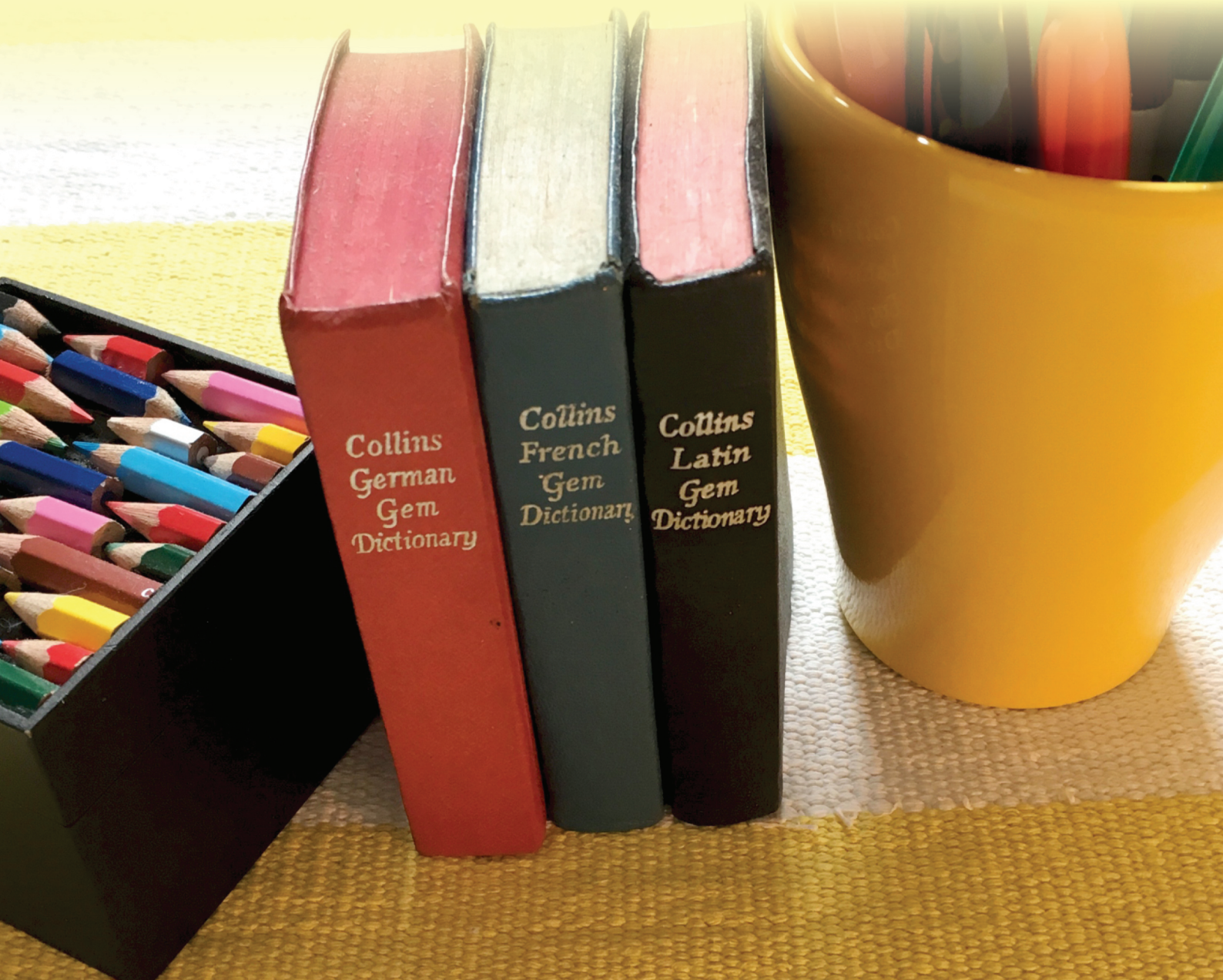
Resources for Language Skills

Albert Wise



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by Albert Wise

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Chapter 1

Reading

Reading is the process of taking in the sense or meaning of letters, symbols, *etc.*, especially by sight or touch.

For educators and researchers, reading is a multifaceted process involving such areas as word recognition, orthography (spelling), alphabetics, phonics, phonemic awareness, vocabulary, comprehension, fluency, and motivation.

Other types of reading and writing, such as pictograms (e.g., a hazard symbol and an emoji), are not based on speech-based writing systems. The common link is the interpretation of symbols to extract the meaning from the visual notations or tactile signals (as in the case of Braille).

Overview

Reading is typically an individual activity, done silently, although on occasion a person reads out loud for other listeners; or reads aloud for one's own use, for better comprehension. Before the reintroduction of separated text (spaces between words) in the late Middle Ages, the ability to read silently was considered rather remarkable.

Major predictors of an individual's ability to read both alphabetic and non-alphabetic scripts are oral language skills,phonological awareness, rapid automatized naming and verbal IQ.

As a leisure activity, children and adults read because it is pleasant and interesting. In the US, about half of all adults read one or more books for pleasure each year. About 5% read more than 50 books per year. Americans read more if they: have more education, read fluently and easily, are female, live in cities, and have higher socioeconomic status. Children become better readers when they know more about the world in general, and when they perceive reading as fun rather than another chore to be performed.

Reading vs. literacy

Reading is an essential part of literacy, yet from a historical perspective literacy is about having the ability to both read and write.

And, since the 1990s some organizations have defined literacy in a wide variety of ways that may go beyond the traditional ability to read and write. The following are some examples:

- "the ability to read and write ... in all media (print or electronic), including digital literacy"
- "the ability to ... understand ... using printed and written materials associated with varying contexts"
- "the ability to read, write, speak and listen"
- "having the skills to be able to read, write and speak to understand and create meaning"
- "the ability to ... communicate using visual, audible, and digital materials"
- "the ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential". It includes

> three types of adult literacy: prose (e.g., a newspaper article), documents (e.g., a bus schedule), and quantitative literacy (e.g., using arithmetic operations a in product advertisement).

In the academic field, some view literacy in a more philosophical manner and propose the concept of "multiliteracies". For example, they say, "this huge shift from traditional print-based literacy to 21st century multiliteracies reflects the impact of communication technologies and multimedia on the evolving nature of texts, as well as the skills and dispositions associated with the consumption, production, evaluation, and distribution of those texts (Borsheim, Meritt, & Reed, 2008, p. 87)". According to cognitive neuroscientist Mark Seidenberg these "multiple literacies" have allowed educators to change the topic from reading and writing to "Literacy". He goes on to say that some educators, when faced with criticisms of how reading is taught, "didn't alter their practices, they changed the subject".

Also, some organizations might include numeracy skills and technology skills separately but alongside of literacy skills.

In addition, since the 1940s the term literacy is often used to mean having knowledge or skill in a particular field (e.g., computer literacy, ecological literacy, health literacy, media literacy, quantitative literacy (numeracy) and visual literacy).

Writing systems

In order to understand a text, it is usually necessary to understand the spoken language associated with that text. In

this way, writing systems are distinguished from many other symbolic communication systems. Once established, writing systems on the whole change more slowly than their spoken counterparts, and often preserve features and expressions which are no longer current in the spoken language. The great benefit of writing systems is their ability to maintain a persistent record of information expressed in a language, which can be retrieved independently of the initial act of formulation.

Cognitive benefits

Reading for pleasure has been linked to increased cognitive progress in vocabulary and mathematics during adolescence. Sustained high volume lifetime reading has been associated with high levels of academic attainment.

Reading has also been shown to improve stress management, memory, focus, writing skills, and imagination.

The cognitive benefits of reading continue into mid-life and the senior years.

Reading books and writing are among brain-stimulating activities shown to slow down cognitive decline in seniors.

State of reading achievement

Reading has been the subject of considerable research and reporting for decades. Many organizations measure and report on reading achievement for children and adults (e.g., NAEP, PIRLS, PISA and PIAAC).

Researchers have concluded that 95% of students can be taught to read by the end of first grade, yet in many countries 20% or more do not meet that expectation.

According to the 2019 Nation's Report card, 35% of grade four students in the United States failed to perform at or above the *Basic level* (partial mastery of the proficient level skills). There was a significant difference by race and ethnicity (e.g., black students at 53% and white students at 24%). See more here.

The Progress in International Reading Literacy Study (PIRLS) publishes reading achievement for fourth graders in 50 countries. The five countries with the highest overall reading average are the Russian Federation, Singapore, Hong Kong SAR, Ireland and Finland. Some others are: England 10th, United States 15th, Australia 21st, Canada 23rd, and New Zealand 33rd.

The Programme for International Student Assessment (PISA) measures 15-year-old school pupils scholastic performance on mathematics, science, and reading.

The reading levels of adults, ages 16 – 65, in 39 countries are reported by The Programme for the International Assessment of Adult Competencies (PIAAC). Between 2011 and 2018, PIAAC reports the percentage of adults reading *at-or-below level one* (the lowest of five levels). Some examples are Japan 4.9%, Finland 10.6%, Netherlands 11.7%, Australia 12.6%, Sweden 13.3%, Canada 16.4%, England (UK) 16.4%, and the United States 16.9%.

According to the World Bank, 53% of all children in low-and-middle-income countries suffer from 'learning poverty'. In

2019, using data from the UNESCO Institute for Statistics, they published a report entitled *Ending Learning Poverty: What will it take?*. Learning poverty is defined as being unable to read and understand a simple text by age 10.

Although they say that all foundational skills are important, include reading, numeracy, basic reasoning ability, socio-emotional skills, and others – they focus specifically on reading. Their reasoning is that reading proficiency is an easily understood metric of learning, reading is a student's gateway to learning in every other area, and reading proficiency can serve as a proxy for foundational learning in other subjects.

They suggest five pillars to reduce learning poverty: 1) learners are prepared and motivated to learn, 2) teachers at all levels are effective and valued, 3) classrooms are equipped for learning, 4) Schools are safe and inclusive spaces, and 5) education systems are well-managed.

Learning to read

Learning to read or **reading skills acquisition** is the acquisition and practice of the skills necessary to understand the meaning behind printed words. For a skilled reader, the act of reading feels simple, effortless, and automatic. However, the process of learning to read is complex and builds on cognitive, linguistic, and social skills developed from a very early age. As one of the four core language skills (listening, speaking, reading and writing), reading is vital to gaining a command of written language.

In the United States and elsewhere, it is widely believed that students who lack proficiency in reading by the end of grade three may face obstacles for the rest of their academic career. For example, it is estimated that they would not be able to read half of the material they will encounter in grade four.

In 2019, with respect to the reading skills of grade-four US public school students, only 44% of white students and 18% of black students performed at or above the *proficient level* of the Nations Report Card. Also, in 2012, in the United Kingdom it has been reported that 15-year-old students are reading at the age of 12-year-old students.

As a result, many governments put practices in place to ensure that students are reading at grade level by the end of grade three. An example of this is the Third Grade Reading Guarantee created by the State of Ohio in 2017. This is a program to identify students from kindergarten through grade three that are behind in reading, and provide support to make sure they are on track for reading success by the end of grade three. This is also known as remedial education. Another example is the policy in England whereby any pupil who is struggling to decode words properly by year three must "urgently" receive help through a "rigorous and systematic phonics programme".

In 2016, out of 50 countries, the United States achieved the 15th highest score in grade-four reading ability. The ten countries with the highest overall reading average are the Russian Federation, Singapore, Hong Kong SAR, Ireland, Finland, Poland, Northern Ireland, Norway, Chinese Taipei and England (UK). Some others are: Australia (21st), Canada

(23rd), New Zealand (33rd), France (34th), Saudi Arabia (44th), and South Africa (50th).

Spoken language: the foundation of reading

Spoken language is the foundation of learning to read (long before children see any letters) and children's knowledge of the phonological structure of language is a good predictor of early reading ability. Spoken language is dominant for most of childhood, however, reading ultimately catches up and surpasses speech.

By their first birthday most children have learned all the sounds in their spoken language. However, it takes longer for them to learn the phonological form of words and to begin developing a spoken vocabulary.

Children acquire a spoken language in a few years. Five-to-six-year-old English learners have vocabularies of 2,500 to 5,000 words, and add 5,000 words per year for the first several years of schooling. This exponential learning rate cannot be accounted for by the instruction they receive. Instead, children learn that the meaning of a new word can be inferredbecause it occurs in the same context as familiar words (e.g., *lion* is often seen with *cowardly* and *king*). As British linguist John Rupert Firth says, "You shall know a word by the company it keeps".

The environment in which children live may also impact their ability to acquire reading skills. Children who are regularly exposed to chronic environmental noise pollution, such as

highway traffic noise, have been known to show decreased ability to discriminate between phonemes (oral language sounds) as well as lower reading scores on standardized tests.

Reading to children: necessary but not sufficient

Children learn to speak naturally — by listening to other people speak. However, reading is not a natural process, and many children need to learn to read through a process that involves "systematic guidance and feedback".

So, "reading to children is not the same as teaching children to read". Nonetheless, reading to children is important because it socializes them to the activity of reading; it engages them; it expands their knowledge of spoken language; and it enriches their linguistic ability by hearing new and novel words and grammatical structures.

However, there is some evidence that "shared reading" with children does help to improve reading if the children's attention is directed to the words on the page as they are being read to.

Stages to skilled reading

The path to skilled reading involves learning the alphabetic principle, phonemic awareness, phonics, fluency, vocabulary and comprehension.

British psychologist UtaFrith introduced a three stages model to acquire skilled reading. Stage one is the *logographic or pictorial stage* where students attempt to grasp words as objects, an artificial form of reading. Stage two is the *phonological stage* where students learn the relationship between the graphemes (letters) and the phonemes (sounds). Stage three is the *orthographic stage* where students read familiar words more quickly than unfamiliar words, and word length gradually ceases to play a role.

Optimum age to learn to read

There is some debate as to the optimum age to teach children to read.

The Common Core State Standards Initiative (CCSS) in the United States has standards for foundational reading skills in kindergarten and grade one that include instruction in print concepts, phonological awareness, phonics, word recognition and fluency. However, some critics of CCSS say that "To achieve reading standards usually calls for long hours of drill and worksheets — and reduces other vital areas of learning such as math, science, social studies, art, music and creative play."

The PISA 2007 OECD data from 54 countries demonstrates "no association between school entry age ... and reading achievement at age 15".Also, a German study of 50 kindergartens compared children who, at age 5, had spent a year either "academically focused", or "play-arts focused" and found that in time the two groups became inseparable in reading skill. The authors conclude that the effects of early

reading are like "watering a garden before a rainstorm; the earlier watering is rendered undetectable by the rainstorm, the watering wastes precious water, and the watering detracts the gardener from other important preparatory groundwork."

Some scholars favor a developmentally appropriate practice (DPA) in which formal instruction on reading begins when children are about six or seven years old. And to support that theory some point out that children in Finland start school at age 7 (Finland ranked 5th in the 2016 PIRLS international grade four reading achievement.)In a discussion on academic kindergartens, professor of child development David Elkind has argued that, since "there is no solid research demonstrating that early academic training is superior to (or worse than) the more traditional, hands-on model of early education", educators should defer to developmental approaches that provide young children with ample time and opportunity to explore the natural world on their own terms. Elkind emphasized the principle that "early education must start with the child, not with the subject matter to be taught." In response, Grover J. Whitehurst, Director, Brown Center on Education Policy, (part of Brookings Institution) said David Elkind is relying too much on philosophies of education rather than science and research. He continues to say education practices are "doomed to cycles of fad and fancy" until they become more based on evidence-based practice.

On the subject of Finland's academic results, as some researchers point out, prior to starting school Finnish children must participate in one year of compulsory free pre-primary education and most are reading before they start school. And, with respect to *developmentally appropriate practice* (DPA), in

2019 the National Association for the Education of Young Children, Washington, DC released a draft position paper on DPA saying "The notion that young children are not ready for academic subject matter is a misunderstanding of developmentally appropriate practice; particularly in grades 1 through 3, almost all subject matter can be taught in ways that are meaningful and engaging for each child."And, researchers at The Institutes for the Achievement of Human Potential say it is a myth that early readers are bored or become trouble makers in school.

Other researchers and educators favor limited amounts of literacy instruction at the age of four and five, in addition to non-academic, intellectually stimulating activities. Some parents teach their children to read as babies. Some say that babies learn to read differently and more easily than children who learn to read in school from formal instruction. They also suggest, the most important aspect of early (baby) reading is interaction with loving parents and bonding.

Reviews of the academic literature by the Education Endowment Foundation in the UK have found that starting literacy teaching in preschool has "been consistently found to have a positive effect on early learning outcomes" and that "beginning early years education at a younger age appears to have a high positive impact on learning outcomes". This supports current standard practice in the UK which includes developing children's phonemic awareness in preschool and teaching reading from age four.

A study in Chicago reports that an early education program for children from low-income families is estimated to generate $4

to $11 of economic benefits over a child's lifetime for every dollar spent initially on the program, according to a cost-benefit analysis funded by the National Institutes of Health. The program is staffed by certified teachers and offers "instruction in reading and math, small group activities and educational field trips for children ages 3 through 9".

There does not appear to be any definitive research about the "magic window" to begin reading instruction. However, there is also no definitive research to suggest that starting early causes any harm. Researcher Timothy Shanahan, suggests, "Start teaching reading from the time you have kids available to teach, and pay attention to how they respond to this instruction—both in terms of how well they are learning what you are teaching, and how happy and invested they seem to be. If you haven't started yet, don't feel guilty, just get going."

Reading development

According to some researchers, learners (children and adults) progress through several stages while first learning to read in English, and then refining their reading skills. One of the recognized experts in this area is Harvard professor Jeanne SternlichtChall. In 1983 she published a book entitled *Stages of Reading Development* that proposed six stages.

Subsequently, in 2008 Maryanne Wolf, UCLA Graduate School of Education and Information Studies, published a book entitled *Proust and the Squid* in which she describes her view of the following five stages of reading development. It is normal that children will move through these stages at different rates;

however, typical ages for children in the United States are shown below.

Emerging pre-reader: 6 months to 6 years old

The emerging pre-reader stage, also known as reading readiness, usually lasts for the first five years of a child's life. Children typically speak their first few words before their first birthday. Educators and parents help learners to develop their skills in listening, speaking, reading and writing.

Reading to children helps them to develop their vocabulary, a love of reading, and phonemic awareness, (the ability to hear and manipulate the individual sounds (phonemes) of oral language). And children will often "read" stories they have memorized. However, in the late 1990s United States' researchers found that the traditional way of reading to children made little difference in their later ability to read because children spend relatively little time actually looking at the text. Yet, in a shared reading program with four-year-old children, teachers found that directing children's attention to the letters and words (e.g. verbally or pointing to the words) made a significant difference in early reading, spelling and comprehension.

Novice reader: 6 to 7 years old

Novice readers continue to develop their phonemic awareness, and come to realise that the letters (graphemes) connect to the sounds (phonemes) of the language; known as decoding,

phonics, and the alphabetic principle. They may also memorize the most common letter patterns and some of the high-frequency words that do not necessarily follow basic phonological rules (e.g. *have and who*). However, it is a mistake to assume a reader understands the meaning of a text merely because they can decode it. Vocabulary and oral language comprehension are also important parts of text comprehension as described in the Simple view of reading, Scarborough's reading rope, and The active view of reading model. Reading and speech are codependent: reading promotes vocabulary development and a richer vocabulary facilitates skilled reading.

Decoding reader: 7 to 9 years old

The transition from the novice reader stage to the decoding stage is marked by a reduction of painful pronunciations and in its place the sounds of a smoother, more confident reader. In this phase the reader adds at least 3,000 words to what they can decode. For example, in the English language, readers now learn the variations of the vowel-based rimes (e.g. s*at*, m*at*, c*at*) and vowel pairs (also digraph) (e.g. r*ai*n, pl*ay*, b*oa*t)

As readers move forward, they learn the make up of morphemes (i.e. stems, roots, prefixes and suffixes). They learn the common morphemes such as "s" and "ed" and see them as "sight chunks". "The faster a child can see that *beheaded* is *be + head + ed"*, the faster they will become a more fluent reader.

In the beginning of this stage a child will often be devoting so much mental capacity to the process of decoding that they will have no understanding of the words being read. It is

nevertheless an important stage, allowing the child to achieve their ultimate goal of becoming fluent and automatic.

It is in the decoding phase that the child will get to what the story is really about, and to learn to re-read a passage when necessary so as to truly understand it.

Fluent, comprehending reader: 9 to 15 years old

The goal of this stage is to "go below the surface of the text", and in the process the reader will build their knowledge of spelling substantially.

Teachers and parents may be tricked by fluent-sounding reading into thinking that a child understands everything that they are reading. As the content of what they are able to read becomes more demanding, good readers will develop knowledge of figurative language and irony which helps them to discover new meanings in the text.

Children improve their comprehension when they use a variety of tools such as connecting prior knowledge, predicting outcomes, drawing inferences, and monitoring gaps in their understanding. One of the most powerful moments is when fluent comprehending readers learn to enter into the lives of imagined heroes and heroines.

The educational psychologist, G. Michael Pressley, concluded there are two important aids to fluent comprehension: explicit

instruction in major content areas by a child's teacher, and the child's own desire to read.

At the end of this stage many processes are starting to become automatic, allowing the reader to focus on meaning. With the decoding process almost automatic by this point, the brain learns to integrate more metaphorical, inferential, analogical, background and experiential knowledge. This stage in learning to read will often last until early adulthood.

Expert reader: 16 years and older

At the expert stage it will usually only take a reader one-half second to read almost any word. The degree to which expert reading will change over the course of an adult's life depends on what they read and how much they read.

Science of reading

There is no single definition of the science of reading (SOR).Foundational skills such as phonics (decoding) and phonemic awareness are considered to be important parts of the science of reading, but they are not the only ingredients. SOR includes any research and evidence about how humans learn to read, and how reading should be taught. This includes areas such as oral reading fluency, vocabulary, morphology, reading comprehension, text, spelling and pronunciation, thinking strategies, oral language proficiency, working memory training, and written language performance (e.g., cohesion, sentence combining/reducing).

In addition, some educators feel that SOR should include digital literacy; background knowledge; content-rich instruction; infrastructural pillars (curriculum, reimagined teacher preparation, and leadership); adaptive teaching (recognizing the student's individual, culture and linguistic strengths); bi-literacy development; equity, social justice and supporting underserved populations (e.g., students from low-income backgrounds).

Some researchers suggest there is a need for more studies on the relationship between theory and practice. They say "we know more about the science of reading than about the science of teaching based on the science of reading", and "there are many layers between basic science findings and teacher implementation that must be traversed".

In cognitive science there is likely no area that has been more successful than the study of reading. Yet, in many countries reading levels are considered low. In the United States, the 2019 *Nations Report Card* reported that 34% of grade-four public school students performed at or above the NAEP*proficient level* (solid academic performance) and 65% performed at or above the *basic level* (partial mastery of the proficient level skills). As reported in the PIRLS study, the United States ranked 15th out of 50 countries, for reading comprehension levels of fourth-graders. In addition, according to the 2011–2018 PIAAC study, out of 39 countries the United States ranked 19th for literacy levels of adults 16 to 65; and 16.9% of adults in the United States read at or below level one (out of five levels).

Many researchers are concerned that low reading levels are due to the manner in which reading is taught. They point to three areas: a) contemporary reading science has had very little impact on educational practice mainly because of a "two-cultures problem separating science and education", b) current teaching practices rest on outdated assumptions that make learning to read harder than it needs to be, and c) connecting evidence-based practice to educational practice would be beneficial but is extremely difficult to achieve because many teachers are not properly trained in the science of reading.

Simple view of reading

The simple view of reading is a scientific theory about reading comprehension. According to the theory, in order to comprehend what they are reading students need both *decoding skills* and *oral language (listening) comprehension ability*. Neither is enough on their own. In other words, they need the ability to recognize and process (e.g., sound out) the text, and the ability to understand the language in which the text is written (i.e., vocabulary, grammar and background knowledge). Students are not reading if they can decode words but do not understand their meaning. Similarly, students are not reading if they cannot decode words that they would ordinarily recognize and understand if they heard them spoken out loud.

It is expressed in this equation: Decoding × Oral Language Comprehension = Reading Comprehension.

As shown in the graphic, the Simple View of Reading proposes four broad categories of developing readers: typical readers;

poor readers (general reading disability); dyslexics; and hyperlexics.

Scarborough's reading rope

Hollis Scarborough, the creator of the Reading Rope and senior scientist at Haskins Laboratories, is a leading researcher of early language development and its connection to later literacy.

Scarborough published the Reading Rope infographic in 2001 using strands of rope to illustrate the many ingredients that are involved in becoming a skilled reader. The upper strands represent *language-comprehension* and reinforce one another. The lower strands represent *word-recognition* and work together as the reader becomes accurate, fluent, and automatic through practice. The upper and lower strands all weave together to produce a skilled reader.

More recent research by Laurie E. Cutting and Hollis S. Scarborough has highlighted the importance of executive function processes (e.g. working memory, planning, organization, self-monitoring, and similar abilities) to reading comprehension. Easy texts do not require much executive functions, however more difficult text require more "focus on the ideas". Reading comprehension strategies, such as summarizing, may help.

The active view of reading model

The active view of reading (AVR) model (May 7, 2021), offers an alternative to the Simple view of reading (SVR), and a proposed

update to Scarborough's reading rope (SRR). It reflects key insights from scientific research on reading that is not captured in the SVR and SRR. Although the AVR model has not been tested as a whole in research, "each element within the model has been tested in instructional research demonstrating positive, causal influences on reading comprehension".

The model lists contributors to reading (and potential causes of reading difficulty) – within, across, and beyond word recognition and language comprehension; including the elements of self-regulation. This feature of the model reflects the research documenting that not all profiles of reading difficulty are explained by low word recognition and/or low language comprehension. A second feature of the model is that it shows how word recognition and language comprehension overlap, and identifies processes that "bridge" these constructs.

How the brain reads

Several researchers and neuroscientist have attempted to explain how the brain reads. They have written articles and books, and created websites and YouTube videos to help the average consumer.

Neuroscientist StanislasDehaene says that a few simple truths should be accepted by all, namely: a) all children have similar brains, are well tuned to systematic grapheme-phoneme correspondences, "and have everything to gain from phonics — the only method that will give them the freedom to read any text", b) classroom size is largely irrelevant if the proper teaching methods are used, c) it is essential to have

standardized screening tests for dyslexia, followed by appropriate specialized training, and d) while decoding is essential, vocabulary enrichment is equally important.

Eye movement and silent reading rate

Reading is an intensive process in which the eye quickly moves to assimilate the text — seeing just accurately enough to interpret groups of symbols. It is necessary to understand visual perception and eye movement in reading to understand the reading process.

When reading, the eye moves continuously along a line of text, but makes short rapid movements (saccades) intermingled with short stops (fixations). There is considerable variability in fixations (the point at which a saccade jumps to) and saccades between readers, and even for the same person reading a single passage of text. When reading, the eye has a **perceptual span** of about 20 slots. In the best-case scenario and reading English, when the eye is fixated on a letter, four to five letters to the right and three to four letters to the left can be clearly identified. Beyond that, only the general shape of some letters can be identified.

