A Review on the Important Role of Vocabulary Knowledge in Reading Comprehension Performance

eTale 2022

Vocabulary learning is a dominant feature of language acquisition. Students and teachers alike know that many of the reading comprehension breakdowns experienced by students involve word recognition and lexical access. This review is an attempt to broaden knowledge of the relationship between vocabulary and reading comprehension performance.

Authors: Soodeh Hamzehlou Moghadam, Zaidah Zainal, & Mahsa Ghaderpour

Source: Moghadam, S.H., Zainal, Z., & Ghaderpour, M. (2012). A review on the important role of vocabulary knowledge in reading comprehension performance. *Procedia – Social and Behavioral Sciences, 66*, 555-563. DOI: 10.1016/j.sbspro.2012.11.300

Vocabulary learning is a dominant feature of language acquisition. Students and teachers alike know that many of the reading comprehension breakdowns experienced by students involve word recognition and lexical access. This review is an attempt to broaden knowledge of the relationship between vocabulary and reading comprehension performance.

- Language acquisition is an active procedure that requires learners to continually acquire vocabulary from the target language.
- The amount of familiar and unfamiliar vocabulary is one of the most significant elements in discerning a text's degree of complication.
- Ignorance of the differences between second language (L2) and foreign language can result in confusion in the practice of language learning, teaching, and research work.

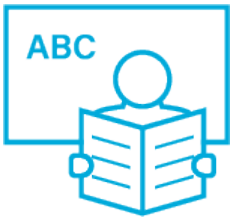
Defining vocabulary knowledge

- Vocabulary knowledge refers to knowledge of the following: the spoken form of a word, the written form of a word, the parts in a word that have meaning, the link between a particular form and a meaning, the concepts a word may possess and the items to which it can refer, the vocabulary that is associated with a word, a word's grammatical functions, a word's collocations, and a word's register and frequency.
- Receptive/passive vocabulary knowledge is the language input that learners receive from others through listening or reading and try to understand it.
- Productive/active vocabulary knowledge is the language output that learners convey as messages to others through speaking or writing.
- Educated native-English speakers know approximately 20,000 word families and each year of their early life they learn (on average) 1,000 word families.
- Knowledge of the most frequent 5000 words should provide sufficient vocabulary to facilitate reading authentic texts.
- Depth of knowledge is a network of links between words; it refers to the way they associate and interact with each other, and may be restricted in use according to register and context.

Significance of vocabulary learning

- Vocabulary appears to be a sound indicator of language ability because learners regularly make use of dictionaries (rather than grammar books).
- A large number of words are required to become competent in a foreign language.

- Vocabulary knowledge breadth and depth correlate quite significantly (approximately .8) and are both capable of explaining a considerable portion (over 50%) of the variance in reading comprehension scores.
- Vocabulary knowledge is fundamental in reading comprehension because it functions in the same way as background knowledge in reading comprehension.



Summary

- Vocabulary knowledge is essential for reading comprehension.
- Both aspects of vocabulary knowledge—depth and breadth—are required.
- Depth of vocabulary, breadth of vocabulary knowledge, and reading comprehension are highly and positively correlated.

RESOLV: Readers' Representation of Reading Contexts and Tasks

eTale 2022

The present study introduces reading as problem SOLVing (RESOLV), a theoretical model to account for readers' construction and management of goals during text comprehension and use. The data supports the view that reading decisions and processes are guided by readers' perceptions and attributions regarding the task statement as well as more implicit cues from the reading context.

Authors: Jean-Francois Rouet, M. Anne Britt, & Amanda M. Durik

Source: Rouet, J.-F., Britt, M.A., & Durik, A.M. (2017) RESOLV: Readers' Representation of Reading Contexts and Tasks, *Educational Psychologist, 52*(3), 200-215, DOI: 10.1080/00461520.2017.1329015

The present study introduces RESOLV, a theoretical model to account for readers' construction and management of goals during text comprehension and use. Using RESOLV, it is assumed that readers construct two types of mental models prior to reading: the context model and the task model. First, the RESOLV model is represented and two core hypotheses are articulated. Then, evidence supporting these hypotheses is presented and discussed. The data supports the view that reading decisions and processes are guided by readers'

perceptions and attributions regarding the task statement as well as more implicit cues from the reading context.

- In contemporary societies, reading serves an increasing range of goals and purposes.
- Effectively selecting and making use of multiple sources of information requires a set of advanced literacy skills that extend beyond word decoding and passage comprehension.
- Skilled reading—particularly applied to multiple sources and functional contexts—involves the ability to decide what to read and how to read it.
- Reading always takes place in a context that motivates readers' engagement with text.
- What readers read and how they read it depends on the reason why they read and the way they intend to use the information.
- When readers read multiple sources, their decisions depend on their initial representation of contextual demands and opportunities, which we refer to as a context model.
- Readers' context models are based on the selection and prioritisation of selected cues from the context, which readers can then turn into a set of initial goals and actions: a task model.