Research published in 2019 concluded that the **silent reading rate** of adults in English for *non-fiction* is in the range of 175 to 300 words per minute (wpm); and for *fiction* the range is 200 to 320 words per minute.

Dual-route hypothesis to reading aloud

In the early 1970s the dual-route hypothesis to reading aloud was proposed, according to which there are two separate mental mechanisms involved in reading aloud, with output from both contributing to the pronunciation of written words. One mechanism is the lexical route whereby skilled readers can recognize a word as part of their sight vocabulary. The other is the nonlexical or sublexical route, in which the reader "sounds out" (decodes) written words.

Evidence-based reading instruction

Evidence-based reading instruction refers to practices having research evidence showing their success in improving reading achievement. It is related to evidence-based education.

Several organizations report on research about reading instruction, for example:

- Best Evidence Encyclopedia (BEE) is a free website created by the Johns Hopkins University School of Education's Center for Data-Driven Reform in Education and is funded by the Institute of Education Sciences, U.S. Department of Education. In 2021, BEE released a review of research on 51 different programs for struggling readers in elementary schools. Many of the programs used phonics-based teaching and/or one or more other approaches. The conclusions of this report are

shown at the section entitled Effectiveness of programs.

- Evidence for ESSA began in 2017 and is produced by the Center for Research and Reform in Education (CRRE) at Johns Hopkins University School of Education, Baltimore, MD. It offers free up-to-date information on current PK-12 programs in reading, math, social-emotional learning, and attendance that meet the standards of the Every Student Succeeds Act (ESSA) (the United States K–12 public education policy signed by President Obama in 2015).
- *ProvenTutoring.org* is a non-profit organization, a separate subsidiary of the non-profit Success for All Foundation. It is a resource for school systems and educators interested in research-proven tutoring programs. It lists programs that deliver tutoring programs that are proven effective in rigorous research as defined in the 2015 Every Student Succeeds Act. The Center for Research and Reform in Education at Johns Hopkins University provides the technical support to inform program selection.
- What Works Clearinghouse (WWC) of Washington, DC, was established in 2002 and evaluates numerous educational programs in twelve categories by the quality and quantity of the evidence and the effectiveness. It is operated by the federal National Center for Education Evaluation and Regional Assistance (NCEE), part of the Institute of Education Sciences (IES) Individual studies are available that have been reviewed by WWC and categorized according to the evidence tiers of the United States *Every student succeeds act* (ESSA).

- Intervention reports are provided for programs according to twelve topics (e.g. literacy, mathematics, science, behavior, etc.).
- The British Educational Research Association (BERA) claims to be the home of educational research in the United Kingdom.
- *Florida Center for Reading Research* is a research center at Florida State University that explores all aspects of reading research. Its Resource Database allows you to search for information based on a variety of criteria.
- Institute of Education Sciences (IES), Washington, DC, is the statistics, research, and evaluation arm of the U.S. Department of Education. It funds independent education research, evaluation and statistics. It published a Synthesis of its Research on Early Intervention and Early Childhood Education in 2013.Its publications and products can be searched by author, subject, etc.
- National Foundation for Educational Research (NFER) is a non-profit research and development organization based in Berkshire, England. It produces independent research and reports about issues across the education system, such as *Using Evidence in the Classroom: What Works and Why*.
- Office for Standards in Education (Ofsted), in England, conducts research on schools, early education, social care, further education and skills.
- The Ministry of Education, Ontario, Canada offers a site entitled *What Works? Research Into Practice*. It is a collection of research summaries of promising

teaching practice written by experts at Ontario universities.

- RAND Corporation, with offices throughout the world, funds research on early childhood, K-12, and higher education.
- ResearchED, a U.K. based non-profit since 2013 has organized education conferences around the world (e.g. Africa, Australia, Asia, Canada, the E.U., the Middle East, New Zealand, the U.K. and the U.S.A.) featuring researchers and educators in order to "promote collaboration between research-users and research-creators". It has been described as a "grass-roots teacher-led project that aims to make teachers research-literate and pseudo-science proof".

Reading from paper vs. screens

A systematic review and meta□analysis was conducted on the advantages of reading from paper vs. screens. It found no difference in reading times, however, reading from paper has a small advantage in reading performance and metacognition.

Apart from that, depending on the circumstances, some people prefer one medium over the other and each appears to have its own unique advantages.

SOR and teacher preparation

Some teachers, even after obtaining a master's degree in education, don't feel they have the necessary knowledge and skills to teach all students how to read.

A survey in the United States reported that 70% of teachers believe in a balanced literacy approach to teaching reading – however balanced literacy "is not systematic, explicit instruction". Teacher, researcher and author, Louisa Moats, in a video about teachers and science of reading, says that sometime, when teachers talk about their "philosophy" of teaching reading, she responds by saying, "But your 'philosophy' doesn't work". She says this is evidenced by the fact that so many children are struggling with reading.

In an Education Week Research Center survey of more than 530 professors of reading instruction, just 22 percent said their philosophy of teaching early reading centered on explicit, systematic phonics with comprehension as a separate focus.

However, at least one State, Arkansas, is requiring every elementary and special education teacher to be proficient in the scientific research on reading by 2021; causing Amy Murdoch, an associate professor and the director of the reading science program at Mount St. Joseph University in Cincinnati to say “We still have a long way to go – but I do see some hope.”

Some non-profit organizations, such as The Center for Development and Learning (Louisiana) and The Reading League (New York State), offer training programs for teachers to learn about the science of reading.

Timothy Shanahan (educator) acknowledges that comprehensive research does not always exist for specific aspects of reading instruction. However, "the lack of evidence doesn’t mean something doesn’t work, only that we don’t know". He suggests that teachers make use of the research

that is available in such places as Journal of Educational Psychology, Reading Research Quarterly, Reading & Writing Quarterly, Review of Educational Research, and Scientific Studies of Reading. If a practice lacks supporting evidence, it can be used with the understanding that it is based upon a claim, not science.

Teaching reading

Alphabetic languages

Educators have debated for years about which method is best to teach reading for the English language. There are three main methods, phonics, whole language and balanced literacy. There are also a variety of other areas and practices such as phonemic awareness, fluency, reading comprehension, sight words and sight vocabulary, the three-cueing system (the searchlights model in England), guided reading, shared reading, and leveled reading. Each practice is employed in different manners depending on the country and the specific school division.

In 2001, some researchers reached two conclusions: 1) "mastering the alphabetic principle is essential" and 2) "instructional techniques (namely, phonics) that teach this principle directly are more effective than those that do not". However, while they make it clear they have some fundamental disagreements with some of the claims made by whole-language advocates, some principles of whole language have value such as the need to ensure that students are enthusiastic about books and eager to learn to read.

Phonics and related areas

Phonics emphasizes the alphabetic principle – the idea that letters (graphemes) represent the sounds of speech (phonemes). It is taught in a variety of ways; some are systematic and others are unsystematic. Unsystematic phonics teaches phonics on a "when needed" basis and in no particular sequence. *Systematic* phonics uses a planned, sequential introduction of a set of phonic elements along with *explicit* teaching and practice of those elements. The National Reading Panel (NPR) concluded that systematic phonics instruction is more effective than unsystematic phonics or non-phonics instruction.

Phonics approaches include analogy phonics, analytic phonics, embedded phonics with mini-lessons, phonics through spelling, and synthetic phonics.

According to a 2018 review of research related to *English speaking poor readers*, phonics training is effective for improving literacy-related skills, particularly the fluent reading of words and non-words, and the accurate reading of irregular words.

In addition, phonics produces higher achievement for all beginning readers, and the greatest improvement is experienced by students who are at risk of failing to learn to read. While some children are able to infer these rules on their own, some need explicit instruction on phonics rules. Some phonics instruction has marked benefits such as expansion of a student's vocabulary. Overall, children who are directly

taught phonics are better at reading, spelling and comprehension.

A challenge in teaching phonics is that in some languages, such as English, complex letter-sound correspondences can cause confusion for beginning readers. For this reason, it is recommended that teachers of English-reading begin by introducing the "most frequent sounds" and the "common spellings", and save the less frequent sounds and complex spellings for later. (e.g. the sounds /s/ and /t/ before /v/ and /w/; and the spellings c*a*ke before *eigh*t and *c*at before du*ck*).

Phonics is gaining world-wide acceptance.

Combining phonics with other literacy instruction

Phonics is taught in many different ways and it is often taught together with some of the following: oral language skills, concepts about print, phonological awareness, phonemic awareness, phonology, oral reading fluency, vocabulary, syllables, reading comprehension, spelling, word study, cooperative learning, multisensory learning, and guided reading. And, phonics is often featured in discussions about science of reading, and evidence-based practices.

The National Reading Panel (U.S.A. 2000) is clear that "systematic phonics instruction should be integrated with other reading instruction to create a balanced reading program". It suggests that phonics be taught together with phonemic awareness, oral fluency, vocabulary and comprehension. Timothy Shanahan (educator), a member of that panel, recommends that primary students receive 60–90 minutes per day of explicit, systematic, literacy instruction

time; and that it be divided equally between a) words and word parts (e.g. letters, sounds, decoding and phonemic awareness), b) oral reading fluency, c) reading comprehension, and d) writing. Furthermore, he states that "the phonemic awareness skills found to give the greatest reading advantage to kindergarten and first-grade children are *segmenting and blending*".

The Ontario Association of Deans of Education (Canada) published research Monograph # 37 entitled *Supporting early language and literacy* with suggestions for parents and teachers in helping children prior to grade one. It covers the areas of letter names and letter-sound correspondence (phonics), as well as conversation, play-based learning, print, phonological awareness, shared reading, and vocabulary.

Effectiveness of programs

Some researchers report that teaching reading without teaching phonics is harmful to large numbers of students; yet not all phonics teaching programs produce effective results. The reason is that the effectiveness of a program depends on using the right curriculum together with the appropriate approach to instruction techniques, classroom management, grouping, and other factors. Louisa Moats, a teacher, psychologist and researcher, has long advocated for reading instruction that is direct, explicit and systematic, covering phoneme awareness, decoding, comprehension, literature appreciation, and daily exposure to a variety of texts. She maintains that "reading failure can be prevented in all but a small percentage of children with serious learning disorders. It

is possible to teach most students how to read if we start early and follow the significant body of research showing which practices are most effective."

Interest in evidence-based education appears to be growing. In 2021, Best evidence encyclopedia (BEE) released a review of research on 51 different programs for struggling readers in elementary schools. Many of the programs used phonics-based teaching and/or one or more of the following: cooperative learning, technology-supported adaptive instruction (see Educational technology), metacognitive skills, phonemic awareness, word reading, fluency, vocabulary, multisensory learning, spelling, guided reading, reading comprehension, word analysis, structured curriculum, and balanced literacy (non-phonetic approach).

The BEE review concludes that a) outcomes were positive for one-to-one tutoring, b) outcomes were positive, but not as large, for one-to-small group tutoring, c) there were no differences in outcomes between teachers and teaching assistants as tutors, d) technology-supported adaptive instruction did not have positive outcomes, e) whole-class approaches (mostly cooperative learning) and whole-school approaches incorporating tutoring obtained outcomes for struggling readers as large as those found for one- to-one tutoring, and benefitted many more students, and f) approaches mixing classroom and school improvements, with tutoring for the most at-risk students, have the greatest potential for the largest numbers of struggling readers.

Robert Slavin, of BEE, goes so far as to suggest that states should "hire thousands of tutors" to support students scoring

far below grade level—particularly in elementary school reading. Research, he says, shows "only tutoring, both one-to-one and one-to-small group, in reading and mathematics, had an effect size larger than +0.10 ... averages are around +0.30", and "well-trained teaching assistants using structured tutoring materials or software can obtain outcomes as good as those obtained by certified teachers as tutors".

What works clearinghouse allows you to see the effectiveness of specific programs. For example, as of 2020 they have data on 231 literacy programs. If you filter them by grade 1 only, all class types, all school types, all delivery methods, all program types, and all outcomes you receive 22 programs. You can then view the program details and, if you wish, compare one with another.

Evidence for ESSA (Center for Research and Reform in Education) offers free up-to-date information on current PK-12 programs in reading, writing, math, science, and others that meet the standards of the Every Student Succeeds Act (U.S.A.).

ProvenTutoring.org a non-profit organization, is a resource for educators interested in research-proven tutoring programs. The programs it lists are proven effective in rigorous research as defined in the 2015 Every Student Succeeds Act. The Center for Research and Reform in Education at Johns Hopkins University provides the technical support to inform program selection.

Systematic phonics

Systematic phonics is not one specific method of teaching phonics; it is a term used to describe phonics approaches that are taught*explicitly* and in a structured, systematic manner. They are *systematic* because the letters and the sounds they relate to are taught in a specific sequence, as opposed to incidentally or on a "when needed" basis.

The National Reading Panel (NPR) concluded that systematic phonics instruction is more effective than unsystematic phonics or non-phonics instruction. The NRP also found that systematic phonics instruction is effective (with varying degrees) when delivered through one-to-one tutoring, small groups, and teaching classes of students; and is effective from kindergarten onward, the earlier the better. It helps significantly with word-reading skills and reading comprehension for kindergartners and 1st graders as well as for older struggling readers and reading disabled students. Benefits to spelling were positive for kindergartners and 1st graders but not for older students.

Systematic phonics is sometimes mischaracterized as "skill and drill" with little attention to meaning. However, researchers point out that this impression is false. Teachers can use engaging games or materials to teach letter-sound connections, and it can also be incorporated with the reading of meaningful text.

Phonics can be taught systematically in a variety of ways, such as: analogy phonics, analytic phonics, phonics through

spelling, and synthetic phonics. However, their effectiveness vary considerably because the methods differ in such areas as the range of letter-sound coverage, the structure of the lesson plans, and the time devoted to specific instructions.

Systematic phonics has gained increased acceptance in different parts of the world since the completion of three major studies into teaching reading; one in the US in 2000, another in Australia in 2005, and the other in the UK in 2006.

In 2009, the UK Department of Education published a curriculum review that added support for systematic phonics. In fact, systematic phonics in the UK is known as Synthetic phonics.

Beginning as early as 2014, several states in the United States have changed their curriculum to include systematic phonics instruction in elementary school.

In 2018, the State Government of Victoria, Australia, published a website containing a comprehensive Literacy Teaching Toolkit including Effective Reading Instruction, Phonics, and Sample Phonics Lessons.

Analogy phonics

Analogy phonics is a particular type of *analytic phonics* in which the teacher has students analyze phonic elements according to the speech sounds (phonograms) in the word. For example, a type of phonogram (known in linguistics as a rime) is composed of the vowel and the consonant sounds that follow it (e.g. in the words *cat, mat and sat,* the rime is *"at"*.) Teachers

using the analogy method may have students memorize a bank of phonograms, such as *-at* or *-am*, or use *word families* (e.g. c*an*, r*an*, m*an*, or m*ay*, pl*ay*, s*ay*).

Analytic phonics

Analytic phonics does not involve pronouncing individual sounds (phonemes) in isolation and blending the sounds, as is done in synthetic phonics. Rather, it is taught at the word level and students learn to analyze letter-sound relationships once the word is identified. For example, students analyze letter-sound correspondences such as the *ou* spelling of /a□/ in shr*ou*ds. Also, students might be asked to practice saying words with similar sounds such as *b*all, *b*at and *b*ite. Furthermore, students are taught consonant blends (separate, adjacent consonants) as units, such as *br*eak or *sh*rouds.

Embedded phonics with mini-lessons

Embedded phonics, also known as *incidental phonics*, is the type of phonics instruction used in whole language programs. It is not *systematic phonics*. Although phonics skills are de-emphasised in whole language programs, some teachers include phonics "mini-lessons" when students struggle with words while reading from a book. Short lessons are included based on phonics elements the students are having trouble with, or on a new or difficult phonics pattern that appears in a class reading assignment. The focus on meaning is generally maintained, but the mini-lesson provides some time for focus on individual sounds and the letters that represent them.

Embedded phonics is different from other methods because instruction is always in the context of literature rather than in separate lessons about distinct sounds and letters; and skills are taught when an opportunity arises, not systematically.

Phonics through spelling

For some teachers this is a method of teaching spelling by using the sounds (phonemes). However, it can also be a method of teaching reading by focusing on the sounds and their spelling (i.e. phonemes and syllables). It is taught systematically with guided lessons conducted in a direct and explicit manner including appropriate feedback. Sometimes mnemonic cards containing individual sounds are used to allow the student to practice saying the sounds that are related to a letter or letters (e.g. *a*, *e*, *i*, *o*, *u*). Accuracy comes first, followed by speed. The sounds may be grouped by categories such as vowels that sound short (e.g. c-*a*-t and s-*i*-t). When the student is comfortable recognizing and saying the sounds, the following steps might be followed: a) the tutor says a target word and the student repeats it out loud, b) the student writes down each individual sound (letter) until the word is completely spelled, saying each sound as it is written, and c) the student says the entire word out loud. An alternate method would be to have the student use mnemonic cards to sound-out (spell) the target word.

Typically, the instruction starts with sounds that have only one letter and simple CVC words such as *sat* and *pin*. Then it progresses to longer words, and sounds with more than one letter (e.g. h*ea*r and d*ay*), and perhaps even syllables (e.g. wa-

ter). Sometimes the student practices by saying (or sounding-out) cards that contain entire words.

Synthetic phonics

Synthetic phonics, also known as blended phonics, is a systematic phonics method employed to teach students to read by *sounding out* the letters then *blending* the sounds to form the word. This method involves learning how letters or letter groups represent individual sounds, and that those sounds are blended to form a word. For example, *shrouds* would be read by pronouncing the sounds for each spelling, *sh, r, ou, d, s* (IPA /ʃ,r,aʊ,d,z/), then blending those sounds orally to produce a spoken word, *sh – r – ou – d – s = shrouds* (IPA /ʃraʊdz/). The goal of either a blended phonics or synthetic phonics instructional program is that students identify the sound-symbol correspondences and blend their phonemes automatically. Since 2005, synthetic phonics has become the accepted method of teaching reading (by phonics instruction) in England, Scotland and Australia.

The 2005 Rose Report from the UK concluded that systematic synthetic phonics was the most effective method for teaching reading. It also suggests the "best teaching" included a brisk pace, engaging children's interest with multi-sensory activities and stimulating resources, praise for effort and achievement; and above all, the full backing of the headteacher.

It also has considerable support in some States in the U.S.A.and some support from expert panels in Canada.

In the US, a pilot program using the Core Knowledge Early Literacy program that used this type of phonics approach showed significantly higher results in K-3 reading compared with comparison schools. In addition, several States such as California, Ohio, New York and Arkansas, are promoting the principles of synthetic phonics (see synthetic phonics in the United States).

Resources for teaching phonics are available here

Related areas

Phonemic awareness

Phonemic awareness is the process by which the phonemes (sounds of oral language) are heard, interpreted, understood and manipulated — unrelated to their grapheme (written language). It is a sub-set of Phonological awareness that includes the manipulation of rhymes, syllables, and onsets and rimes, and is most prevalent in alphabetic systems. The specific part of speech depends on the writing system employed. The National Reading Panel (NPR) concluded that phonemic awareness improves a learner's ability to learn to read. When teaching phonemic awareness, the NRP found that better results were obtained with focused and explicit instruction of one or two elements, over five or more hours, in small groups, and using the corresponding graphemes (letters). See also Speech perception. As mentioned earlier, some researchers feel that the most effective way of teaching phonemic awareness is through segmenting and blending, a key part of synthetic phonics.

Vocabulary

A critical aspect of reading comprehension is vocabulary development. When a reader encounters an unfamiliar word in print and decodes it to derive its spoken pronunciation, the reader understands the word if it is in the reader's spoken vocabulary. Otherwise, the reader must derive the meaning of the word using another strategy, such as context. If the development of the child's vocabulary is impeded by things such as ear infections that inhibit the child from hearing new words consistently then the development of reading will also be impaired.

Sight vocabulary vs. sight words

Sight words (i.e. high-frequency or common words), sometimes called the "look-say" method or **whole-word method**, are *not* a part of the phonics method. They are usually associated with whole language and balanced literacy where students are expected to memorize common words such as those on the Dolch word list and the Fry word list (e.g. a, be, call, do, eat, fall, gave, etc.). The supposition (in whole language and balanced literacy) is that students will learn to read more easily if they memorize the most common words they will encounter, especially words that are not easily decoded (i.e. exceptions).

On the other hand, using sight words as a method of teaching reading in English is seen as being at odds with the alphabetic

principle and treating English as though it was a logographic language (e.g. Chinese or Japanese).

In addition, according to research, whole-word memorisation is "labor-intensive", requiring on average about 35 trials per word. Also, phonics advocates say that most words are decodable, so comparatively few words have to be memorized. And because a child will over time encounter many low-frequency words, "the phonological recoding mechanism is a very powerful, indeed essential, mechanism throughout reading development". Furthermore, researchers suggest that teachers who withhold phonics instruction to make it easier on children "are having the opposite effect" by making it harder for children to gain basic word-recognition skills. They suggest that learners should focus on understanding the principles of phonics so they can recognize the phonemic overlaps among words (e.g. have, had, has, having, haven't, etc.), making it easier to decode them all.

Sight vocabulary is a part of the phonics method. It describes words that are stored in long-term memory and read automatically. Skilled fully-alphabetic readers learn to store words in long-term memory without memorization (i.e. a mental dictionary), making reading and comprehension easier. "Once you know the sound-based way to decode, your mind learns what words look like, even if you're not especially trying to do so." The process, called *orthographic mapping*, involves *decoding, crosschecking, mental marking and rereading.* It takes significantly less time than memorization. This process works for fully-alphabetic readers when reading simple decodable words from left to right through the word. *Irregular words* pose more of a challenge, yet research in 2018

concluded that "fully-alphabetic students" learn irregular words more easily when they use a process called *hierarchical decoding*. In this process, students, rather than decode from left to right, are taught to focus attention on the irregular elements such as a vowel-digraph and a silent-e; for example, break (b – r – *ea* – k), height (h – *eigh* – t), touch (t – *ou* – *ch*), and make (m – *a* – k*e*). Consequentially, they suggest that teachers and tutors should focus on "teaching decoding with more advanced vowel patterns before expecting young readers to tackle irregular words".

Fluency

Fluency is ability to read orally with speed, accuracy, and vocal expression. The ability to read fluently is one of several critical factors necessary for reading comprehension. If a reader is not fluent, it may be difficult to remember what has been read and to relate the ideas expressed in the text to their background knowledge. This accuracy and automaticity of reading serves as a bridge between decoding and comprehension.

Reading comprehension

The NRP describes reading comprehension as a complex cognitive process in which a reader intentionally and interactively engages with the text. The science of reading says that reading comprehension is heavily dependent on word recognition (i.e., phonological awareness, decoding, etc.) and oral language comprehension (i.e., background knowledge,

vocabulary, etc.). Phonological awareness and rapid naming predict reading comprehension in second grade but oral language skills account for an additional 13.8% of the variance.

Reading and spelling

Evidence supports the strong synergy between reading (decoding) and spelling (encoding), especially for children in kindergarten or grade one and elementary school students at risk for literacy difficulties.

Using embedded picture, mnemonic alphabet cards when teaching phonics

Research supports the use of embedded, picture mnemonic (memory support) alphabet cards when teaching letters and sounds, but not words.

Whole language

Whole language has the reputation of being a meaning-based method of teaching reading that emphasizes literature and text comprehension. It discourages any significant use of phonics, if at all. Instead, it trains students to focus on words, sentences and paragraphs as a whole rather than letters and sounds. Students are taught to use context and pictures to "guess" words they do not recognize, or even just skip them and read on. It aims to make reading fun, yet many students struggle to figure out the specific rules of the language on their

own, which causes the student's decoding and spelling to suffer.

The following are some features of the whole language philosophy:

- Children are expected to learn to read and write as they learned to talk, that is gradually, without a great deal of direct instruction. (However, researchers and neuroscientists say that learning to read, unlike learning to talk, is not a natural process and many learners require explicit instruction. They point out that millions of adults can speak their language just fine, yet they cannot read their language.)
- Learning is emphasized more than teaching. It is assumed that the students will learn to read and write, and the teacher facilitates that growth.
- Students read and write every day in a variety of situations.
- Reading, writing, and spoken language are not considered separate components of the curriculum or merely ends in themselves; rather they permeate everything the students are doing.
- There is no division between first *learning to read* and later *reading to learn*.

As of 2020, whole language is widely used in the US and Canada (often as *balanced literacy*), however, in some US States and many other countries, such as Australia and the United Kingdom, it has lost favor or been abandoned because it is not supported by evidence. Some notable researchers have

clearly stated their disapproval of *whole language* and *whole-word* teaching. In his 2009 book, *Reading in the brain*, cognitive neuroscientist, StanislasDehaene, said "cognitive psychology directly refutes any notion of teaching via a 'global' or 'whole language' method." He goes on to talk about "the myth of whole-word reading", saying it has been refuted by recent experiments. "We do not recognize a printed word through a holistic grasping of its contours, because our brain breaks it down into letters and graphemes." In addition, cognitive neuroscientist Mark Seidenberg, in his 2017 book *Language at the speed of light*, refers to whole language as a "theoretical zombie" because it persists in spite of a lack of supporting evidence.

Balanced literacy

Balanced literacy is not well defined, however it is intended as a method that combines elements of both phonics and whole language. According to a survey in 2010, 68% of elementary school teachers in the United States profess to use balanced literacy. However, only 52% of teachers in the United States include *phonics* in their definition of *balanced literacy*.

The National Reading Panel concluded that phonics must be integrated with instruction in phonemic awareness, vocabulary, fluency, and comprehension. And, some studies indicate that "the addition of language activities and tutoring to phonics produced larger effects than any of these components in isolation". They suggest that this may be a constructive way to view balanced reading instruction.

However, balanced literacy has received criticism from researchers and others suggesting that, in many instances, it is merely *whole language* by another name.

According to phonics advocate and cognitive neuroscientist Mark Seidenberg, balanced literacy allows educators to diffuse the reading wars while not making specific recommendations for change. He goes on to say that, in his opinion, the high number of struggling readers in the United States is the result of the manner in which teachers are taught to teach reading. He also says that struggling readers should not be encouraged to skip a challenging word, nor rely on pictures or semantic and syntactic cues to "guess at" a challenging word. Instead, they should use evidence-based decoding methods such as systematic phonics.

Structured Literacy

Structured literacy has many of the elements of systematic phonics and few of the elements of balanced literacy. It is defined as explicit, systematic teaching that focuses on phonological awareness, word recognition, phonics and decoding, spelling, and syntax at the sentence and paragraph levels. It is considered to be beneficial for all early literacy learners, especially those with dyslexia.

According to the International Dyslexia Association, structured literacy contains the elements of phonology and phonemic awareness, sound-symbol association (the alphabetic principle and phonics), syllables, morphology, syntax, and semantics. The elements are taught using methods that are systematic,

cumulative, explicit, multisensory, and use diagnostic assessment.

Three cueing system (Searchlights model)

The three-cueing system (the searchlights model in England) is a theory that has been circulating since the 1980s. Its roots are in the theories proposed in 1960s by Ken Goodman and Marie Clay that eventually became whole language, reading recovery and guided reading (e.g., Fountas and Pinnell early reading programs). As of 2010, 75% of teachers in the United States teach the three-cueing system. It proposes that children who are stuck on a word should use various "cues" to figure it out and determine (guess) its meaning. The "meaning cues" are semantic ("does it make sense in the context?"), syntactic (is it a noun, verb, etc.?) and graphophonic (what are the letter-sound relationships?). It is also known as MSV (*M*eaning, *S*entence structure/syntax and *V*isual information such as the letters in the words).

According to some, three-cueing isn't the most effective way for beginning readers to learn how to decode printed text. While a cueing system does help students to "make better guesses", it does not help when the words become more sophisticated; and it reduces the amount of practice time available to learn essential decoding skills. They also say that students should first decode the word, "then they can use context to figure out the meaning of any word they don't understand".

Consequently, researchers such as cognitive neuroscientists Mark Seidenberg and professor Timothy Shanahan do not support the theory. They say the three-cueing system's value in reading instruction "is a magnificent work of the imagination", and it developed not because teachers lack integrity, commitment, motivation, sincerity, or intelligence, but because they "were poorly trained and advised" about the science of reading. In England, the simple view of reading and synthetic phonicsare intended to replace "the searchlights multi-cueing model". On the other hand, some researchers suggest that "context" can be useful, not to guess a word, but to confirm a word after it has been phonetically decoded.

Three Ps (3Ps) – Pause Prompt Praise

The three Ps approach is used by teachers, tutors and parents to guide oral reading practice with a struggling reader. For some, it is merely a variation of the above-mentioned *three-cueing system*.

However, for others it is very different. For example: when a student encounters a word they do not know or get it wrong, the three steps are: 1) pause to see if they can fix it themselves, even letting them read on a little, 2) prompt them with strategies to find the correct pronunciation, and 3) praise them directly and genuinely. In the *prompt* step, the tutor does not suggest the student skip the word or guess the word based on the pictures or the first sound. Instead, they encourage student to use their decoding training to sound out the word, and use the context (meaning) to confirm they have found the correct word.

Guided reading, reading workshop, shared reading, leveled reading, silent reading (and self-teaching)

Guided reading is small group reading instruction that is intended to allow for the differences in students' reading abilities. While they are reading, students are encouraged to use strategies from the three-cueing system, the searchlights model, or MSV.

It is no longer supported by the Primary National Strategy in England as Synthetic phonics is the officially recognized method for teaching reading.

In the United States, Guided Reading is part of the Reading Workshop model of reading instruction.

The reading workshop model provides students with a collection of books, allows them the choice of what to read, limits students' reading to texts that can be easily read by them, provides teaching through mini-lessons, and monitors and supports reading comprehension development through one-on-one teacher-student conferences. Some reports state that it is 'unlikely to lead to literacy Success' for all students, particularly those lacking foundational skills.

Shared (oral) reading is an activity whereby the teacher and students read from a shared text that is determined to be at the students' reading level.

Leveled reading involves students reading from "leveled books" at an appropriate reading level. A student that struggles with a word is encouraged to use a cueing system (e.g. three-cueing, searchlights model or MSV) to guess its meaning. There are many systems that purport to gauge the students' reading levels using scales incorporating numbers, letters, colors and lexile readability scores.

Silent reading (and self-teaching) is a common practice in elementary schools. A 2007 study in the United States found that, on average only 37% of class time was spent on active reading instruction or practice, and the most frequent activity was students reading silently. Based on the limited available studies on silent reading, the NRP concluded that independent silent reading did not prove an effective practice when used as the only type of reading instruction to develop fluency and other reading skills – particularly with students who have not yet developed critical alphabetic and word reading skills.

Other studies indicate that, unlike silent reading, "oral reading increases phonological effects".

According to some, the classroom method called DEAR (Drop everything and read) is not the best use of classroom time for students who are not yet fluent. However, according to the *self-teaching hypothesis*, when fluent readers practice decoding words while reading silently, they learn what whole words look like (spelling), leading to improved fluency and comprehension.

The suggestion is: "if some students are fluent readers, they could read silently while the teacher works with the struggling readers".

The Reading Wars: phonics vs. whole language

A debate has been going on for decades about the merits of phonics vs. whole language. It is sometimes referred to as the *Reading Wars*.

Until the mid-1800's, phonics was the accepted method in the United States to teach children to read. Then, in 1841 Horace Mann, the Secretary of the Massachusetts Board of Education, advocated for a whole-word method of teaching reading to replace phonics. Others, such as Rudolf Flesch, advocated for a return to phonics in his book *Why Johnny Can't Read* (1955). The whole-word method received support from Kenneth J. Goodman who wrote an article in 1967 entitled *Reading: A psycholinguistic guessing game*. Although not supported by scientific studies, the theory became very influential as the whole language method. Since the 1970s some whole language supporters such as Frank Smith (psycholinguist), are unyielding in arguing that phonics should be taught little, if at all.

Yet, other researchers say instruction in phonics and phonemic awareness are *"critically important"* and *"essential"* to develop early reading skills. In 2000, the National Reading Panel (U.S.A.) identified five ingredients of effective reading instruction, of which phonics is one; the other four are phonemic awareness, fluency, vocabulary and comprehension. Reports from other countries, such as the Australian report on *Teaching reading* (2005) and the U.K. Independent review of the

teaching of early reading (Rose Report 2006) have also supported the use of phonics.

Some notable researchers such as StanislasDehaene and Mark Seidenberg have clearly stated their disapproval of *whole language*.

Furthermore, a 2017 study in the UK that compared teaching with phonics vs. teaching whole written words concluded that phonics is more effective, saying "our findings suggest that interventions aiming to improve the accuracy of reading aloud and/or comprehension in the early stages of learning should focus on the systematicities present in print-to-sound relationships, rather than attempting to teach direct access to the meanings of whole written words".

More recently, some educators have advocated for the theory of balanced literacy purported to combine phonics and whole language yet not necessarily in a consistent or systematic manner. It may include elements such as word study and phonics mini-lessons, differentiated learning, cueing, leveled reading, shared reading, guided reading, independent reading and sight words. According to a survey in 2010, 68% of K-2 teachers in the United States practice balanced literacy; however, only 52% of teachers included *phonics* in their definition of *balanced literacy*. In addition, 75% of teachers teach the three-cueing system (i.e., meaning/structure/visual or semantic/syntactic/graphophonic) that has its roots in whole language.

In addition, some phonics supporters assert that *balanced literacy* is merely *whole language* by another name. And critics of whole language and sceptics of balanced literacy, such as

neuroscientist Mark Seidenberg, state that struggling readers should *not* be encouraged to skip words they find puzzling or rely on semantic and syntactic cues to guess words.

Over time a growing number of countries and states have put greater emphasis on phonics and other evidence-based practices (see Phonics practices by country or region).

Requirements for proficient reading

According to the report by the US National Reading Panel (NRP) in 2000, the elements required for proficient reading of alphabetic languages are phonemic awareness, phonics, fluency, vocabulary, and text comprehension. In non-Latin languages, proficient reading does not necessarily require phonemic awareness, but rather an awareness of the individual parts of speech, which may also include the whole word (as in Chinese characters) or syllables (as in Japanese) as well as others depending on the writing system being employed.

The Rose Report, from the Department for Education in England makes it clear that, in their view, systematic phonics, specifically synthetic phonics, is the best way to ensure that children learn to read; such that it is now the law. In 2005 the government of Australia published a report stating "The evidence is clear ... that direct systematic instruction in phonics during the early years of schooling is an essential foundation for teaching children to read." Phonics has been

gaining acceptance in many other countries as can be seen from this page Practices by country or region.

Other important elements are:rapid automatized naming (RAN), a general understanding of the orthography of the language, and practice.

- Rapid automatized naming, the ability to say quickly the names of letters, objects and colors, predicts an individual's ability to read. This might be linked to the importance of quick retrieval of phonological representations from long-term memory in reading and the importance of object-naming circuits in the left cerebral hemisphere that are recruited to underpin a learner's word-recognition abilities.
- Orthography describes or defines the set of symbols used in a language, and the rules about how to write these symbols (i.e., the conventional spelling system of a language). Orthographic Development proceeds in increasing complexity as a person learns to read. Some of the first things to be learnt are the orthographic conventions such as the direction of reading and that there are differing typefaces and capitalization for each symbol. In general, this means that to read proficiently, the reader has to understand elements of a written language. In the United States, a limited amount of spelling is taught up to grade four, and beyond that "we gain orthographic expertise by reading"; so the amount and variety of texts that children read is important.
- Practice: Repeated exposure to print improves many aspects of learning to read and most importantly the

knowledge of individual words. It increases the speed at which high frequency words are recognized which allows for increased fluency in reading. It also supports orthographic development, reading comprehension and vocabulary development. Research suggests there is value in reading words both in isolation and in context. Reading words in isolation promotes faster reading times and better memory for spellings; whereas, reading words in context improves semantic knowledge and comprehension.

Reading difficulties

Difficulties in reading typically involve difficulty with one or more of the following: decoding, reading rate, reading fluency, or reading comprehension.

Decoding

Brain activity in young and older children can be used to predict future reading skill. Cross model mapping between the orthographic and phonologic areas in the brain are critical in reading. Thus, the amount of activation in the left dorsal inferior frontal gyrus while performing reading tasks can be used to predict later reading ability and advancement. Young children with higher phonological word characteristic processing have significantly better reading skills later on than older children who focus on whole-word orthographic representation.

Difficulty with decoding is marked by having not acquired the phoneme-grapheme mapping concept. One specific disability characterized by poor decoding is dyslexia, defined as brain-based type of learning disability that specifically impairs a person's ability to read. These individuals typically read at levels significantly lower than expected despite having normal intelligence. It can also be inherited in some families, and recent studies have identified a number of genes that may predispose an individual to developing dyslexia. Although the symptoms vary from person to person, common characteristics among people with dyslexia are difficulty with spelling, phonological processing (the manipulation of sounds), and/or rapid visual-verbal responding. Adults can have either developmental dyslexia or acquired dyslexia which occurs after a brain injury, stroke or dementia.

Reading rate

Individuals with reading rate difficulties tend to have accurate word recognition and normal comprehension abilities, but their reading speed is below grade level. Strategies such as guided reading (guided, repeated oral-reading instruction), may help improve a reader's reading rate.

Many studies show that increasing reading speed improves comprehension. Reading speed requires a long time to reach adult levels. According to Carver (1990), children's reading speed increases throughout the school years. On average, from grade 2 to college, reading rate increases 14 standard-length words per minute each year (where one standard-length word is defined as six characters in text, including punctuation and spaces).

Scientific studies have demonstrated that speed reading — defined here as capturing and decoding words faster than 900 wpm — is not feasible given the limits set by the anatomy of the eye.

Reading fluency

Individuals with reading fluency difficulties fail to maintain a fluid, smooth pace when reading. Strategies used for overcoming reading rate difficulties are also useful in addressing reading fluency issues.

Reading comprehension

Individuals with reading comprehension difficulties are commonly described as poor comprehenders. They have normal decoding skills as well as a fluid rate of reading, but have difficulty comprehending text when reading. The simple view of reading holds that reading comprehension requires both *decoding skills* and *oral language comprehension* ability.

Increasing vocabulary knowledge, listening skills and teaching basic comprehension techniques may help facilitate better reading comprehension. It is suggested that students receive brief, explicit instruction in reading comprehension strategies in the areas of vocabulary, noticing understanding, and connecting ideas.

Scarborough's Reading Rope also outlines some of the essential ingredients of reading comprehension.

Reading achievement: national and international reports

The following organizations measure and report on reading achievement in the United States and internationally:

NAEP

In the United States, the National Assessment of Educational Progress or NAEP ("The Nation's Report Card") is the national assessment of what students know and can do in various subjects. Four of these subjects – reading, writing, mathematics and science – are assessed most frequently and reported at the state and district level, usually for grades 4 and 8.

In 2019, with respect to the reading skills of the nation's grade-four public school students, 34% performed at or above the NAEP *Proficient level* (solid academic performance) and 65% performed at or above the NAEP *Basic level* (partial mastery of the proficient level skills).

NAEP reading assessment results are reported as average scores on a 0–500 scale. The Basic Level is 208 and the Proficient Level is 238. The average reading score for grade-four public school students was 219. Female students had an average score that was 7 points higher than male students. Students who were eligible for the National School Lunch

Program (NSLP) had an average score that was 28 points lower than that for students who were not eligible.

Reading scores for the individual States and Districts are available on the NAEP site. Between 2017 and 2019 Mississippi was the only State that had a grade-four reading score increase and 17 States had a score decrease.

PIAAC

The Programme for the International Assessment of Adult Competencies (PIAAC) is an international study by the Organisation for Economic Co-operation and Development (OECD) of cognitive and workplace skills in 39 countries between 2011 and 2018. The Survey measures adults' proficiency in key information-processing skills – literacy, numeracy and problem solving. The focus is on the working-age population between the ages of 16 and 65. For example, the study shows the ranking of 38 countries as to the *literacy proficiency among adults*. According to the 2019 OECD report, the five countries with the highest ranking are Japan, Finland, the Netherlands, Sweden and Australia; whereas Canada is 12th, England (UK) is 16th, and the United States is 19th. It is also worth noting that the PIAAC table A2.1 (2013) shows the percentage of adults reading *at-or-below level one* (out of five levels). Some examples are Japan 4.9%, Finland 10.6%, Netherlands 11.7%, Australia 12.6%, Sweden 13.3%, Canada 16.4%, England (UK) 16.4%, and the United States 16.9%.

PIRLS

The Progress in International Reading Literacy Study (PIRLS) is an international study of reading (comprehension) achievement in fourth graders. It is designed to measure children's reading literacy achievement, to provide a baseline for future studies of trends in achievement, and to gather information about children's home and school experiences in learning to read. The 2016 PIRLS report shows the 4th grade reading achievement by country in two categories (literary and informational). The ten countries with the highest overall reading average are the Russian Federation, Singapore, Hong Kong SAR, Ireland, Finland, Poland, Northern Ireland, Norway, Chinese Taipei and England (UK). Some others are: the United States 15th, Australia 21st, Canada 23rd, and New Zealand 33rd.

PISA

The Programme for International Student Assessment (PISA) measures 15-year-old school pupils scholastic performance on mathematics, science, and reading. In 2018, of the 79 participating countries/economies, on average, students in Beijing, Shanghai, Jiangsu and Zhejiang (China) and Singapore outperformed students from all other countries in reading, mathematics and science. 21 countries have reading scores above the OECD average scores and many of the scores are not statistically different.

History of reading

The history of reading dates back to the invention of writing during the 4th millennium BC. Although reading print text is now an important way for the general population to access information, this has not always been the case. With some exceptions, only a small percentage of the population in many countries was consideredliterate before the Industrial Revolution. Some of the pre-modern societies with generally high literacy rates included classical Athens and the Islamic Caliphate.

Scholars assume that reading aloud (Latin *clarelegere*) was the more common practice in antiquity, and that reading silently (*legeretacite* or *legeresibi*) was unusual. In his *Confessions*, Saint Augustine remarks on Saint Ambrose's unusual habit of reading silently in the 4th century AD.

During the Age of Enlightenment, elite individuals promoted passive reading, rather than creative interpretation. Reading has no concrete laws, but lets readers escape to produce their own products introspectively, promoting deep exploration of texts during interpretation. Some thinkers of that era believed that construction, or the creation of writing and producing a product, was a sign of initiative and active participation in society—and viewed consumption (reading) as simply taking in what constructors made. Also during this era, writing was considered superior to reading in society. They considered readers of that time passive citizens, because they did not produce a product. Michel de Certeau argued that the elites of the Age of Enlightenment were responsible for this general

belief. Michel de Certeau believed that reading required venturing into an author's land, but taking away what the reader wanted specifically. This view held that writing was a superior art to reading within the hierarchical constraints of the era.

In 18th-century Europe, the then new practice of reading alone in bed was, for a time, considered dangerous and immoral. As reading became less a communal, oral practice, and more a private, silent one—and as sleeping increasingly moved from communal sleeping areas to individual bedrooms, some raised concern that reading in bed presented various dangers, such as fires caused by bedside candles. Some modern critics, however, speculate that these concerns were based on the fear that readers—especially women—could escape familial and communal obligations and transgress moral boundaries through the private fantasy worlds in books.

In 19th century Russia, reading practices were highly varied, as people from a wide range of social statuses read Russian and foreign-language texts ranging from high literature to the peasant lubok. Provincial readers such as Andrei Chikhachev give evidence of the omnivorous appetite for fiction and non-fiction alike among middling landowners.

History of learning to read

The history of learning to read dates back to the invention of writing during the 4th millennium BC.

With respect to the English language in the United States, the phonics principle of teaching reading was first presented by

John Hart in 1570, who suggested the teaching of reading should focus on the relationship between what is now referred to as graphemes (letters) and phonemes (sounds).

In the colonial times of the United States, reading material was not written specifically for children, so instruction material consisted primarily of the Bible and some patriotic essays. The most influential early textbook was The New England Primer, published in 1687. There was little consideration given to the best ways to teach reading or assess reading comprehension.

Phonics was a popular way to learn reading in the 1800s. William Holmes McGuffey (1800–1873), an American educator, author, and Presbyterian minister who had a lifelong interest in teaching children, compiled the first four of the McGuffey Readers in 1836.

The whole-word method was invented by Thomas Hopkins Gallaudet, the director of the American Asylum at Hartford. It was designed to educate deaf people by placing a word alongside a picture. In 1830, Gallaudet described his method of teaching children to recognize a total of 50 sight words written on cards. Horace Mann, the Secretary of the Board of Education of Massachusetts, USA, favored the method for everyone, and by 1837 the method was adopted by the Boston Primary School Committee.

By 1844 the defects of the whole-word method became so apparent to Boston schoolmasters that they urged the Board to return to phonics. In 1929, Samuel Orton, a neuropathologist in Iowa, concluded that the cause of children's reading problems was the new **sight method** of reading. His findings were published in the February 1929 issue of the Journal of

Educational Psychology in the article "The Sight Reading Method of Teaching Reading as a Source of Reading Disability".

The meaning-based curriculum came to dominate reading instruction by the second quarter of the 20th century. In the 1930s and 1940s, reading programs became very focused on comprehension and taught children to read whole words by sight. Phonics was taught as a last resort.

Edward William Dolch developed his list of sight words in 1936 by studying the most frequently occurring words in children's books of that era. Children are encouraged to memorize the words with the idea that it will help them read more fluently. Many teachers continue to use this list, although some researchers consider the theory of sight word reading to be a "myth". Researchers and literacy organizations suggest it would be more effective if students learned the words using a phonics approach.

In 1955, Rudolf Flesch published a book entitled *Why Johnny Can't Read*, a passionate argument in favor of teaching children to read using phonics, adding to the reading debate among educators, researchers, and parents.

Government-funded research on reading instruction in the United States and elsewhere began in the 1960s. In the 1970s and 1980s, researchers began publishing studies with evidence on the effectiveness of different instructional approaches. During this time, researchers at the National Institutes of Health (NIH) conducted studies that showed early reading acquisition depends on the understanding of the connection between sounds and letters (i.e. phonics). However, this

appears to have had little effect on educational practices in public schools.

In the 1970s, the whole language method was introduced. This method de-emphasizes the teaching of phonics out of context (e.g. reading books), and is intended to help readers "guess" the right word. It teaches that guessing individual words should involve three systems (letter clues, meaning clues from context, and the syntactical structure of the sentence). It became the primary method of reading instruction in the 1980s and 1990s. However, it is falling out of favor. The neuroscientist Mark Seidenberg refers to it as a "theoretical zombie" because it persists in spite of a lack of supporting evidence. It is still widely practiced in related methods such as sight words, the three-cueing system and balanced literacy.

In the 1980s the three-cueing system (the searchlights model in England) emerged. According to a 2010 survey 75% of teachers in the United States teach the three-cueing system. It teaches children to guess a word by using "meaning cues" (semantic, syntactic and graphophonic). While the system does help students to "make better guesses", it does not help when the words become more sophisticated; and it reduces the amount of practice time available to learn essential decoding skills. Consequently, present-day researchers such as cognitive neuroscientists Mark Seidenberg and professor Timothy Shanahan do not support the theory. In England, synthetic phonicsis intended to replace "the searchlights multi-cueing model".

In the 1990sBalanced literacy arose. It is a theory of teaching reading and writing that is not clearly defined. It may include

elements such as word study and phonics mini-lessons, differentiated learning, cueing, leveled reading, shared reading, guided reading, independent reading and sight words. For some, balanced literacy strikes a balance between whole language and phonics. Others say balanced literacy in practice usually means the *whole language* approach to reading. According to a survey in 2010, 68% of K-2 teachers in the United States practice balanced literacy. Furthermore, only 52% of teachers included *phonics* in their definition of *balanced literacy*.

In 1996 the California Department of Education took an increased interest in using phonics in schools. And in 1997 the department called for grade one teaching in concepts about print, phonemic awareness, decoding and word recognition, and vocabulary and concept development.

By 1998 in the U.K. whole language instruction and the searchlights-model were still the norm, however there was some attention to teaching phonics in the early grades, as seen in the National Literacy Strategies.

21st century

Beginning in 2000, several reading research reports were published:

- 2000 – The National Reading Panel (U.S.A.) that identified five ingredients of effective reading instruction: *phonemic awareness, phonics, fluency, vocabulary and comprehension.*

- 2005 – The Australian report on *Teaching reading* that supports the use of systematic phonics.
- 2006 – The United KingdomIndependent review of the teaching of early reading (Rose Report 2006) that supports systematic synthetic phonics.

In Australia the 2005 report, *Teaching Reading*, recommends teaching reading based on evidence and teaching systematic, explicit phonics within an integrated approach. The executive summary says "systematic phonics instruction is critical if children are to be taught to read well, whether or not they experience reading difficulties." As of October 5, 2018, The State Government of Victoria, Australia, publishes a website containing a comprehensive Literacy Teaching Toolkit including effective reading instruction, phonics, and sample phonics lessons.

In Scotland a seven-year study (the Clackmannanshire Report) was published in 2005. It compared analytic phonics with synthetic phonics and advantaged students with disadvantaged students. The report found that, using synthetic phonics children from lower socio-economic backgrounds performed at the same level as children from advantaged backgrounds in primary school (whereas with analytic phonics teaching, they did significantly less well.); and boys performed better than or as well as girls. A five-year follow-up of the study concluded that the beneficial effects were long-lasting, in fact the reading gains increased. Subsequently, Education Scotland concluded that explicit, systematic phonics programs, usually embedded in a rich literacy environment, give an additional four months progress over other programs such as whole language, and are particularly beneficial for young learners (aged 4–7). There is

evidence, though less secure, that synthetic phonics programs may be more beneficial than analytic phonics programs; however it is most important to teach systematically.

Until 2006, the English language syllabus of Singapore advocated "a balance between decoding and meaning-based instruction ... phonics and whole language". However, a review in 2006 advocated for a "systematic" approach. Subsequently, the syllabus in 2010 had no mention of whole language and advocated for a balance between "systematic and explicit instruction" and "a rich language environment". It called for increased instruction in oral language skills together with phonemic awareness and the key decoding elements of synthetic phonics, analytic phonics and analogy phonics.

In 2007 the Department of Education (DE) in Northern Ireland was required by law to teach children foundational skills in phonological awareness and the understanding that "words are made up of sounds and syllables and that sounds are represented by letters (phoneme/grapheme awareness)". In 2010 the DE required that teachers receive support in using evidence-based practices to teach literacy and numeracy, including: a "systematic programme of high-quality phonics" that is explicit, structured, well-paced, interactive, engaging, and applied in a meaningful context.

In 2008, the National Center for Family Literacy, with the *National Institute for Literacy*, published a report entitled *Developing Early Literacy*. It is a synthesis of the scientific research on the development of early literacy skills in children ages zero to five as determined by the *National Early Literacy Panel* that was convened in 2002. Amongst other things, the

report concluded that code-focused interventions on the early literacy and conventional literacy skills of young children yield a moderate to large effect on the predictors of later reading and writing, irrespective of socioeconomic status, ethnicity, or population density.

In 2010 the Common Core State Standards Initiative was introduced in the United States. The *English Language Arts Standards for Reading: Foundational Skills in Grades 1–5* include recommendations to teach print concepts, phonological awareness, phonics and word recognition, and fluency.

In the United Kingdom a 2010 government white paper contained plans to train all primary school teachers in phonics. The 2013 curriculum has "statutory requirements" that, amongst other things, students in years one and two be capable in using systematic synthetic phonics in regards to word reading, reading comprehension, fluency, and writing. This includes having skills in "sound to graphemes", "decoding", and "blending".

In 2013, the National Commission for UNESCO launched the *Leading for Literacy* project to develop the literacy skills of grades 1 and 2 students. The project facilitates the training of primary school teachers in the use of a *synthetic phonics* program. From 2013 to 2015, the Trinidad and Tobago Ministry of Education appointed seven reading specialist to help primary and secondary school teachers improve their literacy instruction. From February 2014 to January 2016, literacy coaches were hired in selected primary schools to assist teachers of kindergarten, grades 1 and 2 with pedagogy and content of early literacy instruction. Primary schools have been

provided with literacy resources for instruction, including phonemic awareness, word recognition, vocabulary manipulatives, phonics and comprehension.

In 2013 the State of Mississippi passed the Literacy-Based Promotion Act. The Mississippi Department of Education provided resources for teachers in the areas of phonemic awareness, phonics, vocabulary, fluency, comprehension and reading strategies.

The school curriculum in Ireland focuses on ensuring children are literate in both the English language and the Irish language. The 2014 teachers' Professional Development guide covers the seven areas of attitude and motivation, fluency, comprehension, word identification, vocabulary, phonological awareness, phonics, and assessment. It recommends that phonics be taught in a systematic and structured way and is preceded by training in phonological awareness.

In 2014 the California Department of Education said children should know how to decode regularly spelled one-syllable words by mid-first grade, and be phonemically aware (especially able to segment and blend phonemes)". In grades two and three children receive explicit instruction in advanced phonic-analysis and reading multi-syllabic and more complex words.

In 2015 the New York State Public School system revised its English Language Arts learning standards, calling for teaching involving "reading or literacy experiences" as well as phonemic awareness from prekindergarten to grade 1 and phonics and word recognition for grades 1–4. That same year, the Ohio Legislature set minimum standards requiring the use of

phonics including guidelines for teaching phonemic awareness, phonics, fluency, vocabulary and comprehension.

In 2016 the What Works Clearinghouse and the Institute of Education Sciences published an Educator's Practice Guide on Foundational Skills to Support Reading for Understanding in Kindergarten Through 3rd Grade. It contains four recommendations to support reading: 1) teach students academic language skills, including the use of inferential and narrative language, and vocabulary knowledge, 2) develop awareness of the segments of sounds in speech and how they link to letters (phonemic awareness and phonics), 3) teach students to decode words, analyze word parts, and write and recognize words (phonics and synthetic phonics), and 4) ensure that each student reads connected text every day to support reading accuracy, fluency, and comprehension.