The role of goals and standards in reading

- Readers may independently establish their own reading goals; however, goals often result from the readers' interactions with their physical and social environment.
- Readers' memory for text varies as a function of the perspective they are assigned at the time of reading.
- The purposeful nature of reading is even more apparent in situations involving the use of texts to answer specific questions or prompts.
- Mature readers are able to describe the strategies and actions that match the demands of specific situations,

based on several dimensions and features of the situations.

Standards of coherence theory

- Comprehending a text means constructing a coherent mental representation of the situation described in the text.
- This requires the readers to engage in a complex process of connecting the contents at more and more local levels, and generating the inferences needed to establish and maintain coherence.
- Standards determine whether the reader feels that comprehension is complete or that additional inferential processes are required.
- Competent readers adopt standards that meet the demands of the reading context and task.

The COPES model

- Conditions, operations, products, evaluations, and standards (COPES) are core dimensions of learning tasks.
- The model is a four-phase process model of studying, which includes task definition, goal setting and planning, enacting study tactics and strategies, and metacognitively adapting studying.
- Within the model, it is important to recognise students' perceptions and inferences regarding assigned study tasks.

Defining the RESOLV model

Assumptions

- It is assumed that reading behaviour is adaptive and

serves purposes that the individual deems valuable enough to warrant the investment of significant cognitive resources.

- It is acknowledged that human processing resources are limited, placing constraints on the organisation and sequencing of the reading activity; readers will optimise the amount of text information to be processed and the depth of processing as a function of cost–benefit analysis.
- It is assumed that readers perform 'feeling of knowing evaluations' (FOKE) prior to and during reading.
- Readers evaluate the physical, cognitive, and emotional cost relative to the benefits of reading actions with respect to achieving their goals (the cost–benefit assumption).
- Decisions to use specific reading actions correspond to an activation level and a threshold value.

Overview

- Reading takes places within a physical and social context that sets conditions and resources for reading.
- The model provides specific mechanisms to explain how readers construct a representation of the reading task, including constraints such as time, stakes, and cost–benefit ratio.
- The context includes the request, the requester, the audience, support and obstacles, and readers' assessment of themselves as cognitive and social agents.
- Readers' personal resources include pre-existing context schemata, knowledge of reading tasks and strategies to address them, self-regulation skills, and the skills and knowledge required to decode and comprehend written texts.
- To participate in reading, three types of constructs are necessary: a context model, a task model, and reading processes and outcomes.

- Readers’ initially form a mental model of the physical and social context.
- Based on their context model, the reader builds a task model defined as a representation of the end goal and a set of means that can be used for achieving that goal.
- Reading activity is seen as a sequence of processes, decisions, and actions that are selected through cost–benefit analysis in the service of reader-generated goals.
- Reading results in outcomes that are used to engage in self-regulation mechanisms such as moving along a goal structure, making different decisions or engaging in different actions, redefining the task for one-self, or even reconsidering the context.
- Self-regulation decisions are closely related to readers’ FOKE as well as their cost–benefit analysis and decision thresholds.

Context model

- The context model includes subjective representation of the physical and social situation that precedes and surrounds any reading experience.
- Reading is always motivated by some kind of need.
- Readers’ processing of contextual features always play a part in their engagement with text.
- Readers vary in the type of cues they attend to or focus on in a given reading context, and how they interpret those cues.
- Context models are defined as a type of mental model: representations that people construct about their environment, the objects they interact with, and themselves.
- Construction of a context model is typically achieved through two core processes: feature extraction and recognition and instantiation of a pre-existing schema.

Task model

- The task model includes subjective representation of the goal to be achieved and the means available to achieve it.
- Task model processes involve selecting prominent cues from the context model, interpreting the request, setting and updating goals/plans, and detecting and handling obstacles and impasses.
- Goal setting operates on a subset of contextual cues that have been foregrounded through deliberate or incidental selection.
- Reading goals in turn fuel readers' decisions and actions regarding what to read and how to read it. Understanding of a desirable outcome also informs the calibration of a processing level.
- Task models are not very detailed or elaborated; rather, the initial goal representation gets updated as a function of reading outcomes.

Hypotheses derived from the RESOLV model

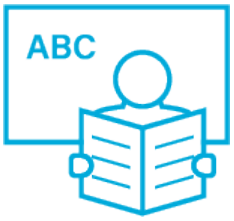
- Readers base their reading decisions on their interpretation of task demands (the task model hypothesis)
- Readers represent contextual cues beyond the task statement itself (the context model hypothesis)

Empirical evidence for the hypotheses

- Experienced readers can make detailed decisions about what to read or to skip in a text as a function of their interpretation of the task demands.
- Students actively control their intake of information as a function of their understanding of the task demands; however, there are substantial individual differences within this.
- Comprehension skill, domain knowledge, and other factors can mediate the relationship between the task and

reading processes.