In 2016 the Colorado Department of Education updated their *Elementary Teacher Literacy Standards* with standards for development in the areas of phonology, phonics and word recognition, fluent automatic reading, vocabulary, text comprehension, handwriting, spelling, and written expression.

The European Literacy Policy Network (ELINET) 2016 reports that Hungarian children in grades one and two receive explicit instruction in phonemic awareness and phonics "as the route to decode words". In grades three and four they continue to apply their knowledge of phonics, however the emphasis shifts to the more meaning-focused technical aspects of reading and writing (i.e., vocabulary, types of texts, reading strategies, spelling, punctuation and grammar).

In 2017 the Ohio Department of Education adopted *Reading Standards for Foundational Skills K–12* laying out a systematic approach to teaching *phonological awareness* in kindergarten and grade one, and *grade-level phonics and word analysis skills in decoding words* (including fluency and comprehension) in grades 1–5.

In 2018 the Arkansas Department of Education published a report about their new initiative known as R.I.S.E., Reading Initiative for Student Excellence, that was the result of The Right to Read Act, passed in 2017. The first goal of this initiative is to provide educators with the in-depth knowledge and skills of "the science of reading" and evidence-based instructional strategies. This included a focus on research-based instruction on phonological awareness, phonics, vocabulary, fluency, and comprehension; specifically systematic and explicit instruction.

As of 2018, the Ministry of Education in New Zealand has online information to help teachers to support their students in years 1–3 in relation to sounds, letters, and words. It states that phonics instruction "is not an end in itself" and it is *not* necessary to teach students "every combination of letters and sounds".

In 2018, ScienceDirect published the results of a study of early literacy and numeracy outcomes in developing countries entitled *Identifying the essential ingredients to literacy and numeracy improvement: Teacher professional development and coaching, student textbooks, and structured teachers' guides*. It concluded that "Including teachers' guides was by far the most cost-effective intervention".

There has been a strong debate in France on the teaching of phonics ("méthodesyllabique") versus whole language ("méthodeglobale"). After the 1990s, supporters of the later started defending a so-called "mixed method" (also known as Balanced literacy) in which approaches from both methods are used. Influential researchers in psycho-pedagogy, cognitive sciences and neurosciences, such as StanislasDehaene and Michel Fayol have put their heavy scientific weight on the side of phonics. In 2018 the ministry created a science educational council that openly supported phonics. In April 2018, the minister issued a set of four guiding documents for early teaching of reading and mathematics and a booklet detailing phonics recommendations. Some have described his stance as "traditionalist", but he openly declared that the so-called mixed approach is no serious choice.

In 2019 the Minnesota Department of Education introduced standards requiring school districts to "develop a local literacy plan to ensure that all students have achieved early reading proficiency by no later than the end of third grade" in accordance with a Statute of the Minnesota Legislature requiring elementary teachers to be able to implement comprehensive, scientifically based reading and oral language instruction in the five reading areas of phonemic awareness, phonics, fluency, vocabulary, and comprehension.

Also in 2019, 26% of grade 4 students in Louisiana were reading at the *proficiency level* according to the Nation's Report Card, as compared to the National Average of 34%. In March 2019 the Louisiana Department of Education revised their curriculum for K-12 English Language Arts including requirements for instruction in the alphabetic principle,

phonological awareness, phonics and word recognition, fluency and comprehension.

And again in 2019, 30% of grade 4 students in Texas were reading at the *proficiency level* according to the Nation's Report Card. In June of that year the Texas Legislature passed a Bill requiring all kindergarten through grade-three teachers and principals to "*begin* a teacher literacy achievement academy before the 2022–2023 school year". The required content of the academies' training includes the areas of *The Science of Teaching Reading, Oral Language, Phonological Awareness, Decoding (i.e. Phonics), Fluency and Comprehension.* The goal is to "increase teacher knowledge and implementation of evidence-based practices to positively impact student literacy achievement".

For more information on reading educational developments, see Phonics practices by country or region.

Other terms

- *Subvocalization*is the sense that a reader is combining silent reading with internal sounding of the words. Advocates of speed reading claim it can be a bad habit that slows reading and comprehension, but some researchers say this is a fallacy since there is no actual speaking involved. Instead, it may help skilled readers to read since they are utilizing the phonological code to understand words (*e.g.*, the difference between *PERmit* and perMIT*).*

- *Speed reading*is the claim that you can increase reading speed without experiencing an unacceptable reduction in comprehension or retention. Methods include skimming or the chunking of words in a body of text to increase the rate of reading. However, cognitive neuroscientists such as Stanislas Dehaene and Mark Seidenberg say that claims of reading up to 1,000 words per minute "must be viewed with skepticism" and that "people are as likely to read thousands of words per minute as they are to run faster than the speed of light"." It is estimated that the average reading speed for adults in English is from 175 to 320 words per minute.
- *Proofreading* is a kind of reading for the purpose of detecting typographical errors. It is not reading in the usual sense, as they may largely suspend comprehension while doing so.
- *Rereading* is reading a book more than once. "One cannot read a book: one can only reread it," Vladimir Nabokov once said.
- *Structure-proposition-evaluation (SPE)* method, popularized by Mortimer Adler in *How to Read a Book*, mainly for non-fiction treatise, in which one reads a writing in three passes: 1) for the structure of the work, 2) for the logical propositions made, and 3) for evaluation of the merits of the arguments and conclusions. This method involves suspending judgment of the work or its arguments until they are fully understood.
- *Survey-question-read-recite-review (SQ3R)* method, often taught in public schools, which involves reading so as to be able to teach what is read, and is

appropriate for instructors preparing to teach material without referring to notes.

- *Rapid serial visual presentation (RSVP)* reading involves presenting the words in a sentence one word at a time at the same location on the display screen, at a specified eccentricity; for studying the timing of vision.

Chapter 2

Writing

Writing is a medium of human communication that involves the representation of a language with written symbols. Writing systems are not themselves human languages (with the debatable exception of computer languages); they are means of rendering a language into a form that can be reconstructed by other humans separated by time and/or space. While not all languages utilize a writing system, those with systems of inscriptions can complement and extend capacities of spoken language by enabling the creation of durable forms of speech that can be transmitted across space (e.g., correspondence) and stored over time (e.g., libraries or other public records). It has also been observed that the activity of writing itself can have knowledge-transforming effects, since it allows humans to externalize their thinking in forms that are easier to reflect on, elaborate, reconsider, and revise. Writing relies on many of the same semantic structures as the speech it represents, such as lexicon and syntax, with the added dependency of a system of symbols to represent that language's phonology and morphology. The result of the activity of writing is called a *text*, and the interpreter or activator of this text is called a *reader*.

As human societies emerged, collective motivations for the development of writing were driven by pragmatic exigencies like keeping history, maintaining culture, codifying knowledge through curricula and lists of texts deemed to contain foundational knowledge (e.g., *The Canon of Medicine*) or to be

artistically exceptional (e.g., a literary canon), organizing and governing societies through the formation of legal systems, census records, contracts, deeds of ownership, taxation, trade agreements, treaties, and so on. Amateur historians, including H.G. Wells, had speculated since the early 20th century on the likely correspondence between the emergence of systems of writing and the development of city-states into empires. As Charles Bazerman explains, the "marking of signs on stones, clay, paper, and now digital memories—each more portable and rapidly traveling than the previous—provided means for increasingly coordinated and extended action as well as memory across larger groups of people over time and space." For example, around the 4th millennium BC, the complexity of trade and administration in Mesopotamia outgrew human memory, and writing became a more dependable method of recording and presenting transactions in a permanent form. In both ancient Egypt and Mesoamerica, on the other hand, writing may have evolved through calendric and political necessities for recording historical and environmental events. Further innovations included more uniform, predictable, and widely dispersed legal systems, distribution and discussion of accessible versions of sacred texts, and the origins of modern practices of scientific inquiry and knowledge-consolidation, all largely reliant on portable and easily reproducible forms of inscribed language.

Individual, as opposed to collective, motivations for writing include improvised additional capacity for the limitations of human memory (e.g., to-do lists, recipes, reminders, logbooks, maps, the proper sequence for a complicated task or important ritual), dissemination of ideas (as in an essay, monograph, broadside, petition, or manifesto), imaginative narratives and

other forms of storytelling, personal or business correspondence, and lifewriting (e.g., a diary or journal).

Writing systems

The major *writing systems*—methods of inscription—broadly fall into five categories: logographic, syllabic, alphabetic, featural, and ideographic (symbols for ideas). A sixth category, pictographic or symbols, is insufficient to represent language on its own, but often forms the core of logographies.

Logographies

A logogram is a written character which represents a word or morpheme. A vast number of logograms are needed to write Chinese characters, cuneiform, and Mayan, where a glyph may stand for a morpheme, a syllable, or both—("logoconsonantal" in the case of hieroglyphs). Many logograms have an ideographic component (Chinese "radicals", hieroglyphic "determiners"). For example, in Mayan, the glyph for "fin", pronounced "ka", was also used to represent the syllable "ka" whenever the pronunciation of a logogram needed to be indicated, or when there was no logogram. In Chinese, about 90% of characters are compounds of a semantic (meaning) element called a *radical* with an existing character to indicate the pronunciation, called a *phonetic*. However, such phonetic elements complement the logographic elements, rather than vice versa.

The main logographic system in use today is Chinese characters, used with some modification for the various

languages or dialects of China, Japan, and sometimes in Korean despite the fact that in South and North Korea, the phonetic Hangul system is mainly used.

Syllabaries

A syllabary is a set of written symbols that represent (or approximate) syllables. A glyph in a syllabary typically represents a consonant followed by a vowel, or just a vowel alone, though in some scripts more complex syllables (such as consonant-vowel-consonant, or consonant-consonant-vowel) may have dedicated glyphs. Phonetically related syllables are not so indicated in the script. For instance, the syllable "ka" may look nothing like the syllable "ki", nor will syllables with the same vowels be similar.

Syllabaries are best suited to languages with a relatively simple syllable structure, such as Japanese. Other languages that use syllabic writing include the Linear B script for Mycenaean Greek; Sequoyan, Ndjuka, an English-based creole language of Surinam; and the Vai script of Liberia. Most logographic systems have a strong syllabic component. Ethiopic, though technically an abugida, has fused consonants and vowels together to the point where it is learned as if it were a syllabary.

Alphabets

An alphabet is a set of symbols, each of which represents or historically represented a phoneme of the language. In a perfectly phonological alphabet, the phonemes and letters

would correspond perfectly in two directions: a writer could predict the spelling of a word given its pronunciation, and a speaker could predict the pronunciation of a word given its spelling.

As languages often evolve independently of their writing systems, and writing systems have been borrowed for languages they were not designed for, the degree to which letters of an alphabet correspond to phonemes of a language varies greatly from one language to another and even within a single language.

Abjads

In most of the writing systems of the Middle East, it is usually only the consonants of a word that are written, although vowels may be indicated by the addition of various diacritical marks. Writing systems based primarily on marking the consonant phonemes alone date back to the hieroglyphs of ancient Egypt. Such systems are called *abjads*, derived from the Arabic word for "alphabet".

Abugidas

In most of the alphabets of India and Southeast Asia, vowels are indicated through diacritics or modification of the shape of the consonant. These are called*abugidas*. Some abugidas, such as Ethiopic and Cree, are learned by children as syllabaries, and so are often called "syllabics". However, unlike true

syllabaries, there is not an independent glyph for each syllable.

Sometimes the term "alphabet" is restricted to systems with separate letters for consonants and vowels, such as the Latin alphabet, although abugidas and abjads may also be accepted as alphabets. Because of this use, Greek is often considered to be the first alphabet.

Featural scripts

A featural script notates in an internally consistent way the building blocks of the phonemes that make up a language. For instance, all sounds pronounced with the lips ("labial" sounds) may have some element in common. In the Latin alphabet, this is accidentally the case with the letters "b" and "p"; however, labial "m" is completely dissimilar, and the similar-looking "q" and "d" are not labial. In Korean hangul, however, all four labial consonants are based on the same basic element, but in practice, Korean is learned by children as an ordinary alphabet, and the featural elements tend to pass unnoticed.

Another featural script is Sign Writing, the most popular writing system for many sign languages, where the shapes and movements of the hands and face are represented iconically. Featural scripts are also common in fictional or invented systems, such as J.R.R. Tolkien's Tengwar.

Historical significance of writing systems

Historians draw a sharp distinction between prehistory and history, with history defined by the advent of writing. The cave paintings and petroglyphs of prehistoric peoples can be considered precursors of writing, but they are not considered true writing because they did not represent language directly.

Writing systems develop and change based on the needs of the people who use them. Sometimes the shape, orientation, and meaning of individual signs changes over time. By tracing the development of a script, it is possible to learn about the needs of the people who used the script as well as how the script changed over time.

Tools and materials

The many tools and writing materials used throughout history include stone tablets, clay tablets, bamboo slats, papyrus, wax tablets, vellum, parchment, paper, copperplate, styluses, quills, ink brushes, pencils, pens, and many styles of lithography. The Incas used knotted cords known as quipu (or khipu) for keeping records.

The typewriter and various forms of word processors have subsequently become widespread writing tools, and various studies have compared the ways in which writers have framed the experience of writing with such tools as compared with the pen or pencil.

History

Mesoamerica

A stone slab with 3,000-year-old writing, known as the Cascajal Block, was discovered in the Mexican state of Veracruz and is an example of the oldest script in the Western Hemisphere, preceding the oldest Zapotec writing by approximately 500 years. It is thought to be Olmec.

Of several pre-Columbian scripts in Mesoamerica, the one that appears to have been best developed, and the only one to be deciphered, is the Maya script. The earliest inscription identified as Maya dates to the 3rd century BC. Maya writing used logograms complemented by a set of syllabic glyphs, somewhat similar in function to modern Japanese writing.

Central Asia

In 2001, archaeologists discovered that there was a civilization in Central Asia that used writing c. 2000 BC. An excavation near Ashgabat, the capital of Turkmenistan, revealed an inscription on a piece of stone that was used as a stamp seal.

China

The earliest surviving examples of writing in China—inscriptions on so-called "oracle bones", tortoise plastrons and ox scapulae used for divination—date from around 1200 BC in the late Shang dynasty. A small number of bronze inscriptions

from the same period have also survived. Historians have found that the type of media used had an effect on what the writing was documenting and how it was used.

In 2003, archaeologists reported discoveries of isolated tortoise-shell carvings dating back to the 7th millennium BC, but whether or not these symbols are related to the characters of the later oracle-bone script is disputed.

Egypt

The earliest known hieroglyphs date back to the second half of the 4th millennium BC, such as the clay labels of a Predynastic ruler called "Scorpion I" (Naqada IIIA period, c. 32nd century BC) recovered at Abydos (modern Umm el-Qa'ab) in 1998 or the Narmer Palette, dating to c. 3100 BC, and several recent discoveries that may be slightly older, though these glyphs were based on a much older artistic rather than written tradition. The hieroglyphic script was logographic with phonetic adjuncts that included an effective alphabet. The world's oldest deciphered sentence was found on a seal impression found in the tomb of Seth-Peribsen at Umm el-Qa'ab, which dates from the Second Dynasty (28th or 27th century BC). There are around 800 hieroglyphs dating back to the Old Kingdom, Middle Kingdom and New Kingdom Eras. By the Greco-Roman period, there are more than 5,000.

Writing was very important in maintaining the Egyptian empire, and literacy was concentrated among an educated elite of scribes. Only people from certain backgrounds were allowed to train to become scribes, in the service of temple, pharaonic, and military authorities, resulting in only 1 percent of the

population that could write. The hieroglyph system was always difficult to learn, but in later centuries was purposely made even more so, as this preserved the scribes' status.

The world's oldest known alphabet appears to have been developed by Canaanite turquoise miners in the Sinai desert around the mid-19th century BC. Around 30 crude inscriptions have been found at a mountainous Egyptian mining site known as Serabit el-Khadem. This site was also home to a temple of Hathor, the "Mistress of turquoise". A later, two line inscription has also been found at Wadi el-Hol in Central Egypt. Based on hieroglyphic prototypes, but also including entirely new symbols, each sign apparently stood for a consonant rather than a word: the basis of an alphabetic system. It was not until the 12th to 9th centuries, however, that the alphabet took hold and became widely used.

Elamite scripts

Over the centuries, three distinct Elamite scripts developed. Proto-Elamite is the oldest known writing system from Iran. In use only for a brief time (c. 3200–2900 BC), clay tablets with Proto-Elamite writing have been found at different sites across Iran. The Proto-Elamite script is thought to have developed from early cuneiform (proto-cuneiform). The Proto-Elamite script consists of more than 1,000 signs and is thought to be partly logographic.

Linear Elamite is a writing system attested in a few monumental inscriptions in Iran. It was used for a very brief period during the last quarter of the 3rd millennium BC. It is often claimed that Linear Elamite is a syllabic writing system

derived from Proto-Elamite, although this cannot be proven since Linear-Elamite has not been deciphered. Several scholars have attempted to decipher the script, most notably Walther Hinz and PieroMeriggi.

The Elamite cuneiform script was used from about 2500 to 331 BC, and was adapted from the Akkadiancuneiform. The Elamite cuneiform script consisted of about 130 symbols, far fewer than most other cuneiform scripts.

Cretan and Greek scripts

Cretan hieroglyphs are found on artifacts of Crete (early-to-mid-2nd millennium BC, MM I to MM III, overlapping with Linear A from MM IIA at the earliest). Linear B, the writing system of the Mycenaean Greeks, has been deciphered while Linear A has yet to be deciphered. The sequence and the geographical spread of the three overlapping, but distinct writing systems can be summarized as follows (beginning date refers to first attestations, the assumed origins of all scripts lie further back in the past): Cretan hieroglyphs were used in Crete from c. 1625 to 1500 BC; Linear A was used in the Aegean Islands (Kea, Kythera, Melos, Thera), and the Greek mainland (Laconia) from c. 18th century to 1450 BC; and Linear B was used in Crete (Knossos), and mainland (Pylos, Mycenae, Thebes, Tiryns) from c. 1375 to 1200 BC.

Indus Valley

Indus script refers to short strings of symbols associated with the Indus Valley Civilization (which spanned modern-day

Pakistan and North India) used between 2600 and 1900 BC. In spite of many attempts at decipherments and claims, it is as yetundeciphered. The term 'Indus script' is mainly applied to that used in the mature Harappan phase, which perhaps evolved from a few signs found in early Harappa after 3500 BC, and was followed by the mature Harappan script. The script is written from right to left, and sometimes follows a boustrophedonic style. Since the number of principal signs is about 400–600, midway between typical logographic and syllabic scripts, many scholars accept the script to be logo-syllabic (typically syllabic scripts have about 50–100 signs whereas logographic scripts have a very large number of principal signs). Several scholars maintain that structural analysis indicates that an agglutinative language underlies the script.

Mesopotamia

While research into the development of writing during the late Stone Age is ongoing, the current consensus is that it first evolved from economic necessity in the ancient Near East. Writing most likely began as a consequence of political expansion in ancient cultures, which needed reliable means for transmitting information, maintaining financial accounts, keeping historical records, and similar activities. Around the 4th millennium BC, the complexity of trade and administration outgrew the power of memory, and writing became a more dependable method of recording and presenting transactions in a permanent form.

The invention of the first writing systems is roughly contemporary with the beginning of the Bronze Age of the late

4th millennium BC. The Sumerian archaic cuneiform script and the Egyptian hieroglyphs are generally considered the earliest writing systems, both emerging out of their ancestral proto-literate symbol systems from 3400 to 3200 BC with earliest coherent texts from about 2600 BC. It is generally agreed that Sumerian writing was an independent invention; however, it is debated whether Egyptian writing was developed completely independently of Sumerian, or was a case of cultural diffusion.

Archaeologist Denise Schmandt-Besserat determined the link between previously uncategorized clay "tokens", the oldest of which have been found in the Zagros region of Iran, and the first known writing, Mesopotamiancuneiform. In approximately 8000 BC, the Mesopotamians began using clay tokens to count their agricultural and manufactured goods. Later they began placing these tokens inside large, hollow clay containers (bulla, or globular envelopes) which were then sealed. The quantity of tokens in each container came to be expressed by impressing, on the container's surface, one picture for each instance of the token inside. They next dispensed with the tokens, relying solely on symbols for the tokens, drawn on clay surfaces. To avoid making a picture for each instance of the same object (for example: 100 pictures of a hat to represent 100 hats), they 'counted' the objects by using various small marks. In this way the Sumerians added "a system for enumerating objects to their incipient system of symbols".

The original Mesopotamian writing system was derived around 3200 BC from this method of keeping accounts. By the end of the 4th millennium BC, the Mesopotamians were using a triangular-shaped stylus pressed into soft clay to record

numbers. This system was gradually augmented with using a sharp stylus to indicate what was being counted by means of pictographs. Round-stylus and sharp-stylus writing was gradually replaced by writing using a wedge-shaped stylus (hence the term cuneiform), at first only for logograms, but by the 29th century BC also for phonetic elements. Around 2700 BC, cuneiform began to represent syllables of spoken Sumerian. About that time, Mesopotamian cuneiform became a general purpose writing system for logograms, syllables, and numbers. This script was adapted to another Mesopotamian language, the East SemiticAkkadian (Assyrian and Babylonian) around 2600 BC, and then to others such as Elamite, Hattian, Hurrian and Hittite. Scripts similar in appearance to this writing system include those for Ugaritic and Old Persian. With the adoption of Aramaic as the 'lingua franca' of the Neo-Assyrian Empire (911–609 BC), Old Aramaic was also adapted to Mesopotamian cuneiform. The last cuneiform scripts in Akkadian discovered thus far date from the 1st century AD.

Phoenician writing system and descendants

The Proto-Sinaitic script, in which Proto-Canaaniteis believed to have been first written, is attested as far back as the 19th century BC. The Phoenician writing system was adapted from the Proto-Canaanite script sometime before the 14th century BC, which in turn borrowed principles of representing phonetic information from Egyptian hieroglyphs. This writing system was an odd sort of syllabary in which only consonants are represented. This script was adapted by the Greeks, who adapted certain consonantal signs to represent their vowels.

The Cumae alphabet, a variant of the early Greek alphabet, gave rise to the Etruscan alphabet and its own descendants, such as the Latin alphabet and Runes. Other descendants from the Greek alphabet include Cyrillic, used to write Bulgarian, Russian and Serbian, among others. The Phoenician system was also adapted into the Aramaic script, from which the Hebrew and the Arabic scriptsare descended.

The Tifinagh script (Berber languages) is descended from the Libyco-Berber script, which is assumed to be of Phoenician origin.

Modern importance

In many parts of the world, writing has become an even more important part of daily life as digital technologies have helped connect individuals from across the globe through systems such as e-mail and social media. Such technologies have brought substantial amounts of routine reading and writing into most modern workplaces. In the United States, for example, the ability to read and write is necessary for most jobs, and multiple programs are in place to aid both children and adults in improving their literacy skills. For example, the emergence of the writing center and community-wide literacy councils aim to help students and community members sharpen their writing skills. These resources, and many more, span across different age groups in order to offer each individual a better understanding of their language and how to express themselves via writing in order to perhaps improve their socioeconomic status. As William J.Farrell puts it: · “Did

you ever notice that, when people become serious about communication, they want it in writing?"

Other parts of the world have seen an increase in writing abilities as a result of programs such as the World Literacy Foundation and International Literacy Foundation, as well as a general push for increased global communication.

Chapter 3

Speaking and Listening

Speaking

In sociolinguistics, **SPEAKING** or the **SPEAKING model**, is a model socio-linguistic study (represented as a mnemonic) developed by Dell Hymes. Hymes developed this model as part of a new methodology referred to as the ethnography of speaking. This model is a tool to assist the identification and labeling of components of interactional linguistics that was driven by his view that, in order to speak a language correctly, one needs not only to learn its vocabulary and grammar, but also the context in which words are used. In essence, the learning the components of the SPEAKING model is essential for linguistic competence.

To facilitate the application of his representation, Hymes constructed the mnemonic, ***S-P-E-A-K-I-N-G*** (for *setting and scene, participants, ends, acts sequence, key, instrumentalities, norms, & genre*) under which he grouped the sixteen components within eight divisions.

The model had sixteen components that can be applied to many sorts of discourse: message form; message content; setting; scene; speaker/sender; addressor; hearer/receiver/audience; addressee; purposes (outcomes); purposes (goals); key; channels; forms of speech; norms of interaction; norms of interpretation; and genres.The

SPEAKING model is used by linguistic anthropologists to analyze speech events (one or more speech acts involving one more participants) as part of an ethnography. This approach can be used to understand relationships and power dynamics within a given speech community and provide insight on cultural values.

Divisions

Setting and Scene

"Setting refers to the time and place of a speech act and, in general, to the physical circumstances". The living room in the grandparents' home might be a setting for a family story. Scene is the "psychological setting" or "cultural definition" of a scene, including characteristics such as range of formality and sense of play or seriousness. The family story may be told at a reunion celebrating the grandparents' anniversary. At times, the family would be festive and playful; at other times, serious and commemorative.

Setting and scene also refer to implicit rules and expectations surrounding the speech event. For instance, the setting of the speech event determines who should speak and who should not, what type of speech is appropriate (code-switching), and when interrupting is acceptable. For instance, speech events in the classroom have specific implicit rules for teachers speaking and students listening, certain words are not viewed as appropriate in the classroom, and interrupting is often met with consequences. Conversely, different implicit rules and expectations apply at social gatherings and work settings.

Setting of the speech event also refers to the location of participants and any physical barriers that may be present. For instance, whether participants are facing one another, what body language they are exhibiting, and whether or not they are separated by a table, chairs, or space in the room. Documentation of the physical setting is especially useful for completing an ethnography of a given community.

Participants

Participants include the speaker and the audience. Linguist anthropologists will make distinctions within these categories. The audience may include those to whom the speech act is directed, and those who are not addressed but overhear. For example, at the family reunion, an aunt might tell a story to the young female relatives, but males, although not addressed, might also hear the narrative.

When considering the participants in a speech event, one should consider implicit and explicit rules about who is, can, and should be involved; what expectations are established for the participants; who is speaking and who is being addressed. Certain ideologies are at play regarding participants in speech events. For instance, cultural norms about how child should speak to adults, how ladies should speak around men, how employees should speak to their boss. Each participant in a speech event is operating with specific rules and expectations, which are important for linguistic competence.

Ends

The end of the speech event are the purposes, goals, and outcomes. The aunt may tell a story about the grandmother to entertain the audience, teach the young women, and honor the grandmother. Additionally, the ends of a speech event may differ for those participating. The exampled provided by Harriet Joseph Ottenheimer was that of a tourist seeking directions and a New Yorker providing vague answers, "your goal may be to get information and get to your destination, but their goal is to appear knowledgeable." Differences in the goals and outcomes for speech events can be frequent, especially in classrooms and work spaced. Similarities and differences in the ends of a speech events are important for successful communication and acceptance into a culture or a speech community.

Act Sequence

Act sequence refers to the sequence of speech acts that make up the event. The order of speech acts greatly influences the speech event. For instance the initial speech acts sets the tone for the conversation; beginning a lecture by saying, "Ladies and gentlemen..." sets a different tone than beginning a lecture by saying, "Hello! How is everyone today?"