- Readers' developing awareness of the structure and affordance of texts also impact their task models, as indicated by the strategies they use to address the question.
- The most efficient information searchers spend more time studying a table of contents or an index, rather than searching through content pages.
- Readers make decisions regarding what to read and how to read it based on their reading goals and means available to achieve these goals; that is, their task model.
- There is evidence that students take into account contextual dimensions such as the subject matter and the type of source when establishing monitoring standards for themselves.
- There is initial evidence that readers construct a representation of both explicit and implicit elements of the context and that what they encode about the situation can influence reading actions when holding the specific task instructions constant.



Summary

- Compared to prior frameworks, RESOLV emphasises the role of explicit and implicit contextual cues as well as readers' prior experiences with similar contexts.
- The RESOLV model is based on the assumption that readers form a task model based on their context model; that is, an interpretation of the task instructions and other relevant cues of the reading environment.
- Readers' task models are the result of their

interpretation of contextual demands, which may vary as a function of readers' perceptions of communication partners' authority, likelihood of success, effort, and stakes.

- Within the RESOLV model, reading is considered a sequence of decisions that are made based on the reader's cost–benefit analysis.

A Longitudinal Investigation of the Role of Quantity and Quality of Child-Directed Speech in Vocabulary Development

eTale 2022

This study examined the quantity and quality of caregiver input longitudinally with a sample of 50 parent-child dyads. The aim was to determine which aspects of input for children aged 18, 30, and 42 months contribute most to vocabulary skill throughout early development when measured at ages 30, 42, and 54 months. Results show that additional variation in later vocabulary ability can be explained by controlling for

socioeconomic status, input quantity, and children's previous vocabulary skill, by using a diverse and sophisticated vocabulary with toddlers, and by using decontextualised language (such as narrative) with pre-school-age children.

Author: Meredith L. Rowe

Source: Rowe, M.L. (2012). A longitudinal investigation of the role of quantity and quality of child-directed speech in vocabulary development. *Child Development, 83*(5), 1762-1774. DOI: 10.1111/j.1467-8624.2012.01805.x

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- One of the most powerful predictors of a child's ability to learn to read and succeed in school is vocabulary size at the start of kindergarten.
- Children's vocabulary size and rate of development vary widely. While it is acknowledged that some of this variability is likely due to genetics, environmental factors also play an integral role.
- One important environmental factor that contributes to individual differences in early vocabulary development is the linguistic input to which children are exposed.
- Linguistic input may be quantitative (the amount of talking) or qualitative (specific types of speech or diversity of input).
- It is possible that diversity of vocabulary input plays

a more significant role in vocabulary growth when children get older, and quantity plays a more important role when children are in the earlier stages of vocabulary acquisition.

- The amount of input (quantity) and specific types of input (quality), although strongly related, may be confounded by socioeconomic status (SES).
- Research to date on parental use of sophisticated vocabulary and decontextualised language has shown positive findings in relation to children's vocabulary skill; however, the work is scarce and limited to studies of low-income families and to parents talking to children age 3 years or older.

The study

The goal of the present study was to examine parents' use of sophisticated vocabulary and decontextualised language with their children to determine whether these input quality measures can explain children's subsequent vocabulary skill over and above the quantity of input to which children are exposed.

Research questions:

1. How much variation is there across families in terms of quantity and quality of parental talk to children aged 18, 30, and 42 months, and does this variation relate to SES?
2. Does variation in child vocabulary skill at 30, 42, and 54 months relate to quantity and quality of parent input?
3. Do measures of input quality also explain variation in

later vocabulary skill when controlling for SES, previous vocabulary skill, and quantity of input?

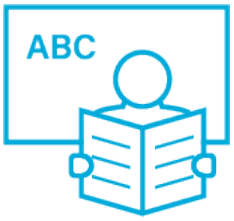
Participants were 50 children and their primary caregivers. One of the primary caregivers is a father and the rest are mothers. The average education level of the primary caregivers is 15.8 years. The home visits used in this study were conducted at 18, 30, 42, and 54 months of age.

Findings

- There was significant variety among parents in terms of the quantity and quality of their child-directed speech.
- The proportion of words used that were rare and the proportion of total utterances that were decontextualised increased over time.
- Primary caregiver education was positively related to both quantity and quality measures; more highly-educated parents used more word tokens and more diverse vocabulary than parents with fewer years of education.
- Education was positively related to rare word use and to decontextualised utterances, and also to children's scores on the Peabody Picture Vocabulary Test (PPVT), a measure of vocabulary comprehension.
- There were positive relations between PPVT scores and both input quantity and vocabulary diversity.
- At 42 and 54 months, PPVT scores were found to relate to vocabulary sophistication at the previous age (30 and 42 months, respectively).
- The number of narrative utterances and explanations were significantly related to PPVT at the final age.
- In addition to prior vocabulary skill and parent

education, the quantity of parent input at 18 months was found to be a positive predictor of child vocabulary at 30 months.