Act sequence for an event also orients the participants to social cues. Important aspects of act sequence include turn-taking and interrupting. For example, an aunt's story might begin as a response to a toast to the grandmother; the story's plot and development would have a sequence structured by the

aunt. Possibly there would be a collaborative interruption during the telling. Finally, the group might applaud the tale and move onto another subject or activity.

Key

"Key" refers to the clues that establish the "tone, manner, or spirit" of the speech act. The aunt might imitate the grandmother's voice and gestures in a playful way, or she might address the group in a serious voice emphasizing the sincerity and respect of the praise the story expresses. Generally, different keys are used in different situations, for instance different tones are used at birthday parties and funerals. Intonation in sentences can provide additional meaning; lighter tones communicate humor and friendship, meanwhile monotone speech acts communicate seriousness or a lack of emotion. Similarly, keys can be formal or informal, and can be influenced by word choice. For instance informal keys include the use of contractions (can't instead of cannot), use of slang or profanity, condensed or loose pronunciations (gonna), missing infinitives ("the kids need bathed" versus "the kids need to be bathed), and prepositional endings "what did you do that for?" Overall, the key in a speech act adds a human element to communication and provides valuable information for informing social norms and expectations for the speech event. Proper application of the appropriate key in a speech event is vital for linguistic competence.

Instrumentalities

Instrumentalities are the channels used to complete the speech act. These include the method of communication (writing, speaking, signing or signaling), the language, dialect (a mutually intelligible subset of a language) or register (a variety of a language that is used in specific settings). Hymes described these instrumentalities generally as the Forms and styles of speech. For example, the instrumentality of the spoken word is different from the written word; the language spoken is unique to the speech act, as is the dialect. Similarly, the register that is spoken influences the speech event. For example, an aunt might speak in a casual register with many dialect features, but if her niece continues the conversation in a more formal register with careful grammatically "standard" forms the conversation may seem awkward.

Norms

Social rules governing the event and the participants' actions and reactions. In a playful story by the aunt, the norms might allow many audience interruptions and collaboration, or possibly those interruptions might be limited to participation by older females. A serious, formal story by the aunt might call for attention to her and no interruptions as norms.

Norms will vary for each speech community. Examples of questions regarding established norms include:

- When is it okay to speak?
- Who should listen?

- When is silence preferred?
- How loud is too loud?
- What speed should be used in the conversation?
- What topics are acceptable?

Genre

The kind of speech act or event; for the example used here, the kind of story. The aunt might tell a character anecdote about the grandmother for entertainment, or an exemplum as moral instruction. Different disciplines develop terms for kinds of speech acts, and speech communities sometimes have their own terms for types. Other examples of speech genres include gossip, jokes, and conversations.

Rich Points

Rich points are instances where there is a disconnect between two speakers in a speech event resulting from differences in perceived implicit rules and expectations. These instances represent a conflict in the SPEAKING model between two people. This difference and the negotiation to reestablish the conversation is referred to as MAR (Mistake, Awareness, Repair)

Mistake

Mistakes in conversation occur when participants in the conversation are operating with different implicit rules and expectations for the SPEAKING model. Mistakes often results

from disagreements about inclusion of participants, mismatched ends, unexpected act sequences, keys or instrumentalities. In general mistakes and conflicts arise when there is a deviation in the conversation from the norm. In some genres, such as gossip, rapid turn-taking and interrupting is not only accepted, but expected. If one participant is not active in this type of speech they may come across as ambivalent to the conversation; this would be an example of a mistake.

Awareness

Awareness occurs when one or more of the participants recognized the differences in expectations for the conversation. In some cases, this may mean that one speaker recognizes that the other is speaking faster or slower, using act sequences that rely heavily on fast turn-taking or accepted interrupting, speaking in a more formal or informal register, etc. In the instance of gossip, it would be important to recognize if one is not matching the speech pattern.

Repair

Repair of the conversation occurs when one or more participants in the speech event change one or more of the SPEAKING components in order to ameliorate the mistake. In some instances this may mean that the speaker increases the speed of their speech, participates in rapid turn-taking and interrupting. When repair does not occur the speech event can seem awkward. However, when one learns to repair speech events they can more easily connect with participants in the

speech event, building rapport. Speaking through by maintaining grammartical rules for understand correctly.

Applications

Standard (Linguistic)

The speaking model has been applied to understand a variety of communities and situations. Speech events are key to the foundation of culture, thus they are the subject of much analysis. Many people have approached the application of the SPEAKING model to understand conversations in unique populations and settings, to better understand the interplay between culture and language, and to analyze status, power and inequality.

Non-standard

In the rise of a variety of ERP (such as D365BC) and other software, the SPEAKING model has been relied upon to build a framework for the analysis of computer programs to help companies and individuals obtain comparable results to choose from multiple options available.

Listening

To listen is to give attention to sound or action. When **listening**, one is hearing what others are saying, and trying to understand what it means. The act of listening involves

complex affective, cognitive, and behavioral processes. Affective processes include the motivation to listen to others; cognitive processes include attending to, understanding, receiving, and interpreting content and relational messages; and behavioral processes include responding to others with verbal and nonverbal feedback.

Listening can be a useful skill for different problems, but it is essential to solve conflict, poor listening can lead to misinterpretations thus causing conflict or a dispute. Other causes can be excessive interruptions, inattention, hearing what you want to hear, mentally composing a response, and having a closed mind.

Listening is also link to our memory, according to a study during a speech some background noises that were heard by the listeners could help listeners recall information by heard it again. For example, when we're doing something like reading or following steps while hearing music, we can recall what that was by hearing the music again later.

What is listening?

Listening differs from obeying. A person who receives and understands information or an instruction, and then chooses not to comply with it or not to agree to it, has listened to the speaker, even though the result is not what the speaker wanted. Listening is a term in which the listener listens to the one who produced the sound to be listened. A Semiotician, Roland Barthes characterized the distinction between listening and hearing. "Hearing is a physiological phenomenon; listening

is a psychological act." We are always hearing, most of the time subconsciously. Listening is done by choice. It is the interpretative action taken by someone in order to understand and potentially make meaning of something they hear.

How does one listen?

Listening may be considered as a simple and isolated process, but it would be far more precise to perceive it as a complex and systematic process. It involves the perception of sounds made by the speaker, of intonation patterns that shows the focus of the information, and of the relevance of the present topic discussed.

According to Roland Barthes, listening can be understood on three levels: alerting, deciphering, and an understanding of how the sound is produced and how the sound affects the listener.

People listen for 45 percent of their time communicating.

Alerting, being the first level is the detection of environmental sound cues. This means that certain places has certain sounds associated with them. This is best explained using the example of someone's home. Their home has certain sounds associated with it that makes it familiar and comfortable. An intrusion, a sound that is not familiar (e.g. a squeaking door or floorboard, a breaking window) alerts the dweller of the home to the potential danger.

Deciphering, the second level, describes detecting patterns when interpreting sounds. An example of this level is that of a

child waiting for the sound of his mother's return home. In this scenario the child is waiting to pick up on sound cues (e.g. jingling keys, the turn of the doorknob, etc.) that will mark his mother's approach.

Understanding, the third level of listening, means knowing how what one says will affect another. This sort of listening is important in psychoanalysis , the study of the unconscious mind. Barthes states that the psychoanalyst must turn off their judgement while listening to their patient in order to communicate with their patient's unconscious in an unbiased fashion. This is the same way that listeners must turn off their judgment when listening to other.

All of the three levels of listening function within the same plane, and sometimes all at once. Specifically the second and third levels, which overlap vastly, can be intertwined in that obtaining, understanding and deriving meaning are part of the same process. In that the child, upon hearing the doorknob turn (obtaining), can almost automatically assume that someone is at the door (deriving meaning).

Active listening

Active listening is a technique of careful listening and observation of non-verbal cues, with feedback in the form of accurate paraphrasing, that is used in counseling, training, and solving disputes or conflicts. It requires the listener to pay attention, understand, respond and remember what is being said in the context of intonation, timing, and non-verbal cues

(body language). This differs from other listening techniques like reflective listening and empathic listening.

Reflective listening is a communication strategy involving seeking to understand a speaker's idea, then offering the idea back to the speaker, to confirm the idea has been understood correctly. Empathic listening is about giving people an outlet for their emotions before being able to be more open, sharing experiences and being able to accept new perspectives on troubled topics that cause emotional suffering. Listening skills may establish flow rather than closed mindedness.

Technique

Active listening comprises several components by the listener, who must pay attention to what the speaker is attempting to communicate and elicit clarification where necessary for comprehension.

Active listening involves the listener observing the speaker's non-verbal behavior and body language. The listener can observe non-verbal behaviors through kinesics, the study of body motion and posture; paralinguistics, the study of the tone of words; and proxemics, the study of physical distance and posture between speakers. Having the ability to interpret a person's body language lets the listener develop a more accurate understanding of the speaker's message.

Comprehending

Comprehension is a shared meaning between parties in a communication transaction. This is the first step in the listening process. The second step is being able to take breaks between discernible words, or talking segmentation.

Retaining

Retaining is the second step in the process. Memory is essential to the active listening process because the information retained when a person is involved in the listening process is how meaning is extracted from words. Because everyone has different memories, the speaker and the listener may attach different meanings to the same statement. Memories are fallible, things like cramming may cause information to be forgotten.

Responding

Active listening is an interaction between speaker and listener. It adds action to a normally passive process.

Assessment

Active listening can be assessed using the active listening observation scale (ALOS).

Barriers to active listening

There are a multitude of factors that may impede upon someone's ability to listen with purpose and intention; these factors are referred to as listening blocks. Some examples of these blocks include rehearsing, filtering, and advising. Rehearsing is when the listener is more focused on preparing their response rather than listening. Filtering is when a listener focuses only on what they expect to hear, while tuning out other aspects of what is being said, and lastly, advising is when the listener focuses on problem solving, which can create a sense of pressure to fix what the other person is doing wrong. Some barriers are due to hunger or fatigue of the listener, making them irritated and less inclined to listen to the speaker. Sometimes it is due to the language the speaker uses—such as high sounding and bombastic words that can lead to ambiguity. Other barriers include distractions, trigger words, vocabulary, and limited attention span.

Individuals in conflict often contradict each other. Ambushing occurs when one listens to someone else's argument for its weaknesses and ignore its strengths. This may include a distortion of the speaker's argument to gain a competitive advantage. On the other hand, if one finds that the other party understands, an atmosphere of cooperation can be created.

Shift response

Shift response is the general tendency of a speaker in a conversation to affix attention to their position. This is a type of conversational narcissism—the tendency of listeners to turn

the topic to themselves without showing sustained interest in others. A support response is the opposite of a shift response; it is an attention giving method and a cooperative effort to focus the conversational attention on the other person. Instead of being me-oriented like shift response, it is we-oriented. It is the response a competent communicator is most likely to use.

Understanding of non-verbal cues

Ineffective listeners are unaware of non-verbal cues, though they dramatically affect how people listen. To a certain extent, it is also a perceptual barrier. Up to 93 percent of people's attitudes are formed by non-verbal cues. This should help one to avoid undue influence from non-verbal communication. In most cases, the listener does not understand the non-verbal cues the speaker uses. A person may show fingers to emphasize a point, but this may be perceived as an intent by the speaker to place their fingers in the listener's eyes. Overuse of non-verbal cues also creates distortion, and as a result listeners may be confused and forget the correct meaning.

Overcoming listening barriers

The active listening technique is used to improve personal communications in organizations. Listeners put aside their own emotions and ask questions and paraphrase what the speaker says to clarify and gain a better understanding of what the speaker intended to say. Distractions that interrupt the listener's attention are one of the major barriers to effective listening. These include external factors such as background

noise and physical discomfort, and internal distractions, such as thoughts about other things and lack of focus. Another barrier is misinterpretation of what the speaker is attempting to communicate, including assumption of motives, and "reading between the lines", as is premature judgment of the speaker's point, which can occur as a consequence of the listener holding onto a rigid personal opinion on the topic. This problem can be mitigated by asking the speaker what they mean when it is unclear, though this is not guaranteed to work every time. A strong disagreement hinders the ability to listen closely to what is being said. Eye contact and appropriate body languages\ are seen as important components to active listening, as they provide feedback to the speaker. The stress and intonation used by the speaker may also provide information to the listener, which is not available in the written word.

Applications

Active listening is used in a wide variety of situations, including public interest advocacy, community organizing, tutoring, medical workers talking to patients, HIV counseling, helping suicidal persons, management, counseling and journalistic settings. In groups it may aid in reaching consensus. It may also be used in casual conversation or small talk to build understanding, though this can be interpreted as condescending.

A listener can use several degrees of active listening, each resulting in a different quality of communication.

The proper use of active listening results in getting people to open up, avoiding misunderstandings, resolving conflict, and building trust. In a medical context, benefits may include increased patient satisfaction, improved cross-cultural communication, improved outcomes, or decreased litigation.

Active listening in music

Active listening has been developed as a concept in music and technology by François Pachet, researcher at Sony Computer Science Laboratory, Paris. Active listening in music refers to the idea that listeners can be given some degree of control on the music they listen to, by means of technological applications mainly based on artificial intelligence and information theory techniques, by opposition to traditional listening, in which the musical media is played passively by some neutral device

History

Carl Rogers and Richard Farson coined the term "active listening" in 1957 in a paper of the same title (reprinted in 1987 in the volume “Communicating in Business Today”). Practicing active listening also emphasized Rogers’ (1980) concept of three facilitative conditions for effective counseling; empathy, genuineness, and unconditional positive regard. Rogers and Farson write: "Active listening is an important way to bring about changes in people. Despite the popular notion that listening is a passive approach, clinical and research evidence clearly shows that sensitive listening is a most effective agent for individual personality change and group

development. Listening brings about changes in peoples' attitudes toward themselves and others; it also brings about changes in their basic values and personal philosophy. People who have been listened to in this new and special way become more emotionally mature, more open to their experiences, less defensive, more democratic, and less authoritarian."

Criticism

A Munich-based marital therapy study conducted by Dr. Kurt Hahlweg and associates found that even after employing active listening techniques in the context of couple's therapy, the typical couple was still distressed.

Active listening was criticized by John Gottman's *The Seven Principles for Making Marriage Work* as being of limited usefulness:

Active listening asks couples to perform Olympic-level emotional gymnastics when their relationship can barely walk. . . . After studying some 650 couples and tracking the fate of their marriages for up to fourteen years, we now understand that this approach to counseling doesn't work, *not just* because it's nearly impossible for most couples to do well, but more importantly because *successful conflict resolution isn't what makes marriages succeed.* One of the most startling findings of our research is that most couples who have maintained happy marriages rarely do anything that even partly resembles active listening when they're upset.

Robert F. Scuka defends active listening by arguing that:

...a careful reading of the Hahlweg et al. (1984) study reveals that Gottman cites only certain (one-sided) results from the study. He also overlooks several important considerations that call into question his implied dismissal of the RE model as a legitimate therapeutic intervention for distressed couples.

In language learning

Along with speaking, reading, and writing, listening is one of the "four skills" of language learning. All language teaching approaches, except for grammar translation, incorporate a listening component. Some teaching methods, such as total physical response, involve students simply listening and responding.

A distinction is often made between "intensive listening", in which learners attempt to listen with maximum accuracy to a relatively brief sequence of speech, and "extensive listening", in which learners listen to lengthy passages for general comprehension. While intensive listening may be more effective in terms of developing specific aspects of listening ability, extensive listening is more effective in building fluency and maintaining learner motivation.

People are usually not conscious of how they listen in their first language unless they encounter difficulty. A research focus in facilitating language learning determined, what L2 (Second Language) learners need to do when listening is to make conscious use of the strategies, they unconsciously use in their first language. Such as, inferring, selective attention, evaluation, etc.

Several factors are activated in speech perception as phonetic quality, prosodic patterns, pausing and speed of input, all of which influence the comprehensibility of listening input. There is a common store of semantic information (single) in memory that is used in both first language and second language speech comprehension; however, research shows that there are separate stores of phonological information (dual) for speech. Semantic knowledge required for language understanding (scripts and schemata related to real-world people, places, and actions) is accessed through phonological tagging of the language that is heard.

In a study involving 93 participants about the relationship between second language listening and a range of tasks, there was a discovery about how listening anxiety played a big factor as an obstacle for the execution of the speed and explicitness of second language listening tasks. Additional research explored whether listening anxiety and comprehension are related, and as expected by the researchers it yielded negative correlation.

Appreciative listening

Appreciative listening is a type of listening behavior where the listener seeks certain information which they will appreciate, and meet his/her needs and goals. One uses appreciative listening when listening to music, poetry or the stirring words of a speech.

It involves listening to music that one enjoys, people the listener likes to listen to because of their style and the choices

the listener make in the films and television he/she watches, radio programmes and plays and musicals in the theatre. Unlike informative listening or relationship listening, appreciative listening does not rely on the message from the speaker it is how one responds as a listener. Our appreciation of what we hear will vary depending on our individual tastes, but will also be affected by three different factors:

Presentation

There are many different factors that encompass presentation including the medium, the setting and the style and personality of a presenter. Of course this works both ways and equally you will have been entranced by others because of the force of their personality and their delivery style.

The environment can also impact your appreciation of the presentation. Seating, temperature, clarity and volume of sound will all impact on whether it’s a good or poor experience.

Perception

Perception is an important factor in appreciative listening. As one is exposed to different experiences his/her perceptions can change. For example: individual's taste in music. We need to listen to various types of music to have a preference over other types and appreciate them. An individual's expectations also affects our perception.

An individual's perception and expectations are driven by his/her attitudes which determine how he/she reacts to and interact to the world in which he/she lives.

Previous experience

Some of our perceptions are clearly influenced by our previous experience and impact on whether or not we enjoy listening to something, or whether we are even willing to listen. Whether our memories evoke pleasant or unpleasant reminders will affect our appreciation. However, it's important to remain open to new experiences. We can develop our appreciative listening skills.

Dialogic listening

Dialogic listening is an alternative to active listening which was developed by John Stewart and Milt Thomas. The word 'dialogue' originated from the Greek words 'dia', meaning 'through' and 'logos' meaning 'words'. Thus dialogic listening means learning through conversation. Dialogic listening is also known as 'relational listening' because with the help of exchange of ideas while listening, we also indirectly create a relation.

Informational listening

The process of **informational listening** focuses on the ability of an individual to understand a speaker's message. It is a

huge part of everyday life, and failing to understand the concept of informational listening can be very detrimental to one's quality of life and to their contribution to society. Much of the listening people engage in on a regular basis falls under the blanket of listening for information. In the office, people listen to their superiors for instructions about what they are to do. At school, students listen to teachers for information that they are expected to understand for quizzes and tests. In all areas of life, informational listening plays a huge role in human communication.

Potential hindrances

When listening to a person's message, it is common to overlook aspects of the conversation or make judgments before all of the information is presented. This lack of effective comprehension is detrimental to communication and is illustrated effectively by several specific obstacles. Chief among these obstacles are confirmation bias and the vividness effect, both of which distort the speaker's message by severely affecting the perception of a particular topic.

Confirmation bias

Confirmation bias is the tendency to pick out aspects of a conversation that support one's own beliefs and values. This psychological process proves to have a detrimental effect on communication for several reasons.

First, confirmation bias tends to become involved in conversation before the speaker finishes his/her message. As a

result, an opinion is formed without first obtaining all pertinent information. This, in turn, leads to uneducated thinking and fallacious judgments that could later affect others.

Second, confirmation bias detracts from a person's ability to be open-minded. For example, when listening to a statement, an individual may hear something at the beginning of the conversation that arouses a specific emotion. Whether this is anger or frustration or anything else, it could have a profound impact on that person's perception of the rest of the conversation. If they were to become angry about a statement the speaker made early in the conversation, they would likely be averse to accepting arguments presented later in the discourse.

To combat this bias and its consequences, an individual must be aware of it and its effects. With this knowledge, an individual can learn to critically judge both sides of an argument before coming to a conclusion.

Vividness effect

The vividness effect explains how vivid or highly graphic and dramatic events affect an individual's perception of a situation. This phenomenon has been amplified by the media in recent decades. With the use of media technology, graphic images can be used to portray an event. While this makes the process of receiving news easier and more enjoyable, it can also blow a situation out of proportion. One year after the Columbine High School massacre, about 60 percent of the people who responded to a survey by *USA Weekend* said that they felt a

shooting was likely at their own school. The reality was much different; in fact, the likelihood of a school shooting is negligible across America.

The vividness effect was only amplified by the media. It existed long before the advent of television or radio. When observing an event in person, an individual is automatically drawn toward the sensational or vivid aspects. Thus, a person becomes quick to believe that all aspects of an event are bad if they only remember the vivid parts that offended them. To counter this, an individual must be aware of and deal with the inclination to the dramatic and offensive, act accordingly. One must resist the temptation to jump to conclusions and instead weigh all facts before judging.

Effective listening

In addition to avoiding the two major mistakes listed above, there are things one must do to be a competent informational listener.

Memory

To understand what is said in the present, one must remember what has been said before; and for the message to have impact, one must remember at least parts of it at some point in the future. The most obvious memory aid is simply taking notes, but it is also helpful to create a mental outline of the message as it is being heard.

Identification

Identify the main point that the speaker is trying to bring across. When the main point has been deduced, one can begin to sort out the rest of the information and decide where it belongs in the mental outline. Before getting the big picture of a message, it can be difficult to focus on what the speaker is saying, because it is impossible to know where any particular piece of information fits.

Questions

It is usually helpful to ask oneself questions about the speaker's message. If the listener is mentally asking questions about what is being said, it is a good sign that he/she is actively involved in effective informational listening.

Workplace listening

Workplace listening is a type of active listening that is generally employed in a professional environment. Listening skills are imperative for career success, organizational effectiveness, and worker satisfaction. Workplace listening includes understanding the listening process (i.e. perception, interpretation, evaluation, and action) and its barriers that hamper the flow of that process. Like other skills, there are specific techniques for improving workplace listening effectiveness. Moreover, it is imperative to become aware of the role of nonverbal communication in communicating in the

workplace, as understanding messages wholly entails more than simple verbal messages.

Chapter 4

Vocabulary

A **vocabulary** is a set of familiar words within a person's language. A vocabulary, usually developed with age, serves as a useful and fundamental tool for communication and acquiring knowledge. Acquiring an extensive vocabulary is one of the largest challenges in learning a second language.

Definition and usage

Vocabulary is commonly defined as "all the words known and used by a particular person".

Productive and receptive knowledge

The first major change distinction that must be made when evaluating word knowledge is whether the knowledge is productive (also called achieve) or receptive (also called receive); even within those opposing categories, there is often no clear distinction. Words that are generally understood when heard or read or seen constitute a person's receptive vocabulary. These words may range from well known to barely known (see degree of knowledge below). A person's receptive vocabulary is usually the larger of the two. For example, although a young child may not yet be able to speak, write, or sign, he or she may be able to follow simple commands and appear to understand a good portion of the language to which they are exposed. In this case, the child's receptive vocabulary

is likely tens, if not hundreds of words, but his or her active vocabulary is zero. When that child learns to speak or sign, however, the child's active vocabulary begins to increase. It is also possible for the productive vocabulary to be larger than the receptive vocabulary, for example in a second-language learner who has learned words through study rather than exposure, and can produce them, but has difficulty recognizing them in conversation.

Productive vocabulary, therefore, generally refers to words that can be produced within an appropriate context and match the intended meaning of the speaker or signer. As with receptive vocabulary, however, there are many degrees at which a particular word may be considered part of an active vocabulary. Knowing how to pronounce, sign, or write a word does not necessarily mean that the word that has been used correctly or accurately reflects the intended message; but it does reflect a minimal amount of productive knowledge.

Degree of knowledge

Within the receptive–productive distinction lies a range of abilities that are often referred to as *degree of knowledge*. This simply indicates that a word gradually enters a person's vocabulary over a period of time as more aspects of word knowledge are learnt. Roughly, these stages could be described as:

- Never encountered the word.
- Heard the word, but cannot define it.
- Recognizes the word due to context or tone of voice.

- Able to use the word and understand the general and/or intended meaning, but cannot clearly explain it.
- Fluent with the word – its use and definition.

Depth of knowledge

The differing degrees of word knowledge imply a greater *depth of knowledge*, but the process is more complex than that. There are many facets to knowing a word, some of which are not hierarchical so their acquisition does not necessarily follow a linear progression suggested by *degree of knowledge*. Several frameworks of word knowledge have been proposed to better operationalise this concept. One such framework includes nine facets:

- orthography – written form
- phonology – spoken form
- reference – meaning
- semantics – concept and reference
- register – appropriacy of use or register
- collocation – lexical neighbours
- word associations
- syntax – grammatical function
- morphology – word parts

Definition of word

Words can be defined in various ways, and estimates of vocabulary size differ depending on the definition used. The most common definition is that of a lemma (the inflected or

dictionary form; this includes *walk*, but not *walks, walked or walking*). Most of the time lemmas do not include proper nouns (names of people, places, companies, etc.). Another definition often used in research of vocabulary size is that of word family. These are all the words that can be derived from a ground word (e.g., the words *effortless, effortlessly, effortful, effortfully* are all part of the word family *effort*). Estimates of vocabulary size range from as high as 200 thousand to as low as 10 thousand, depending on the definition used.

Types of vocabulary

Listed in order of most ample to most limited:

Reading vocabulary

A person's reading vocabulary is all the words recognized when reading. This class of vocabulary is generally the most ample, as new words are more commonly encountered when reading than when listening.

Listening vocabulary

A person's listening vocabulary comprises the words recognized when listening to speech. Cues such as the speaker's tone and gestures, the topic of discussion, and the conversation's social context may convey the meaning of an unfamiliar word.

Speaking vocabulary

A person's speaking vocabulary comprises the words used in speech and is generally a subset of the listening vocabulary. Due to the spontaneous nature of speech, words are often misused slightly and unintentionally, but facial expressions and tone of voice can compensate for this misuse.

Writing vocabulary

The written word appears in registers as different as formal essays and social media feeds. While many written words rarely appear in speech, a person's written vocabulary is generally limited by preference and context: a writer may prefer one synonym over another, and they will be unlikely to use technical vocabulary relating to a subject in which they have no interest or knowledge.

Final vocabulary

The American philosopher Richard Rorty characterized a person's "final vocabulary" as follows:

All human beings carry about a set of words which they employ to justify their actions, their beliefs, and their lives. These are the words in which we formulate praise of our friends and contempt for our enemies, our long-term projects, our deepest self-doubts and our highest hopes... I shall call these words a person's “final vocabulary”. Those words are as far as he can go with language; beyond them is only helpless passivity or a resort to force. (*Contingency, Irony, and Solidarity* p. 73)

Focal vocabulary

Focal vocabulary is a specialized set of terms and distinctions that is particularly important to a certain group: those with a particular focus of experience or activity. A lexicon, or vocabulary, is a language's dictionary: its set of names for things, events, and ideas. Some linguists believe that lexicon influences people's perception of things, the Sapir–Whorf hypothesis. For example, the Nuer of Sudan have an elaborate vocabulary to describe cattle. The Nuer have dozens of names for cattle because of the cattle's particular histories, economies, and environments. This kind of comparison has elicited some linguistic controversy, as with the number of "Eskimo words for snow". English speakers with relevant specialised knowledge can also display elaborate and precise vocabularies for snow and cattle when the need arises.

Vocabulary growth

During its infancy, a child instinctively builds a vocabulary. Infants imitate words that they hear and then associate those words with objects and actions. This is the listening vocabulary. The speaking vocabulary follows, as a child's thoughts become more reliant on his/her ability to self-express without relying on gestures or babbling. Once the reading and writing vocabularies start to develop, through questions and education, the child starts to discover the anomalies and irregularities of language.

In first grade, a child who can read learns about twice as many words as one who cannot. Generally, this gap does not narrow later. This results in a wide range of vocabulary by age five or six, when an English-speaking child will have learned about 1500 words.

Vocabulary grows throughout one's life. Between the ages of 20 and 60, people learn about 6,000 more lemmas, or one every other day. An average 20-year-old knows 42,000 lemmas coming from 11,100 word families. People expand their vocabularies by e.g. reading, playing word games, and participating in vocabulary-related programs. Exposure to traditional print media teaches correct spelling and vocabulary, while exposure to text messaging leads to more relaxed word acceptability constraints.

Importance

- An extensive vocabulary aids expression and communication.
- Vocabulary size has been directly linked to reading comprehension.
- Linguistic vocabulary is synonymous with thinking vocabulary.
- A person may be judged by others based on his or her vocabulary.
- Wilkins (1972) said, "Without grammar, very little can be conveyed; without vocabulary, nothing can be conveyed."

Vocabulary size

Native-language vocabulary

Estimating average vocabulary size poses various difficulties and limitations due to the different definitions and methods employed such as what is the word, what is to know a word, what sample dictionaries were used, how tests were conducted, and so on. Native speakers' vocabularies also vary widely within a language, and are dependent on the level of the speaker's education.

As a result, estimates vary from as little as 10,000 to as many as over 50,000 for young adult native speakers of English.

One most recent 2016 study, shows that 20-year-old English native speakers recognize on average 42,000 lemmas, ranging from 27,100 for the lowest 5% of the population to 51,700 lemmas for the highest 5%. These lemmas come from 6,100 word families in the lowest 5% of the population and 14,900 word families in the highest 5%. 60-year-olds know on average 6,000 lemmas more.

According to another, earlier 1995 study junior-high students would be able to recognize the meanings of about 10,000–12,000 words, whereas for college students this number grows up to about 12,000–17,000 and for elderly adults up to about 17,000 or more.

For native speakers of German, average absolute vocabulary sizes range from 5,900 lemmas in first grade to 73,000 for adults.

Foreign-language vocabulary

The effects of vocabulary size on language comprehension

The knowledge of the 3000 most frequent English word families or the 5000 most frequent words provides 95% vocabulary coverage of spoken discourse. For minimal reading comprehension a threshold of 3,000 word families (5,000 lexical items) was suggested and for reading for pleasure 5,000 word families (8,000 lexical items) are required. An "optimal" threshold of 8,000 word families yields the coverage of 98% (including proper nouns).

Second language vocabulary acquisition

Learning vocabulary is one of the first steps in learning a second language, but a learner never finishes vocabulary acquisition. Whether in one's native language or a second language, the acquisition of new vocabulary is an ongoing process. There are many techniques that help one acquire new vocabulary.

Memorization

Although memorization can be seen as tedious or boring, associating one word in the native language with the corresponding word in the second language until memorized is considered one of the best methods of vocabulary acquisition. By the time students reach adulthood, they generally have gathered a number of personalized memorization methods. Although many argue that memorization does not typically require the complex cognitive processing that increases retention (Sagarra and Alba, 2006), it does typically require a large amount of repetition, and spaced repetition with flashcards is an established method for memorization, particularly used for vocabulary acquisition in computer-assisted language learning. Other methods typically require more time and longer to recall.

Some words cannot be easily linked through association or other methods. When a word in the second language is phonologically or visually similar to a word in the native language, one often assumes they also share similar meanings. Though this is frequently the case, it is not always true. When faced with a false friend, memorization and repetition are the keys to mastery. If a second language learner relies solely on word associations to learn new vocabulary, that person will have a very difficult time mastering false friends. When large amounts of vocabulary must be acquired in a limited amount of time, when the learner needs to recall information quickly, when words represent abstract concepts or are difficult to picture in a mental image, or when discriminating between false friends, rote memorization is the method to use. A neural

network model of novel word learning across orthographies, accounting for L1-specific memorization abilities of L2-learners has recently been introduced (Hadzibeganovic and Cannas, 2009).

The keyword method

One useful method of building vocabulary in a second language is the keyword method. If time is available or one wants to emphasize a few key words, one can create mnemonic devices or word associations. Although these strategies tend to take longer to implement and may take longer in recollection, they create new or unusual connections that can increase retention. The keyword method requires deeper cognitive processing, thus increasing the likelihood of retention (Sagarra and Alba, 2006). This method uses fits within Paivio's (1986) dual coding theory because it uses both verbal and image memory systems. However, this method is best for words that represent concrete and imageable things. Abstract concepts or words that do not bring a distinct image to mind are difficult to associate. In addition, studies have shown that associative vocabulary learning is more successful with younger students (Sagarra and Alba, 2006). Older students tend to rely less on creating word associations to remember vocabulary.

Word lists

Several word lists have been developed to provide people with a limited vocabulary either for the purpose of rapid language proficiency or for effective communication. These include Basic English (850 words), Special English (1,500 words), General

Service List (2,000 words), and Academic Word List. Some learner's dictionaries have developed defining vocabularies which contain only most common and basic words. As a result, word definitions in such dictionaries can be understood even by learners with a limited vocabulary. Some publishers produce dictionaries based on word frequency or thematic groups.

The Swadesh listwas made for investigation in linguistics.

Vocabulary learning

Vocabulary learning is the process acquiring building blocks in second language acquisition Restrepo Ramos (2015). The impact of vocabulary on proficiency in second language performance "has become [...] an object of considerable interest among researchers, teachers, and materials developers" (Huckin&Coady, 1999, p. 182). From being a "neglected aspect of language learning" (Meara, 1980, as cited in Xu & Hsu, 2017) vocabulary gained recognition in the literature and reclaimed its position in teaching. Educators shifted their attention from accuracy to fluency by moving from the Grammar translation method to communicative approaches to teaching. As a result, incidental vocabulary teaching and learning became one of the two major types of teaching programs along with the deliberate approach.

Goals of vocabulary learning

Vocabulary learning goals help in deciding the kind of language to be learnt and taught. Nation (2000) suggests three types of information to keep in mind while deciding on the goals. 1)number of words in the target language. 2) Number of words known by the native speakers. 3) The number of words required to use another language. It is very difficult to know all the words in a language as even native speakers don't know all the words. There are many specialized vocabularies that only a specific set of people know. In this context if somebody wants to count all the words in a language, it is useful to be familiar with terms such as tokens, types, lemmas, and word families. If we count the words as they appear in language, even if they are repeated, the words are called tokens. If we count all the words but not counting the repetition of a word, the words are called types. A lemma is the head word and some of its reduced and inflected forms.

Types and strategies of vocabulary learning

There are two major types of vocabulary learning: deliberate and incidental. Vocabulary learning types and low-frequency are important components in a vocabulary teaching program. The two major types of vocabulary learning are deliberate and low-frequency. It is important to treat these types as complementary -rather than mutually exclusive- by using

different vocabulary learning strategies and their combinations.

Scott Thornbury (2002) describes these types by stating that "some of the words will be learned actively", while others "will be picked up incidentally" (p. 32). Dodigovic (2013) and Nation (2006) emphasize the same distinction - only using a different term for the one side of this dichotomy: deliberate vocabulary learning. Nation (2006) also adds another nuance to this concept by calling it "deliberate, decontextualized vocabulary learning" (p. 495). Elgort (2011) to uses the term *deliberate*, while DeCarrico (2001) prefers to talk about "explicit versus implicit learning" (p. 10). Other authors, although employing various terminology are also in favor of this same distinction. For example, throughout their article, Alemi and Tayebi (2011) talk of “incidental and intentional” vocabulary learning, as does also Hulstijn (2001). Expanding the terminology even further, Gu (2003) uses the terms “explicit and implicit learning mechanisms” throughout his article in discussing the second language learning strategies. Whatever terminology is used in the literature by different authors, the two major types of vocabulary learning are discussed: explicit and incidental. These two concepts should not be perceived as competitors but rather as *mutually reinforcing* (Nation, 2006b).

In both types of vocabulary learning or their combination, the efficiency of learning is achieved by following one or more of the vocabulary learning strategies. Different researchers look into the nature of this concept from various perspectives. Given that vocabulary learning strategies are very diverse, Schmitt(2000) suggests a summary of major vocabulary learning strategies and classify them into five groups:

determination, social, memory, cognitive and meta-cognitive. Building on this classification, Xu and Hsu (2017) suggest two major categories of vocabulary learning strategies – direct and indirect. The first category includes four types of strategies: memory, cognitive and compensation strategies; the second category contains the meta-cognitive, effective and social strategies. Based on their research, Lawson and Hogben (1996) distinguish repetition as the major strategy of vocabulary learning, while Mokhtar et al. (2009) explain that ESL students prefer vocabulary strategies such as guessing and using a dictionary.

Deliberate Vocabulary Learning

One of the major types of vocabulary learning in language acquisition is deliberate vocabulary learning. Before moving on to presenting the literature, it is important to mention that when talking about deliberate vocabulary learning, various terminologies are used by different linguists and writers. Elgort and Warren (2014), as well as Schmitt (2000), use the term explicit (which is mostly used for grammar teaching), while Nation (2006) uses the word decontextualized vocabulary learning and contrasts the term with "learning from context" (p. 494) without explicitly using the term incidental vocabulary learning. Intentional vocabulary learning (Dodigovic, Jeaco& Wei, 2017; Hulstijn, 2001), active learning (Thornbury, 2002), and direct instruction (Lawrence et al., 2010) are also used. However, throughout this paper, the term deliberate (Elgort, 2011;Nation, 2006) will be used to refer to this concept.

The advocates of deliberate vocabulary learning paradigm -for example, Coady, 1993; Nation, 1990, 2001, as cited in Ma &

Kelly, 2006- agree that context is the main source for vocabulary acquisition. However, they also believe that in order to be able to build up sufficient vocabulary and acquire the necessary strategies to handle the context when reading, learners need support. Thus, extensive reading may be sufficient for developing advanced students' vocabulary, but it has to be supplemented with deliberate vocabulary learning at lower proficiency levels (Elgort & Warren, 2014). Kennedy (2003) supports this notion and argues that deliberate learning is more appropriate for students with up to an intermediate level of proficiency, while incidental learning, which can occur outside the classroom, is more valuable with higher proficiency students. The limited classroom time should be spent on the deliberate teaching of vocabulary (Schmitt, 2000), as the main problem of vocabulary teaching is that only a few words, or a small part of what is required to know a word, can be taught at a time (Ma & Kelly, 2006). Ma and Kelly (2006) argue that learning a word requires more "deliberate mental effort" than merely being engaged in meaning-focused activities. However, according to the authors, the advocates of deliberate approach believe that it should be combined with incidental learning to be more efficient.

Schmitt (2000) demonstrates that deliberate vocabulary learning, unlike incidental learning, is *time-consuming*, and *too laborious*. Moreover, according to Nation (2005), deliberate vocabulary learning is "one of the least efficient ways" to improve students' vocabulary knowledge. Yet, he claims that it is a vital component in vocabulary teaching programs. However, Schmitt (2000) states that deliberate vocabulary learning gives the learners the "greatest chance" for acquiring vocabulary, as it focuses their attention directly on the target

vocabulary. He presents an important concept from the field of psychology: “the more one manipulates, thinks about, and uses mental information, the more likely it is that one will retain that information” (p. 121). The deeper the processing, the more likely it is for the newly learned words to be remembered. Therefore, explicit attention should also be given to vocabulary, especially when the aim is language-focused learning (Nation, 2006b). According to Ellis (1994, as cited in Laufer&Hulstijn, 2001), while the meaning of a word requires “conscious processing” and is learned deliberately, the articulation of its form is learned incidentally because of frequent exposure. Ma and Kelly (2006) mention the necessity of establishing a link between the meaning and form of a word by various strategies, e.g., “direct memorization,” which is a strategy of deliberate vocabulary teaching.

In vocabulary teaching programs, it is also necessary to consider the frequency of the words (Nation, 2006b). Thus, high-frequency words deserve to be taught explicitly (Kennedy, 2003) and sometimes even low-frequency words can be taught and learned deliberately, for example through word cards, word part analysis, and dictionary as recommended by Nation (2006b). However, when measuring the difficulty by the results, deliberate vocabulary learning is easier than incidental learning, yet it needs more focused effort. Therefore, directing deliberate attention to the particular aspect can lighten "the learning burden" (Nation, 2006a).

To sum up, deliberate vocabulary learning is essential to reach a *threshold* of the vocabulary size and it is a *prerequisite* to incidental learning (Schmitt, 2000).

Incidental Vocabulary Learning

Another type of vocabulary learning is called incidental vocabulary learning. By its nature, incidental vocabulary learning is one of the key aspects of language acquisition. This concept, which is also referred to as passive learning (Shmidth, 1990; as cited in Alemi&Tayebi, 2011) or implicit learning (Gu, 2003), is the process of acquiring vocabulary without placing the focus on specific words to be learned (Paribakht&Wesche, 1999). It is deemed that, this type of learning should occur with low-frequency words (Nation, 2005) as the first few thousand words are better learned through deliberate learning approach (Huckin&Coady 1999). However, this may be hampered by the fact that several encounters with a word are needed before it is committed to memory (Nation, 1990), which may not be possible with low-frequency words (Nation 1990). Aelmi and Tayebi (2011) as well as Schmitt (2000) link incidental vocabulary learning with the communicative context. The formers stress that incidental vocabulary learning occurs by "picking up structures and lexicon of a language, through getting engaged in a variety of communicative activities" (p. 82), while the latter indicates that producing language for *communicational purposes* results in incidental learning.

There is a number of factors which affect the occurrence of incidental vocabulary learning. Most of the scholars agree that the best way is through extensive reading (Jian-ping, 2013; Restrepo Ramos, 2015). Restrepo Ramos (2015) indicates that “there is strong evidence that supports the occurrence of incidental vocabulary learning through reading for meaning comprehension” (p. 164). However, as research shows, 95% of the words must be familiar to the reader to understand a text

(Hirsh &Nation, 1992; Laufer, 1989). According to Nation (2009), this figure is even higher, i.e., 98 percent. Huckin&Coady (1999), on the other hand, argue that "extensive reading for meaning does not automatically lead to the acquisition of vocabulary. Much depends on the context surrounding each word, and the nature of the learner's attention" (p. 183). While Dodigovic (2015) finds that it is the approach that matters, i.e., the bottom-up processing of readings is better than the top-down. Thus, to develop incidental vocabulary learning, the learners should be exposed to the words in different informative contexts, following the bottom-up processing of the readings.

Vocabulary development

Vocabulary development is a process by which people acquire words. Babbling shifts towards meaningful speech as infants grow and produce their first words around the age of one year. In early word learning, infants build their vocabulary slowly. By the age of 18 months, infants can typically produce about 50 words and begin to make word combinations.

In order to build their vocabularies, infants must learn about the meanings that words carry. The mapping problem asks how infants correctly learn to attach words to referents. Constraints theories, domain-general views, social-pragmatic accounts, and an emergentist coalition model have been proposed to account for the mapping problem.

From an early age, infants use language to communicate. Caregivers and other family members use language to teach

children how to act in society. In their interactions with peers, children have the opportunity to learn about unique conversational roles. Through pragmatic directions, adults often offer children cues for understanding the meaning of words.

Throughout their school years, children continue to build their vocabulary. In particular, children begin to learn abstract words. Beginning around age 3–5, word learning takes place both in conversation and through reading. Word learning often involves physical context, builds on prior knowledge, takes place in social context, and includes semantic support. The phonological loop and serial order short-term memory may both play an important role in vocabulary development.

Early word learning

Infants begin to understand words such as "Mommy", "Daddy", "hands" and "feet" when they are approximately 6 months old. Initially, these words refer to their own mother or father or hands or feet. Infants begin to produce their first words when they are approximately one year old. Infants' first words are normally used in reference to things that are of importance to them, such as objects, body parts, people, and relevant actions. Also, the first words that infants produce are mostly single-syllabic or repeated single syllables, such as "no" and "dada". By 12 to 18 months of age, children's vocabularies often contain words such as "kitty", "bottle", "doll", "car" and "eye". Children's understanding of names for objects and people usually precedes their understanding of words that describe actions and relationships. "One" and "two" are the

first number words that children learn between the ages of one and two. Infants must be able to hear and play with sounds in their environment, and to break up various phonetic units to discover words and their related meanings.

Development in oral languages

Studies related to vocabulary development show that children's language competence depends upon their ability to hear sounds during infancy. Infants' perception of speech is distinct. Between six and ten months of age, infants can discriminate sounds used in the languages of the world. By 10 to 12 months, infants can no longer discriminate between speech sounds that are not used in the language(s) to which they are exposed. Among six-month-old infants, seen articulations (i.e. the mouth movements they observe others make while talking) actually enhance their ability to discriminate sounds, and may also contribute to infants' ability to learn phonemic boundaries. Infants' phonological register is completed between the ages of 18 months and 7 years.

Children's phonological development normally proceeds as follows:

6–8 weeks: Cooing appears

16 weeks: Laughter and vocal play appear

6–9 months: Reduplicated (canonical) babbling appears

12 months: First words use a limited sound repertoire

18 months: Phonological processes (deformations of target sounds) become systematic

18 months–7 years: Phonological inventory completion

At each stage mentioned above, children play with sounds and learn methods to help them learn words. There is a relationship between children's prelinguistic phonetic skills and their lexical progress at age two: failure to develop the required phonetic skills in their prelinguistic period results in children's delay in producing words. Environmental influences may affect children's phonological development, such as hearing loss as a result of ear infections. Deaf infants and children with hearing problems due to infections are usually delayed in the beginning of vocal babbling.

Babbling

Babbling is an important aspect of vocabulary development in infants, since it appears to help practice producing speech sounds. Babbling begins between five and seven months of age. At this stage, babies start to play with sounds that are not used to express their emotional or physical states, such as sounds of consonants and vowels. Babies begin to babble in real syllables such as "ba-ba-ba, neh-neh-neh, and dee-dee-dee," between the ages of seven and eight months; this is known as canonical babbling. Jargon babbling includes strings of such sounds; this type of babbling uses intonation but doesn't convey meaning. The phonemes and syllabic patterns produced by infants begin to be distinctive to particular languages during this period (e.g., increased nasal stops in

French and Japanese babies) though most of their sounds are similar. There is a shift from babbling to the use of words as the infant grows.

Vocabulary spurt

As children get older their rate of vocabulary growth increases. Children probably understand their first 50 words before they produce them. By the age of eighteen months, children typically attain a vocabulary of 50 words in production, and between two and three times greater in comprehension. A switch from an early stage of slow vocabulary growth to a later stage of faster growth is referred to as the *vocabulary spurt*. Young toddlers acquire one to three words per month. A vocabulary spurt often occurs over time as the number of words learned accelerates. It is believed that most children add about 10 to 20 new words a week. Between the ages of 18 to 24 months, children learn how to combine two words such as *no bye-bye* and *more please*. Three-word and four-word combinations appear when most of the child's utterances are two-word productions. In addition, children are able to form conjoined sentences, using *and*. This suggests that there is a vocabulary spurt between the time that the child's first word appears, and when the child is able to form more than two words, and eventually, sentences. However, there have been arguments as to whether or not there is a spurt in acquisition of words. In one study of 38 children, only five of the children had an inflection point in their rate of word acquisition as opposed to a quadratic growth.

Development in sign languages

The learning mechanisms involved in language acquisition are not specific to oral languages. The developmental stages in learning a sign language and an oral language are generally the same. Deaf babies who are exposed to sign language from birth will start babbling with their hands from 10 to 14 months. Just as in oral languages, manual babbling consists of a syllabic structure and is often reduplicated. The first symbolic sign is produced around the age of 1 year.

Young children will simplify complex adult signs, especially those with difficult handshapes. This is likely due to fine motor control not having fully developed yet. The sign's movement is also often proximalized: the child will articulate the sign with a body part that is closer to the torso. For example, a sign that requires bending the elbow might be produced by using the shoulder instead. This simplification is systematic in that these errors are not random, but predictable.

Signers can represent the alphabet through the use offingerspelling. Children start fingerspelling as early as the age of 2. However, they are not aware of the association between fingerspelling and alphabet. It is not until the age of 4 that they realize that fingerspelling consists of a fixed sequence of units.

Mapping problem

In word learning, the mapping problem refers to the question of how infants attach the forms of language to the things that

they experience in the world. There are infinite objects, concepts, and actions in the world that words could be mapped onto. Many theories have been proposed to account for the way in which the language learner successfully maps words onto the correct objects, concepts, and actions.

While domain-specific accounts of word learning argue for innate constraints that limit infants' hypotheses about word meanings,domain-general perspectives argue that word learning can be accounted for by general cognitive processes, such as learning and memory, which are not specific to language. Yet other theorists have proposed social pragmatic accounts, which stress the role of caregivers in guiding infants through the word learning process. According to some research, however, children are active participants in their own word learning, although caregivers may still play an important role in this process. Recently, an emergentist coalition model has also been proposed to suggest that word learning cannot be fully attributed to a single factor. Instead, a variety of cues, including salient and social cues, may be utilized by infants at different points in their vocabulary development.

Theories of constraints

Theories of word-learning constraints argue for biases or default assumptions that guide the infant through the word learning process. Constraints are outside of the infant's control and are believed to help the infant limit their hypotheses about the meaning of words that they encounter daily. Constraints can be considered domain-specific (unique to language).

Critics argue that theories of constraints focus on how children learn nouns, but ignore other aspects of their word learning. Although constraints are useful in explaining how children limit possible meanings when learning novel words, the same constraints would eventually need to be overridden because they are not utilized in adult language. For instance, adult speakers often use several terms, each term meaning something slightly different, when referring to one entity, such as a family pet. This practice would violate the mutual exclusivity constraint.

Below, the most prominent constraints in the literature are detailed:

- **Reference**is the notion that a word symbolizes or stands in for an object, action, or event. Words consistently stand for their referents, even if referents are not physically present in context.
- **Mutual Exclusivity** is the assumption that each object in the world can only be referred to by a single label.
- **Shape** has been considered to be one of the most critical properties for identifying members of an object category. Infants assume that objects that have the same shape also share a name. Shape plays an important role in both appropriate and inappropriate extensions.
- **The Whole Object Assumption** is the belief that labels refer to whole objects instead of parts or properties of those objects. Children are believed to hold this assumption because they typically label

whole objects first, and parts of properties of objects later in development.

- **The Taxonomic Assumption** reflects the belief that speakers use words to refer to categories that are internally consistent. Labels to pick out coherent categories of objects, rather than those objects and the things that are related to them. For example, children assume that the word "dog" refers to the category of "dogs", not to "dogs with bones", or "dogs chasing cats".

Domain-general views

Domain-general views of vocabulary development argue that children do not need principles or constraints in order to successfully develop word-world mappings. Instead, word learning can be accounted for through general learning mechanisms such as salience, association, and frequency. Children are thought to notice the objects, actions, or events that are most salient in context, and then to associate them with the words that are most frequently used in their presence. Additionally, research on word learning suggests that fast mapping, the rapid learning that children display after a single exposure to new information, is not specific to word learning. Children can also successfully fast map when exposed to a novel fact, remembering both words and facts after a time delay.

Domain-general views have been criticized for not fully explaining how children manage to avoid mapping errors when there are numerous possible referents to which objects, actions, or events might point. For instance, if biases are not

present from birth, why do infants assume that labels refer to whole objects, instead of salient parts of these objects? However, domain-general perspectives do not dismiss the notion of biases. Rather, they suggest biases develop through learning strategies instead of existing as built-in constraints. For instance, the whole object bias could be explained as a strategy that humans use to reason about the world; perhaps we are prone to thinking about our environment in terms of whole objects, and this strategy is not specific to the language domain. Additionally, children may be exposed to cues associated with categorization by shape early in the word learning process, which would draw their attention to shape when presented with novel objects and labels. Ordinary learning could, then, lead to a shape bias.

Social pragmatic theories

Social pragmatic theories, also in contrast to the constraints view, focus on the social context in which the infant is embedded. According to this approach, environmental input removes the ambiguity of the word learning situation. Cues such as the caregiver's gaze, body language, gesture, and smile help infants to understand the meanings of words. Social pragmatic theories stress the role of the caregiver in talking about objects, actions, or events that the infant is already focused-in upon.

Joint attention is an important mechanism through which children learn to map words-to-world, and vice versa. Adults commonly make an attempt to establish joint attention with a child before they convey something to the child. Joint attention is often accompanied by physical co-presence, since children

are often focused on what is in their immediate environment. As well, conversational co-presence is likely to occur; the caregiver and child typically talk together about whatever is taking place at their locus of joint attention. Social pragmatic perspectives often present children as covariation detectors, who simply associate the words that they hear with whatever they are attending to in the world at the same time. The co-variation detection model of joint attention seems problematic when we consider that many caregiver utterances do not refer to things that occupy the immediate attentional focus of infants. For instance, caregivers among the Kaluli, a group of indigenous peoples living in New Guinea, rarely provide labels in the context of their referents. While the covariation detection model emphasizes the caregiver's role in the meaning-making process, some theorists argue that infants also play an important role in their own word learning, actively avoiding mapping errors. When infants are in situations where their own attentional focus differs from that of a speaker, they seek out information about the speaker's focus, and then use that information to establish correct word-referent mappings. Joint attention can be created through infant agency, in an attempt to gather information about a speaker's intent.

From early on, children also assume that language is designed for communication. Infants treat communication as a cooperative process. Specifically, infants observe the principles of conventionality and contrast. According to conventionality, infants believe that for a particular meaning that they wish to convey, there is a term that everyone in the community would expect to be used. According to contrast, infants act according to the notion that differences in form mark differences in meaning. Children's attention to conventionality and contrast

is demonstrated in their language use, even before the age of 2 years; they direct their early words towards adult targets, repair mispronunciations quickly if possible, ask for words to relate to the world around them, and maintain contrast in their own word use.

Emergentist coalition model

The emergentist coalition model suggests that children make use of multiple cues to successfully attach a novel label to a novel object. The word learning situation may offer an infant combinations of social, perceptual, cognitive, and linguistic cues. While a range of cues are available from the start of word learning, it may be the case that not all cues are utilized by the infant when they begin the word learning process. While younger children may only be able to detect a limited number of cues, older, more experienced word learners may be able to make use of a range of cues. For instance, young children seem to focus primarily on perceptual salience, but older children attend to the gaze of caregivers and use the focus of caregivers to direct their word mapping. Therefore, this model argues that principles or cues may be present from the onset of word learning, but the use of a wide range of cues develops over time.

Supporters of the emergentist coalition model argue that, as a hybrid, this model moves towards a more holistic explanation of word learning that is not captured by models with a singular focus. For instance, constraints theories typically argue that constraints/principles are available to children from the onset of word learning, but do not explain how children develop into expert speakers who are not limited by constraints.

Additionally, some argue that domain-general perspectives do not fully address the question of how children sort through numerous potential referents in order to correctly sort out meaning. Lastly, social pragmatic theories claim that social encounters guide word learning. Although these theories describe how children become more advanced word learners, they seem to tell us little about children's capacities at the start of word learning. According to its proponents, the emergentistcoalion model incorporates constraints/principles, but argues for the development and change in these principles over time, while simultaneously taking into consideration social aspects of word learning alongside other cues, such as salience.

Pragmatic development

Both linguistic and socio-cultural factors affect the rate at which vocabulary develops. Children must learn to use their words appropriately and strategically in social situations. They have flexible and powerful social-cognitive skills that allow them to understand the communicative intentions of others in a wide variety of interactive situations. Children learn new words in communicative situations. Children rely on pragmatic skills to build more extensive vocabularies. Some aspects of pragmatic behaviour can predict later literacy and mathematical achievement, as children who are pragmatically skilled often function better in school. These children are also generally better liked.

Children use words differently for objects, spatial relations and actions. Children ages one to three often rely on general

purpose deictic words such as "here", "that" or "look" accompanied by a gesture, which is most often pointing, to pick out specific objects. Children also stretch already known or partly known words to cover other objects that appear similar to the original. This can result in word *overextension* or misuses of words. Word overextension is governed by the perceptual similarities children notice among the different referents. Misuses of words indirectly provide ways of finding out which meanings children have attached to particular words. When children come into contact withspatial relations, they talk about the location of one object with respect to another. They name the object located and use a deictic term, such as *here* or "there" for location, or they name both the object located and its location. They can also use a general purpose locative marker, which is a preposition, postposition or suffix depending on the language that is linked in some way to the word for location. Children's earliest words for actions usually encode both the action and its result. Children use a small number of general purposeverbs, such as "do" and "make" for a large variety of actions because their resources are limited. Children acquiring a second language seem to use the same production strategies for talking about actions. Sometimes children use a highly specific verb instead of a general purpose verb. In both cases children stretch their resources to communicate what they want to say.

Infants use words to communicate early in life and their communication skillsdevelop as they grow older. Communication skills aid in word learning. Infants learn to take turns while communicating with adults. While preschoolers lack precise timing and rely on obvious speaker cues, older children are more precise in their timing and take

fewer long pauses. Children get better at initiating and sustaining coherent conversations as they age. Toddlers and preschoolers use strategies such as repeating and recasting their partners' utterances to keep the conversation going. Older children add new relevant information to conversations. Connectives such as *then*, *so*, and *because* are more frequently used as children get older. When giving and responding to feedback, preschoolers are inconsistent, but around the age of six, children can mark corrections with phrases and head nods to indicate their continued attention. As children continue to age they provide more constructive interpretations back to listeners, which helps prompt conversations.

Pragmatic influences

Caregivers use language to help children become competent members of society and culture. From birth, infants receive pragmatic information. They learn structure of conversations from early interactions with caregivers. Actions and speech are organized in games, such as peekaboo to provide children with information about words and phrases. Caregivers find many ways to help infants interact and respond. As children advance and participate more actively in interactions, caregivers adapt their interactions accordingly. Caregivers also prompt children to produce correct pragmatic behaviours. They provide input about what children are expected to say, how to speak, when they should speak, and how they can stay on topic. Caregivers may model the appropriate behaviour, using verbal reinforcement, posing a hypothetical situation, addressing children's comments, or evaluating another person.

Family members contribute to pragmatic development in different ways. Fathers often act as secondary caregivers, and may know the child less intimately. Older siblings may lack the capacity to acknowledge the child's needs. As a result, both fathers and siblings may pressure children to communicate more clearly. They often challenge children to improve their communication skills, therefore preparing them to communicate with strangers about unfamiliar topics. Fathers have more breakdowns when communicating with infants, and spend less time focused on the same objects or actions as infants. Siblings are more directive and less responsive to infants, which motivates infants to participate in conversations with their older siblings. There are limitations to studies that focus on the influences of fathers and siblings, as most research is descriptive and correlational. In reality, there are many variations of family configurations, and context influences parent behaviour more than parent gender does. The majority of research in this field is conducted with mother/child pairs.

Peers help expose children to multi-party conversations. This allows children to hear a greater variety of speech, and to observe different conversational roles. Peers may be uncooperative conversation partners, which pressures the children to communicate more effectively. Speaking to peers is different from speaking to adults, but children may still correct their peers. Peer interaction provides children with a different experience filled with special humour, disagreements and conversational topics.

Culture and context in infants' linguistic environment shape their vocabulary development. English learners have been

found to map novel labels to objects more reliably than to actions compared to Mandarin learners. This early noun bias in English learners is caused by the culturally reinforced tendency for English speaking caregivers to engage in a significant amount of ostensive labelling as well as noun-friendly activities such as picture book reading. Adult speech provides children with grammatical input. Both Mandarin and Cantonese languages have a category of grammatical function word called a noun classifier, which is also common across many genetically unrelated East Asian languages. In Cantonese, classifiers are obligatory and specific in more situations than in Mandarin. This accounts for the research found on Mandarin-speaking children outperforming Cantonese-speaking children in relation to the size of their vocabulary.

Pragmatic directions

Pragmatic directions provide children with additional information about the speaker's intended meaning. Children's learning of new word meanings is guided by the pragmatic directions that adults offer, such as explicit links to word meanings. Adults present young children with information about how words are related to each other through connections, such as "is a part of", "is a kind of", "belongs to", or "is used for". These pragmatic directions provide children with essential information about language, allowing them to make inferences about possible meanings for unfamiliar words. This is also called inclusion. When children are provided with two words related by inclusion, they hold on to that information. When children hear an adult say an incorrect word, and then repair their mistake by stating the correct

word, children take into account the repair when assigning meanings to the two words.

In school-age children

Vocabulary development during the school years builds upon what the child already knows, and the child uses this knowledge to broaden their vocabulary. Once children have gained a level of vocabulary knowledge, new words are learned through explanations using familiar, or "old" words. This is done either explicitly, when a new word is defined using old words, or implicitly, when the word is set in the context of old words so that the meaning of the new word is constrained. When children reach school-age, context and implicit learning are the most common ways in which their vocabularies continue to develop. By this time, children learn new vocabulary mostly through conversation and reading. Throughout schooling and adulthood, conversation and reading are the main methods in which vocabulary develops. This growth tends to slow once a person finishes schooling, as they have already acquired the vocabulary used in everyday conversation and reading material and generally are not engaging in activities that require additional vocabulary development.

During the first few years of life, children are mastering concrete words such as "car", "bottle", "dog", "cat". By age 3, children are likely able to learn these concrete words without the need for a visual reference, so word learning tends to accelerate around this age. Once children reach school-age, they learn abstract words (e.g. "love", "freedom", "success").

This broadens the vocabulary available for children to learn, which helps to account for the increase in word learning evident at school age. By age 5, children tend to have an expressive vocabulary of 2,100–2,200 words. By age 6, they have approximately 2,600 words of expressive vocabulary and 20,000–24,000 words of receptive vocabulary. Some claim that children experience a sudden acceleration in word learning, upwards of 20 words per day, but it tends to be much more gradual than this. From age 6 to 8, the average child in school is learning 6–7 words per day, and from age 8 to 10, approximately 12 words per day.

Means

Exposure to conversations and engaging in conversation with others help school-age children develop vocabulary. Fast mapping is the process of learning a new concept upon a single exposure and is used in word learning not only by infants and toddlers, but by preschool children and adults as well. This principle is very useful for word learning in conversational settings, as words tend not to be explained explicitly in conversation, but may be referred to frequently throughout the span of a conversation.

Reading is considered to be a key element of vocabulary development in school-age children. Before children are able to read on their own, children can learn from others reading to them. Learning vocabulary from these experiences includes using context, as well as explicit explanations of words and/or events in the story. This may be done using illustrations in the book to guide explanation and provide a visual reference or comparisons, usually to prior knowledge and past experiences.

Interactions between the adult and the child often include the child's repetition of the new word back to the adult. When a child begins to learn to read, their print vocabulary and oral vocabulary tend to be the same, as children use their vocabulary knowledge to match verbal forms of words with written forms. These two forms of vocabulary are usually equal up until grade 3. Because written language is much more diverse than spoken language, print vocabulary begins to expand beyond oral vocabulary. By age 10, children's vocabulary development through reading moves away from learning concrete words to learning abstract words.

Generally, both conversation and reading involve at least one of the four principles of context that are used in word learning and vocabulary development: physical context, prior knowledge, social context and semantic support.

Physical context

Physical context involves the presence of an object or action that is also the topic of conversation. With the use of physical context, the child is exposed to both the words and a visual reference of the word. This is frequently used with infants and toddlers, but can be very beneficial for school-age children, especially when learning rare or infrequently used words. Physical context may include props such as in toy play. When engaging in play with an adult, a child's vocabulary is developed through discussion of the toys, such as naming the object (e.g. "dinosaur") or labeling it with the use of a rare word (e.g., *stegosaurus*). These sorts of interactions expose the

child to words they may not otherwise encounter in day-to-day conversation.

Prior knowledge

Past experiences or general knowledge is often called upon in conversation, so it is a useful context for children to learn words. Recalling past experiences allows the child to call upon their own visual, tactical, oral, and/or auditory references. For example, if a child once went to a zoo and saw an elephant, but did not know the word *elephant*, an adult could later help the child recall this event, describing the size and color of the animal, how big its ears were, its trunk, and the sound it made, then using the word *elephant* to refer to the animal. Calling upon prior knowledge is used not only in conversation, but often in book reading as well to help explain what is happening in a story by relating it back to the child's own experiences.

Social context

Social context involves pointing out social norms and violations of these norms. This form of context is most commonly found in conversation, as opposed to reading or other word learning environments. A child's understanding of social norms can help them to infer the meaning of words that occur in conversation. In an English-speaking tradition, "please" and "thank you" are taught to children at a very early age, so they are very familiar to the child by school-age. For example, if a group of people is eating a meal with the child

present and one person says, "give me the bread" and another responds with, "that was rude. What do you say?", and the person responds with "please", the child may not know the meaning of "rude", but can infer its meaning through social context and understanding the necessity of saying "please".

Semantic support

Semantic support is the most obvious method of vocabulary development in school-age children. It involves giving direct verbal information of the meaning of a word. By the time children are in school, they are active participants in conversation, so they are very capable and willing to ask questions when they do not understand a word or concept. For example, a child might see a zebra for the first time and ask, *what is that?*and the parent might respond, *that is a zebra. It is like a horse with stripes and it is wild so you cannot ride it.*

Memory

Memory plays an important role in vocabulary development, however the exact role that it plays is disputed in the literature. Specifically, short-term memory and how its capacities work with vocabulary development is questioned by many researchers.

The phonology of words has proven to be beneficial to vocabulary development when children begin school. Once children have developed a vocabulary, they utilize the sounds that they already know to learn new words. The phonological loop encodes, maintains and manipulates speech-based

information that a person encounters. This information is then stored in the phonological memory, a part of short term memory. Research shows that children's capacities in the area of phonological memory are linked to vocabulary knowledge when children first begin school at age 4–5 years old. As memory capabilities tend to increase with age (between age 4 and adolescence), so does an individual's ability to learn more complex vocabulary.

Serial-order short-term memory may be critical to the development of vocabulary. As lexical knowledge increases, phonological representations have to become more precise to determine the differences between similar sound words (i.e. "calm", "come"). In this theory, the specific order or sequence of phonological events is used to learn new words, rather than phonology as a whole.

Defining vocabulary

A **defining vocabulary** is a list of words used by lexicographers to write dictionary definitions. The underlying principle goes back to Samuel Johnson's notion that words should be defined using 'terms less abstruse than that which is to be explained', and a defining vocabulary provides the lexicographer with a restricted list of high-frequency words which can be used for producing simple definitions of any word in the dictionary.

Defining vocabularies are especially common in English monolingual learner's dictionaries. The first such dictionary to use a defining vocabulary was the *New Method English*

Dictionary by Michael West and James Endicott (published in 1935), a small dictionary written using a defining vocabulary of just 1,490 words. When the *Longman Dictionary of Contemporary English* was first published in 1978, its most striking feature was its use of a 2,000-word defining vocabulary based on Michael West's General Service List, and since then defining vocabularies have become a standard component of monolingual learner's dictionaries for English and for other languages.

Differing opinions

Using a defining vocabulary is not without its problems, and some scholars have argued that it can lead to definitions which are insufficiently precise or accurate, or that words in the list are sometimes used in non-central meanings. The more common view, however, is that the disadvantages are outweighed by the advantages, and there is some empirical research which supports this position. Almost all English learner's dictionaries have a defining vocabulary, and these range in size between 2000 and 3000 words, for example:

- *Longman Dictionary of Contemporary English*: approximately 2,000 words
- *Macmillan English Dictionary for Advanced Learners*: approximately 2,500 words
- *Oxford Advanced Learner's Dictionary*: approximately 3,000 words

It is possible that, in electronic dictionaries at least, the need for a controlled defining vocabulary will disappear. In some

online dictionaries, such as the *Macmillan English Dictionary for Advanced Learners*, every word in every definition is hyperlinked to its own entry, so that a user who is unsure of the meaning of a word in a definition can immediately see the definition for the word that is causing problems. However, this strategy works only if all the definitions are written in reasonably accessible language, which argues for some sort of defining vocabulary to be maintained in dictionaries aimed at language learners.

Intermediate-level language learners are likely to have receptive familiarity with most words in a typical 2,000-word defining vocabulary. To accommodate beginning-level learners, the defining vocabulary can be divided into two or more layers, where words in one layer are explained using only the simpler words from the previous layers. This strategy is used in the *Learn These Words First* multi-layer dictionary, where a 360-word beginning-level defining vocabulary is used to explain a 2,000-word intermediate-level defining vocabulary, which in turn is used to define the remaining words in the dictionary.

Word family

A **word family** is the base form of a word plus its inflected forms and derived forms made with suffixes and prefixes plus its cognates, i.e. all words that have a common etymological origin, some of which even native speakers don't recognize as being related (e.g. "wrought (iron)" and "work(ed)"). In the English language, inflectional affixes include third person *-s*, verbal-*ed* and *-ing*, plural *-s*, possessive *-s*, comparative *-er* and superlative *-est*. Derivational affixes include *-able*, *-er*, *-*

ish, -less, -ly, -ness, -th, -y, non-, un-, -al, -ation, -ess, -ful, -ism, -ist, -ity, -ize/-ise, -ment, in-. The idea is that a base word and its inflected forms support the same core meaning, and can be considered learned words if a learner knows both the base word and the affix. Bauer and Nation proposed seven levels of affixes based on their frequency in English. It has been shown that word families can assist with deriving related words via affixes, along with decreasing the time needed to derive and recognize such words.

Effects on learning

There are several studies that suggest that knowledge of root words and their derivatives can assist with learning or even deducing the meaning of other members of a word family. A study from Carlisle and Katz (2006) comparing separate English word families varying in size, frequency, and affirmation and negation suggests that "accuracy of reading derived words by 4th and 6th graders is related to measures of familiarity, ... base word frequencies, family size, average family frequency, and word length". It was found that families that were either larger or more frequent (i.e. word families that had more words or were more common) were more quickly read. Nagy et al. (1989) found that morphologically related families had an increase of reaction time of up to 7 ms compared to those without a morphological relation. Nagy et al. (1993) summarizes how knowledge of the meanings of common English suffixes underwent significant development between fourth grade and high school.

Studies on non-native speakers

There have also been studies on non-native English speakers and learners on their knowledge and understanding of word families. A study of nonnative-English-speaking college students showed that non-native English speakers knew at least some of the four word forms studied (nouns, verbs, adjectives, and adverbs). Out of these four, word families derived from nouns and verbs were found to be the most well-known. Results showed that in regards to these word forms, ESL students knew the least, MA-ELT (English Language Teaching) students knew more, and native speakers knew the most. In addition, a study of Japanese students learning English showed poor knowledge of the affixes studied, showing a division between their knowledge of a word's meaning and a derivative form of a separate word (e.g. *stimulate* versus *similar*, *disclose* and *far*). To conclude their study, Schmitt and Zimmerman have provided the following for those teaching word families as a guideline:

- Introduce derivatives along with their roots.
- Teach more affixes.
- Emphasize adverbs, adjectives, and their derivatives.
- Suggest reading that includes these word families.

Diagrammatology

Diagrammatology is the academic study of diagrams. It studies fundamental role played by the diagram in the communication and creation of knowledge. Diagrammatology is

not only an interdisciplinary subject, but pan-historical and cross-cultural.

Overview

The term diagrammatology is often used synonymously with diagrammatics, however diagrammatics tends to be more common place within the fields of Mathematics (especially logic), the sciences and technology. In contrast, diagrammatology is currently the term of choice for the arts and humanities, where it is closely associated with Charles Sanders Peirce's work on diagrammatic reasoning.

In the introduction to his seminal 2011 work "Diagrammatology", Frederik Stjernfelt describes the reasoning behind his use of the term:

"As a substitute for the neologism of 'diagrammatology', the title might equally have well have been 'diagrammatical reasoning'. But two things argued against such a choice: (1) a book with that title already exists (Glasgow et al. 1995, on the reemergence of diagrammatic representations in computer science), and, consequently (2) the close association of that title with diagrams in computer science specifically."

Stjernfelt attributes the term diagrammatology to the art historian W.J.T Mitchell, who, in a 1981 article entitled "Diagrammatology" writes of the need for "...something like a diagrammatology, a systematic study of the way that relationships among elements are represented and interpreted by graphic constructions"

The term diagrammatology was also used in the title of the 2010 publication "Studies in Diagrammatology and Diagram Praxis" by Olga Pombo and Alexander Gerner. This volume is a collection of papers given at the interdisciplinary workshop on diagrammatology and diagram praxis held at the University of Lisbon, 23 – 24 March 2009. The workshop was organised by the Research Project "Images in Science" of the centre for Philosophy of Science of the University of Lisbon (CFCUL), aiming to analyse the place of image and diagrammatic thinking in different epistemological and semiotic programs.

Discussion

- Scientific presentations (1998-2014)
- Documents
- People
- The Culture of Diagram

Fossil word

A **fossil word** is a word that is broadly obsolete but remains in current use due to its presence within an idiom. Fossil status can also occur for word senses and for phrases. An example for a word sense is 'navy' in 'merchant navy', which means 'commercial fleet' (although that sense of navy is obsolete elsewhere). An example for a phrase is 'in point' (relevant), which is retained in the larger phrases 'case in point' (also 'case on point' in the legal context) and 'in point of fact', but is rarely used outside of a legal context.

English-language examples

- *ado*, as in "without further ado" or "with no further ado" or "much ado about nothing", although the homologous form "to-do" remains attested ("make a to-do", "a big to-do", etc.)
- *bandy*, as in "bandy about" or "bandy-legged"
- *bated*, as in "wait with bated breath", although the derived term "abate" remains in nonidiom-specific use
- *batten*, as in "batten down the hatches",
- *beck*, as in "at one's beck and call", although the verb form "beckon" is still used in nonidiom-specific use
- *champing*, as in "champing at the bit", where "champ" is an obsolete precursor to "chomp", in current use.
- *coign*, as in "coign of vantage"
- *deserts*, as in "just deserts", although singular "desert" in the sense of "state of deserving" occurs in nonidiom-specific contexts including law and philosophy. "Dessert" is a French loanword, meaning "removing what has been served," and has only a distant etymological connection.
- *dint*, as in "by dint of"
- *dudgeon*, as in "in high dudgeon"
- *eke*, as in "eke out"
- *fettle*, as in "in fine fettle", although the verb, 'to fettle', remains in specialized use in metal casting.
- *fro*, as in "to and fro"
- *hark*, as in "hark back to" or "hark at you"

- *helter skelter*, as in "scattered helter skelter about the office", Middle English *skelten* to hasten
- *hither*, as in "come hither", "hither and thither", and "hither and yon"
- *inclement*, as in "inclement weather"
- *jetsam*, as in "flotsam and jetsam", except in legal contexts (especially admiralty, property, and international law)
- *kith*, as in "kith and kin"
- *nap*, meaning to steal, as in "kidnap"
- *lo*, as in "lo and behold"
- *loggerheads* as in "at loggerheads" or loggerhead turtle
- *muchness* as in "much of a muchness"
- *neap*, as in "neap tide"
- *offing*, as in "in the offing"
- *pale*,as in "beyond the pale"
- *petard*, as in "hoist[ed] by [one's] own petard"
- *riddance*, as in "good riddance"
- *shebang*, as in "the whole shebang", although the word is also used as a common noun in programmers' jargon.
- *shrive*, preserved only in inflected forms occurring only as part of fixed phrases: 'shrift' in "short shrift" and 'shrove' in "Shrove Tuesday"
- *spick*, as in "spick and span"
- *turpitude*, as in "moral turpitude"
- *vim*, as in "vim and vigor"
- *wedlock*, as in "out of wedlock"
- *wend*, as in "wend your way"
- *wrought*, as in "what hath God wrought" and wrought iron

- *yore*, as in "of yore", usually "days of yore"

"Born fossils"

These words were formed from other languages, by elision, or by mincing of other fixed phrases.

- *caboodle*, as in "kit and caboodle" (evolved from "kit and boodle", itself a fixed phrase borrowed as a unit from Dutch *kitte en boedel*)
- *druthers*, as in "if I had my druthers..." (formed by elision from "would rather" and never occurring outside this phrase to begin with)
- *tarnation*, as in "what in tarnation...?" (evolved in the context of fixed phrases formed by mincing of previously fixed phrases that include the term "damnation")
- *nother*, as in "a whole nother..." (fixed phrase formed by rebracketing *another* as *a nother*, then inserting *whole* for emphasis; almost never occurs outside this phrase)

Ghost word

A **ghost word** is a word published in a dictionary or similarly authoritative reference work, having rarely, if ever, been used in practice, and previously having been meaningless. As a rule, a ghost word will have originated from an error, such as a misinterpretation, mispronunciation, misreading, or from typographical or linguistic confusion.

Once authoritatively published, a ghost word occasionally may be copied widely and take a long time to be erased from usage (if it ever is).

Origin

The term **ghost words**was coined and originally presented in public by Professor Walter William Skeat in his annual address as president of the Philological Society in 1886. He said in part:

Of all the work which the Society has at various times undertaken, none has ever had so much interest for us, collectively, as the New English Dictionary. Dr Murray, as you will remember, wrote on one occasion a most able article, in order to justify himself in omitting from the Dictionary the word abacot, defined by Webster as "the cap of state formerly used by English kings, wrought into the figure of two crowns". It was rightly and wisely rejected by our Editor on the ground that there is no such word, the alleged form being due to a complete mistake ... due to the blunders of printers or scribes, or to the perfervid imaginations of ignorant or blundering editors. ...

I propose, therefore, to bring under your notice a few more words of the abacot type; words which will come under our Editor's notice in course of time, and which I have little doubt that he will reject. As it is convenient to have a short name for words of this character, I shall take leave to call them "ghost-words." ... I only allow the title of ghost-words to such words, or rather forms, as have no meaning whatever.

... I can adduce at least two that are somewhat startling. The first is kime ... The original ... appeared in the Edinburgh Review for 1808. "The Hindoos ... have some very savage customs ... Some swing on hooks, some run kimes through their hands ..."

It turned out that "kimes" was a misprint for "knives", but the word gained currency for some time. A more drastic example followed, also cited in Skeat's address:

A similar instance occurs in a misprint of a passage of one of Walter Scott's novels, but here there is the further amusing circumstance that the etymology of the false word was settled to the satisfaction of some of the readers. In the majority of editions of *The Monastery*, we read: *... dost thou so soon morse thoughts of slaughter?* This word is nothing but a misprint of *nurse*; but in *Notes and Queries* two independent correspondents accounted for the word *morse* etymologically. One explained it as *to prime*, as when one primes a musket, from O. Fr.*amorce*, powder for the touchhole (Cotgrave), and the other by *to bite* (Lat. *mordere*), hence "to indulge in biting, stinging or gnawing thoughts of slaughter". The latter writes: "That the word as a misprint should have been printed and read by millions for fifty years without being challenged and altered exceeds the bounds of probability." Yet when the original manuscript of Sir Walter Scott was consulted, it was found that the word was there plainly written *nurse*.

One example of such an edition of *The Monastery* was published by the Edinburgh University Press in 1820.

More examples

In his address, Skeat exhibited about 100 more specimens that he had collected.

Other examples include:

- The supposed Homeric Greek word στήτη (*stētē*) = "woman", which arose thus: In *Iliad* Book 1 line 6 is the phrase διαστήτηνἐρίσαντε (*diastētēnerisante*) = "two (i.e. Achilles and Agamemnon) stood apart making strife". However someone unfamiliar with dual number verb inflections, which read it as διάστήτηνἐρίσαντε (*diastētēnerisante*) = "two making strife because of a *stētē*", and he guessed that *stētē* meant the woman Briseis who was the subject of the strife, influenced by the fact that nouns ending with eta are usually feminine.
- The placenameSarum, which arose by misunderstanding of the abbreviation **Sar~** used in a medieval manuscript to mean some early form such as "Sarisberie" (= Salisbury).
- As an example of an editing mistake, "dord" was defined as a noun meaning *density* (mass per unit volume). When the second edition of Webster's New International Dictionary was being prepared, an index card that read "D or d" with reference to the word "density" was incorrectly misfiled as a word instead of an abbreviation. The entry existed in more than one printing from 1934 to 1947.

- *A Concise Dictionary of Pronunciation* (ISBN 978-0-19-863156-9) accidentally included the nonexistent word *testentry* (evidently a feature of work-in-progress), with spurious British and US pronunciations as though it rhymed with *pedantry*.
- The *OED* explains the ghost word **Phantomnation** as "Appearance of a phantom; illusion. Error for *phantom nation*".Alexander Pope's (1725) translation of the *Odyssey* originally said, "The Phantome-nations of the dead". Richard Paul Jodrell's (1820) *Philology of the English Language*, which omitted hyphens from compounds, entered it as one word, "Phantomnation, a multitude of spectres". Lexicographers copied this error into various dictionaries, such as, "Phantomnation, illusion. Pope." (Worcester, 1860, *Philology of the English Language*), and "Phantomnation, appearance as of a phantom; illusion. (Obs. and rare.) Pope." (Webster, 1864, *An American dictionary of the English language*).
- The Japanese word *kusege* (癖毛, compounding *kuse*癖 "habit; vice" and 毛*ke* "hair", "frizzy hair") was mistranslated as **vicious hair** in the authoritative *Kenkyūsha's New Japanese-English Dictionary* from the first edition (1918) to the fourth (1974), and corrected in the fifth edition (2003) "twisted [kinky, frizzy] hair; hair that stands up". This phantom word was not merely an unnoticed lexicographical error, generations of dictionary users copied the mistake. For example, a Tokyo hospital of cosmetic surgery had a long-running display advertisement in the Asian edition of *Newsweek* that read, "Kinky or

vicious hair may be changed to a lovely, glossy hair" [*sic*]. This hair-straightening ad was jokingly used in the "Kinky Vicious" title of a 2011 Hong Kong iPhoneography photo exhibition.

- The JIS X 0208 standard, the most widespread system to handle Japanese language with computers since 1978, has entries for 12 kanji that have no known use and were probably included by mistake (for example 弼). They are called幽霊文字 (yūreimoji, "ghost characters") and are still supported by most computer systems (see: JIS X 0208#Kanji from unknown sources).
- Hsigo, an apparently erroneous output from optical character recognition software for "hsiao", a creature from Chinese mythology. The typographical error appeared in several limited-audience publications but spread around the World Wide Web after the creation of a Wikipedia article about the term (which has since been corrected), due to its numerous mirrors and forks.
- In his book *Beyond Language: Adventures in Word and Thought*, Dmitri Borgmann shows how *feamyng*, a purported collective noun for ferrets which appeared in several dictionaries, is actually the result of a centuries-long chain of typographical or misread-handwriting errors (from BUSYNESS to BESYNESS to FESYNES to FESNYNG to FEAMYNG).
- In the Irish language, the word *cigire* ("inspector") was invented by the scholar TadhgUaNeachtain, who misread *cighim* (pronounced [ˈciːmʲ], like modern *cím*) in Edward Lhuyd's*Archaeologia Britannica* as

cigim[ˈcɪʄɪmʲ], and so constructed the verbal forms *cigire*, *cigireacht*, *cigirim* etc. from it.

Speculative examples

Many neologisms, including those that eventually develop into established usages, are of obscure origin, and some might well have originated as ghost words through illiteracy, such as the term "okay". However, establishing the true origin often is not possible, partly for lack of documentation, and sometimes through obstructive efforts on the part of pranksters. The most popular etymology of the word pumpernickel bread - that Napoleon described it as "C'est pain pour Nicole!", being only fit for his horse - is thought to be a deliberate hoax. "Quiz" also has been associated with apparently deliberate false etymology. All these words and many more have remained in common usage, but they may well have been ghost words in origin.

Distinguished from back-formation

A recent, incorrect use of the term "ghost word" refers to coining a new word implied logically from a real word, often etymologically incorrectly. The correct term for such a derivation is back-formation, a word that has been established since the late 19th century. An example is "beforemath" which is derived from "aftermath". A back-formation cannot become a ghost word; as a rule it would clash with Skeat's precise

definition, which requires that the word forms have "no meaning".

Hypocognition

Hypocognition, in cognitive linguistics, means missing and being unable to communicate cognitive and linguistic representations because there are no words for particular concepts.

Origins

The word hypocognition (and its opposite, hypercognition) was coined by American psychiatrist and anthropologistRobert Levy in his 1973 book *Tahitians: Mind and Experience in the Society Islands*. After 26 months of studying them, Levy described Tahitians as having no words to describe sorrow or guilt, resulting in people who had suffered personal losses describing themselves as feeling sick or strange instead of sad. Levy believed the Tahitians' lack of frames for thinking about and expressing grief contributed to their high suicide rate. He believed that a balance between hypercognition and hypocognition was culturally most desirable.

Usage

Hypocognition is a phrase commonly used in linguistics. In 2004 George Lakoff used it to describe political progressives in the United States, saying that relative to conservatives they

suffer from "massive hypocognition," which he described as the lack of having a progressive philosophy framed around the progressive core values of empathy and responsibility such as "effective government" versus "less government" or "broader prosperity" versus "free markets."

Effects

Hypocognition has been blamed for preventing the practical application of evidence-based medicine in areas where frames (contextual and presentational influences on perceptions of reality) obscure facts. More generally, experts often overuse their own expertise: e.g. cardiologist diagnose a heart problem when the actual problem is something else.

Lexicon

A **lexicon** is the vocabulary of a language or branch of knowledge (such as nautical or medical). In linguistics, a lexicon is a language's inventory of lexemes. The word *lexicon* derives from Greek word λεξικόν (*lexikon*), neuter of λεξικός (*lexikos*) meaning 'of or for words'.

Linguistic theories generally regard human languages as consisting of two parts: a lexicon, essentially a catalogue of a language's words (its wordstock); and a grammar, a system of rules which allow for the combination of those words into meaningful sentences. The lexicon is also thought to include bound morphemes, which cannot stand alone as words (such as most affixes). In some analyses, compound words and

certain classes of idiomatic expressions, collocations and other phrases are also considered to be part of the lexicon. Dictionaries represent attempts at listing, in alphabetical order, the lexicon of a given language; usually, however, bound morphemes are not included.

Size and organization

Items in the lexicon are called lexemes, or lexical items, or word forms. Lexemes are not atomic elements but contain both phonological and morphological components. When describing the lexicon, a reductionist approach is used, trying to remain general while using a minimal description. To describe the size of a lexicon, lexemesare grouped into lemmas. A lemma is a group of lexemes generated by inflectional morphology. Lemmas are represented in dictionaries by headwords which list the citation forms and any irregular forms, since these must be learned to use the words correctly. Lexemes derived from a word by derivational morphology are considered new lemmas. The lexicon is also organized according to open and closed categories. Closed categories, such as determiners or pronouns, are rarely given new lexemes; their function is primarily syntactic. Open categories, such as nouns and verbs, have highly active generation mechanisms and their lexemes are more semantic in nature.

Lexicalization and other mechanisms in the lexicon

A central role of the lexicon is the documenting of established *lexical norms and conventions*. Lexicalization is the process by which new words, having gained widespread usage, enter the lexicon. Since lexicalization may modify lexemes phonologically and morphologically, it is possible that a single etymological source may be inserted into a single lexicon in two or more forms. These pairs, called a doublet, are often close semantically. Two examples are *aptitude* versus *attitude* and *employ* versus *imply*.

The mechanisms, not mutually exclusive, are:

- Innovation, the planned creation of new roots (often on a large-scale), such as *slang*, *branding*.
- Borrowing of foreign words.
- Compounding (composition), the combination of lexemes to make a single word.
- Abbreviation of compounds.
- Acronyms, the reduction of compounds to their initial letters, such as NASA and laser (from "LASER").
- Inflection, a morphology change with a category, such as number or tense.
- Derivation, a morphological change resulting in a change of category.
- Agglutination, the compounding of morphemes into a single word.

Neologisms (new words)

Neologisms are new lexeme candidates which, if they gain wide usage over time, become part of a language's lexicon. Neologisms are often introduced by children who produce erroneous forms by mistake. Other common sources are slang and advertising.

Neologisms that maintain the sound of their external source

There are two types of borrowings (neologisms based on external sources) that retain the sound of the source language material:

- Borrowing using the source language lexical item as the basic material for the neologization: guestwords, foreignisms and loanwords
- Borrowing using a target language lexical items as the basic material for the neologization: phono-semantic matching, semanticized phonetic matching and phonetic matching.

Guestwords, foreignisms and loanwords

The following are examples of external lexical expansion using the source language lexical item as the basic material for the neologization, listed in decreasing order of phonetic

resemblance to the original lexical item (in the source language):

- Guestword (in German: *Gastwort*): unassimilated borrowing.
- Foreignism (in German: *Fremdwort*): foreign word, e.g. phonetic adaptation.
- Loanword (in German: *Lehnwort*): totally assimilated borrowing, e.g. morphemic adaptation.

Phono-semantic matches, semanticized phonetic matches and phonetic matches

The following are examples of simultaneous external and internal lexical expansion using target language lexical items as the basic material for the neologization but still resembling the sound of the lexical item in the source language:

- Phono-semantic matching (PSM): the target language material is originally similar to the source language lexical item both phonetically and semantically.
- Semanticized phonetic matching (SPM): the target language material is originally similar to the source language lexical item phonetically, and only in a loose way semantically.
- Phonetic matching (PM): the target language material is originally similar to the source language lexical item phonetically but not semantically.

Role of morphology

Another mechanism involves generative devices that combine morphemes according to a language's rules. For example, the suffix "-able" is usually only added to transitive verbs, as in "readable" but not "cryable".

Compounding

A compound word is a lexeme composed of several established lexemes, whose semantics is not the sum of that of their constituents. They can be interpreted through analogy, common sense and, most commonly, context. Compound words can have simple or complex morphological structures. Usually only the head requires inflection for agreement. Compounding may result in lexemes of unwieldy proportion. This is compensated by mechanisms that reduce the length of words. A similar phenomenon has been recently shown to feature in social media also where hashtags compound to form longer-sized hashtags that are at times more popular than the individual constituent hashtags forming the compound. Compounding is the most common of word formation strategies cross-linguistically.

Diachronic mechanisms

Comparative historical linguistics studies the evolutions languages and takes a diachronic view of the lexicon. The evolution of lexicons in different languages occurs through parallel mechanism. Over time historical forces work to shape

the lexicon, making it simpler to acquire and often creating an illusion of great regularity in language.

- Phonological assimilation, the modification of loanwords to fit a new language's sound structure more effectively. If, however, a loanword sounds too "foreign", inflection or derivation rules may not be able to transform it.
- Analogy, where new words undergo inflection and derivation analogous to that of words with a similar sound structure.
- Emphasis, the modification of words' stress or accenting.
- Metaphor, a form of semantic extension.

Second-language lexicon

The term "lexicon" is generally used in the context of single language. Therefore, multi-lingual speakers are generally thought to have multiple lexicons. Speakers of language variants (Brazilian Portuguese and European Portuguese, for example) may be considered to possess a single lexicon. Thus a *cash dispenser* (British English) as well as an automatic teller machine or ATM in American English would be understood by both American and British speakers, despite each group using different dialects.

When linguists study a lexicon, they consider such things as what constitutes a word; the word/concept relationship; lexical access and lexical access failure; how a word's phonology, syntax, and meaning intersect; the morphology-word

relationship; vocabulary structure within a given language; language use (pragmatics); language acquisition; the history and evolution of words (etymology); and the relationships between words, often studied within philosophy of language.

Various models of how lexicons are organized and how words are retrieved have been proposed in psycholinguistics, neurolinguistics and computational linguistics.

Mumpsimus

A **mumpsimus** (/ˈmʌmpsɪməs/) is a "traditional custom obstinately adhered to however unreasonable it may be", or "someone who obstinately clings to an error, bad habit or prejudice, even after the foible has been exposed and the person humiliated; also, any error, bad habit, or prejudice clung to in this fashion".Thus it may describe behaviour or the person who behaves thus. For example, *all intensive purposes* is a common eggcorn of the fixed expression*all intents and purposes*; if a person continues to say the eggcorn even after being made aware of the correct form, either the speaker or the phrase may be called a mumpsimus.

Origin

The term originates from an apocryphal story about a poorly educated Catholic priest saying Latin mass who, in reciting the postcommunion prayer *Quod ore sumpsimus, Domine* (meaning:

'What we have received in the mouth, Lord'), instead of *sumpsimus* (meaning: "we have received") substitutes the non-word *mumpsimus*, presumably as a mondegreen. After being made aware of his mistake, he nevertheless persisted with his erroneous version, whether from stubbornness, force of habit, or refusing to believe he was mistaken.

The story was told by Desiderius Erasmus (1466–1536) in a letter he wrote in August 1516 to Henry Bullock. Erasmus used it as an analogy with those who refused to accept that *NovumInstrumentumomne*, his edition of the Greek New Testament, corrected errors in the Latin Vulgate. The English diplomat Richard Pace (1482–1536) included a variant in his 1517 work *De Fructu qui ex Doctrina Percipitur*, where the priest was English and had been saying *mumpsimus* for thirty years when corrected. While Pace's book (written in Latin) is credited by the first edition of the *Oxford English Dictionary* as the origin of *mumpsimus*, Pace acknowledged his borrowing in a 1517 letter to Erasmus. "Mumpsimus and sumpsimus" became proverbial among Protestants in the early English Reformation.

Usage

Mumpsimus soon entered the language as a cant word widely used by 16th-century writers. In William Tyndale's 1530 book *Practice of Prelates*, the word was used in the sense of a stubborn opponent to Tyndale's views. He said that the men whom Cardinal Wolsey had asked to find reasons why Catherine of Aragon was not truly the wife of King Henry VIII of England were "all lawyers, and other doctors, mumpsimuses of

divinity". Sir Thomas Elyot in 1531 in *The Book of the Governor* explains why he uses the term *good courage* instead of *magnanimity* thus: "this worde Magnanimitiebeinge yet straunge, as late borowed out of the latyne, shall nat content all men, and specially them whome nothing contenteth out of their accustomed Mumpsimus, I will aduenture to put for Magnanimitie a worde more familiar, callynge it good courage".

Henry VIII in his speech at the State Opening of Parliament on Christmas Eve 1545 said:

I see and hear daily, that you of the clergy preach one against another, teach, one contrary to another, inveigh one against another, without charity or discretion. Some be too stiff in their old *mumpsimus*, other be too busy and curious in their new *sumpsimus*. Thus, all men almost be in variety and discord, and few or none do preach, truly and sincerely, the word of God, according as they ought to do.

Peter Heylin refers to the king's saying in his 1631 *The History of St. George of Cappadocia* when he talks of "those self-conceited ones which are so stiffe—as King Harry used to say—in their new sumpsimus..."Hugh Latimer (1487–1555) used the term in two sermons he preached in 1552, saying: "When my neighbour is taught, and knoweth the truth, and will not believe it, but will abide in his old *mumpsimus*..." and again: "Some be so obstinate in their old *mumpsimus*, that they cannot abide the true doctrine of God."

In an 1883 polemic on errors in translations of the Christian Bible, John Burgonsays: "If men prefer *their* 'mumpsimus' to *our* 'sumpsimus', let them by all means have it: but pray let

them keep their rubbish to themselves—and at least leave our SAVIOUR's words alone."

Eugene T. Maleska, 1970s editor of *The New York Times* crossword puzzle, received "dozens of letters" after "mumpsimus" appeared as an answer; he had felt that "it was time to revive the obsolete noun". A. Leslie Derbyshire applied it in a 1981 management science book to managers who know how to do a better job but choose not to.*Garner's Modern English Usage* says the word could describe George W. Bush because of his persistent habit of pronouncing "nuclear" as "nucular", despite the error being widely reported.

National Vocabulary Championship

The **National Vocabulary Championship** (NVC) was the first-ever U.S.-wide vocabulary competition for high school students created by GSN, in association with The Princeton Review. Thirty thousand high school students from across the United States participated in the inaugural year (2006-2007).

The NVC aimed to inspire students to expand their vocabularies and narrow the achievement gap. The program offered free educational resources, created spirited competition through testing and game play, and awarded more than $100,000 annually in college tuition and other prizes.

Fifty finalists nationally received a trip to the NVC Finals, where they competed to win $40,000 toward college tuition in

the form of a 529 plan and to be crowned the National Vocabulary Champion.

The host of the National Vocabulary Championship was GSN host Dylan Lane.

The NVC was discontinued after the 2007-2008 academic and competition year due to changes in GSN policy and administration.

How to Compete

The NVC was open to eligible high school students in the United States between the ages of 13 and 19 years old and in grades 9-12. Home-schooled students were also eligible to compete.

There were two ways to enter the competition:

Eligible students at participating schools in eight local markets could qualify to participate in a *Citywide Championship* for a chance to win $5,000 toward college tuition and other prizes, as well as a trip to the national finals.

Eligible students nationwide could also participate through a *National Qualifying Competition* via on-line and regional exams offered by The Princeton Review for a chance to compete in the NVC Finals.

2007-2008 Citywide Championships

Eight U.S. cities across the country were chosen each year to host Citywide Championship events. Eligible students who wanted to compete in one of the local Citywide Championships had to attend a participating high school, register with the designated NVC coach at their school, and take the NVC in-school qualifying exam. All public and private high schools within these markets and their surrounding areas were invited to participate and encourage their students to compete. Approximately 100 top scorers per market qualified to compete in each Citywide Championship, where one winner received $5,000 toward college tuition and other prizes as well as a trip to the national finals.

Below is a list of cities that the NVC visited in 2007-2008:

- Sacramento: Thursday, November 15 -- **WINNER:** Yvonne Lin (Sophomore)
- Nashville: Tuesday, November 27 -- **WINNER:** Brian Swenson (Junior)
- St. Louis: Thursday, November 29 -- **WINNER:** Rajiv Tarigopula (Sophomore)
- Detroit: Monday, December 3 -- **WINNER:** Steven Banks (Senior)
- Northeast Ohio: Thursday, December 6 -- **WINNER:** Joel Fichter (Senior)
- New York: Monday, December 10 -- **WINNER:** Rebecca Maxfield (Junior)

- Pittsburgh: Monday, January 14 -- **WINNER:** John Oxenreiter (Senior)
- Philadelphia: Thursday, January 17 -- **WINNER:** Lauren Bezjak (Junior)

National Qualifying Competition

Eligible high school students who did not attend a participating school (listed under Citywide Championship) or who did not wish to take the in-school qualifying exam could compete in the National Qualifying Competition by following the below steps: 1) The NVC offered an online national qualifying exam during November 2007 at winwithwords.com. For months leading up to the online exam, study tools and study modules were available at winwithwords.com Or: 2) Top-scoring students on the online national qualifying exam had an opportunity to advance to the regional exams, which took place at designated The Princeton Review locations across the country. Forty-two top scorers from the National Qualifying Competition joined the eight citywide champions at the national finals.

OntoLex

OntoLex is the short name of a vocabulary for lexical resources in the web of data (OntoLex-Lemon) and the short name of the W3C community group that created it (W3C Ontology-Lexica Community Group).

OntoLex-Lemon vocabulary

The OntoLex-Lemon vocabulary represents a vocabulary for publishing lexical data as a knowledge graph, in an RDF format and/or as Linguistic Linked Open Data. Since its publication as a W3C Community report in 2016, it serves as ``a de facto standard to represent ontology-lexica on the Web´´.OntoLex-Lemon is a revision of the Lemon vocabulary originally proposed by McCrae et al. (2011).

The core elements of OntoLex-Lemon.

- lexical entry: unit of analysis of the lexicon, groups together one or more forms and one or more senses, resp. concepts. Can provide additional morphosyntactic information, e.g., one part of speech. Note that every lexical entry can have at most one part of speech, for representing groups of lexical entries with identical forms but different parts of speech, see the lexicography module.
- lexical form: surface form of a particular lexical entry, e.g., its written representation
- lexical sense: word sense of a particular lexical entry. Note that aOntoLex-Lemon senses are *lexicalized*, i.e., they belong to exactly one lexical entry. For elements of meaning that can be expressed by different lexemes, use lexical concept.
- lexical concept: elements of meaning with different lexicalizations. A typical example are WordNet synsets, where multiple synonymous words are grouped together in a single set.

Aside from the core module (namespace http://www.w3.org/ns/lemon/ontolex#), other modules specify designated vocabulary for representing lexicon metadata (namespace http://www.w3.org/ns/lemon/lime#), lexical-semantic relations (e.g., translation and variation, namespace http://www.w3.org/ns/lemon/vartrans#), multi-word expressions (decomposition, namespace http://www.w3.org/ns/lemon/decomp#) and syntactic frames (namespace http://www.w3.org/ns/lemon/synsem#).

The data structures of OntoLex-Lemon are comparable with those of other dictionary formats (see related vocabularies below). The innovative element about OntoLex-Lemon is that it provides such a data model as an RDF vocabulary, as this enables novel use cases that are based on web technologies rather than stand-alone dictionaries (e.g., translation inference, see applications below). For the foreseeable future, OntoLex-Lemon will also remain *unique* in this role, as the (Linguistic) Linked Open Data community strongly encourages to reuse existing vocabularies and as of Dec 2019, OntoLex-Lemon is the only established (i.e., published by W3C or another standardization initiative) vocabulary for its purpose. This is also reflected in recent extensions to the original OntoLex-Lemon specification, where novel modules have been developed to extend the use of OntoLex-Lemon to novel areas of application:

- OntoLex-Lemon Lexicography Module, published as a W3C Community Group Report, extends OntoLex-Lemon with respect to requirements from digital lexicography.

- OntoLex-Lemon Morphology Module, as of Dec 2019 under development, aims to facilitate multilinguality in OntoLex-Lemon, esp., for morphologically rich languages
- OntoLex-Lemon Module for Frequency, Attestation and Corpus Information, as of Dec 2019 under development, aims to facilitate uses of OntoLex-Lemon in computational lexicography and natural language processing
- Updates to LexInfo: LexInfo provides data categories for OntoLex-Lemon data. At the moment (Jan 2020), LexInfo is being updated, version 3.0 will no longer depend on the older Monnet-Lemon vocabulary.

Applications

OntoLex-Lemon is widely used for lexical resources in the context of Linguistic Linked Open Data. Selected applications include

- OASIS Lexicographic Infrastructure Data Model and API (LEXIDMA), a framework for internationally interoperable lexicographic work
- European public multilingual knowledge infrastructure
- LexO, a collaborative web editor used for the creation and management of (multilingual) lexical and terminological resources as linked data resources

- VocBench, a web-based, multilingual, collaborative development platform for managing ontologies, thesauri, lexicons and RDF data
- The Lexicala API by K Dictionaries that provides access to cross-lingual lexical data of 50 languages and 150 language pairs.
- DiTMAO, a lexicographic editor developed for creating the Dictionary of Old Occitan medico-botanical terminology
- a series of Shared Tasks on Translation Inference Across Dictionaries (TIAD-2017, TIAD-2019, TIAD-2020)
- DBnary, RDF edition of 16 language editions of Wiktionary
- PanLex, a large-scale lexical network of about 2,500 dictionaries and more than 500 languages
- Princeton WordNet 3.1, a large-scale, hierarchically and relationally structured lexical resource for English
- Global WordNet Association, a community effort to produce, maintain and interlink multilingual WordNets
- BabelNet, a large-scale multilingual lexical network
- LiLa, a knowledge base of linguistic resources for Latin based on a large lexicon consisting of a collection of citation forms

OntoLex development is regularly addressed in scientific events dedicated to ontologies, linked data or lexicography. Since 2017, a designated workshop series on the OntoLex module is conducted biannually.

Related vocabularies

Related vocabularies that focus on standardizing and publishing lexical resources include DICT (text-based format), the XML Dictionary eXchange Format, TEI-Dict (XML) and the Lexical Markup Framework (abstract model usually serialized in XML; the Lemon vocabulary originally evolved from an RDF serialization of LMF). OntoLex-Lemon differs from these earlier models in being a native Linked Open Data vocabulary that does not (just) formalize structure and semantics of machine-readable dictionaries, but is designed to facilitate information integration between them.

Share of throat

Share of throat is a beverage industry term that refers to the proportion of the world's beverage consumption produced by a single company. The term was originally coined by Coca-Cola as "throat share", in order to measure how much of the world's beverages were theirs, but is now more commonly referred to as *share of throat*.

SkELL

SkELL (abbreviation of *Sketch Engine for Language Learning*) is a free corpus-basedweb tool that allows language learners and teachers find authentic sentences for specific target word(s). For any word or a phrase, SkELL displays a concordance that lists example sentences drawn from a special text corpus

crawled from the World Wide Web, which has been cleaned of spam and includes only high-quality texts covering everyday, standard, formal, and professional language. There are versions of SkELL for English, Russian, German, Italian, Czech and Estonian.

SkELLis based on the commercial Sketch Engine corpus manager and the proprietary GDEX (Good Dictionary Examples) score that it implements.

Features

SkELL can provide three kinds of results for a query:

- Examples: This page displays a concordance created by searching for the specified word or phrase in the reference corpus, taking any derived forms into account.
- Word sketch: This page shows the most frequent collocates for the specified word. It is a simplified version of Sketch Engine's word sketch function.
- Similar words: This page contains visualization of similar (not necessarily just synonymous) words in a word cloud, based on Sketch Engine's distributional thesaurus.

The number of displayed lines in a concordance is limited to 40. However, the frequency of the searched query in the reference corpus is indicated above the concordance as *hits per million*.

Use

It has been suggested that SkELL can be used, for instance:

- to obtain illustrative examples of target features, lexical and grammatical;
- to find authentic sentences for the target word(s);
- to help students understand the meaning and/or usage of a word or phrase;
- to help teachers wanting to use example sentences in a class;
- to discover and explore collocates;
- to create gap-fill exercises;
- to have the students find and investigate examples/collocates;
- to draw sentences to be used for translation exercises;
- to teach various kinds of homonyms and polysemous words;

Data

For each language, SkELL uses a dedicated text corpus, which can also be searched manually in the Sketch Engine using more powerful tools.

For example, the English Corpus for SkELL includes a total of more than 57 million sentences that contain more than one billion words. It is based on the English Wikipedia (a special selection of 130,000 articles), a subset from the English web

corpus enTenTen14, the whole of the British National Corpus, and free news sources. The English collection of Project Gutenbergused to be a part of the corpus as well, but was removed due to its too archaic language.

History

SkELLwas first presented in 2014, when only English was supported. In 2015, support for Russianwas added, and Czech has been supported since 2017.German,Italian and Estonianwere added in 2018.

Lexical changes from Classical Latin to Proto-Romance

As Classical Latin developed into Proto-Romance it gained and lost lexical items for a variety of reasons. Sometimes the new vocabulary came from contact with neighbouring languages, and other times it was coined from native elements. Much of the inherited Latin vocabulary also underwent semantic drift, regularization, or other linguistic changes.

Overview

Irregular nouns and verbs tended to be either regularized or replaced with prexisting regular equivalents, cf. the loss of *esse* 'to eat' in favour of its own regularized compound *comedere* and also the unrelated *manducare*, the latter having

originally meant 'chew'. Similar motives underlie the general replacement of *ferre* 'carry' with *portare* or *loqui* 'speak' with *parabolare* and *fabulare*.

Semantic drift affected numerous words, notable examples of which are *causa* ('subject matter' → 'thing'), *civitas* ('citizenry' → 'city'), *focus* ('hearth' → 'fire'), *mittere* ('send' → 'put'), *necare* ('murder' → 'drown'), *pacare* ('placate' → 'pay'), and *totus* ('whole' → 'all, every').

Words that were felt to be too short or phonetically insubstantial were more likely to be replaced, often with their own derivatives, hence *auris* 'ear' and *agnus* 'lamb' were rejected in favour of the diminutives*auricula* and *agnellus*.

A number of verb-forming (or verb-extending) suffixes were popularized, such as *-icare* (based on the adjective ending *-icus*), *-ulare* (based on the diminutive *-ul-*), and *-izare* (a borrowing from Greek).

The majority of borrowed vocabulary came from Greek, particularly in the domains of medicine, cooking, and Christian worship. A lesser fraction came from Gaulish or Germanic.

There was a trend towards forming compound prepositions of the type *ab-ante*, which at first simply combined the sense of their two constitutuents (hence the original sense of *abante* was 'from before'). In time many would develop a generic sense, often simply that of one of their constituents (hence *abante* came to mean 'before', in competition with *ante*). Other examples attested in Late Antiquity are *de-inter*, *de-retro*, *de-foris*, *de-intus*, *de-ab*, and *de-ex*.

Most Classical particles (such as *an, at, autem, donec, enim,* etc.) simply died out in popular speech and hence survive nowhere in Romance.