- Children whose parents used a wider range of vocabulary with their child at 30 months demonstrated higher PPVT scores 1 year later, controlling for children's vocabulary knowledge at the time of the interaction, parent education, and amount of parental talk.
- Children whose parents used more decontextualised language with their child at 42 months demonstrated greater vocabulary skills 1 year later, controlling for children's vocabulary skill at the time of the interaction, parent education, and quantity of parental talk. This model explains 79% of the variation in PPVT scores at 54 months.



Summary

- The present study demonstrates that specific measures of input quality relate to child vocabulary skill at different points in development, even when controlling for SES and quantity of input.
- The results are consistent with a developmental scenario in which quantity of input is most important during the 2nd year of life, the diversity or sophistication of the vocabulary in the input is most important during the 3rd year of life, and the use of decontextualised language (such as narrative and explanations in the input) is most beneficial during the 4th year of life.

- It would be helpful for parents to concentrate on the quality of their talk, incorporating a diverse and sophisticated vocabulary with toddlers and engaging their preschool children in conversations about past or future events.

A Systematic Review of the Research on Vocabulary Instruction That Impacts Text Comprehension

eTale 2022

This review led to four major findings, as follows: in almost all cases, teaching of word meanings supported comprehension of text containing the target words; instruction that focused on some active processing was typically more impactful than a definition or a dictionary method for supporting comprehension of text containing target words; there is very limited evidence that direct teaching of word meanings can improve generalised comprehension; and there is currently no empirical evidence that instruction in one or two strategies for identifying word meanings will impact generalised

comprehension.

Authors: Tanya S. Wright & Gina N. Cervetti

Source: Wright, T.S. & Cervetti, G.N. (2016). A systematic review of the research on vocabulary instruction that impacts text comprehension. *Reading Research Quarterly, 52*(2), 203-226. DOI: 10.1002/rrq.163

This study comprised a systematic review of vocabulary interventions with comprehension outcomes. Analyses of 36 studies that met criteria are organised according to type of comprehension measure and type of intervention. The review led to four major findings: in almost all cases, teaching of word meanings supported comprehension of text containing the target words; instruction that focused on some active processing was typically more impactful than a definition or a dictionary method for supporting comprehension of text containing the target words; there is very limited evidence that direct teaching of word meanings can improve generalised comprehension; and there is currently no empirical evidence that instruction in one or two strategies for identifying word meanings will impact generalised comprehension.

- The ultimate goal of all reading-related instruction in schools is to help students comprehend text.
- The size of a person's vocabulary is one of the strongest predictors of their reading comprehension.
- There is evidence that schooling has a limited impact on students' vocabulary development.
- Increased attention to vocabulary instruction in school will improve students' vocabulary knowledge, which will, in turn, improve students' reading comprehension.
- Educational researchers have posited a reciprocal model in which vocabulary knowledge supports comprehension of text and text comprehension supports vocabulary learning.
- Comprehension can be supported by directly teaching a

set of word meanings or by teaching strategies for making sense of unknown words during reading.

Hypotheses about the relationship between vocabulary and comprehension

- The aptitude hypothesis proposes that vocabulary and comprehension are linked by an underlying factor that impacts both outcomes.
- The knowledge hypothesis suggests that vocabulary actually represents knowledge and that knowledge boosts comprehension.
- The instrumentalist hypothesis suggests that knowledge of a word's meaning directly impacts reading comprehension.
- The speed-of-access hypothesis suggests that interventions should involve depth-of-processing of word meanings to increase text comprehension.

The study

This study reviewed research about vocabulary interventions that may impact comprehension.

The goals of this study were:

- To complete a systematic search of the literature to ensure the inclusion of all available peer-reviewed vocabulary intervention studies with passage-level comprehension outcomes.
- To use qualitative coding and analytic strategies to identify patterns in the characteristics of vocabulary interventions that do and do not impact comprehension.

- To use the analysis to make recommendations that could inform future research on vocabulary instruction.

The data

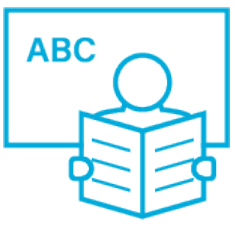
The review consisted of 36 vocabulary intervention studies with passage comprehension as outcomes.

Findings

- A majority of the studies (n = 22) focused on students in Grades 3–5.
- A majority of the studies (n = 25) examined the impact of interventions on comprehension of passages that included the taught target words involving direct teaching of word meanings, and significant effects for at least one condition on the taught-word comprehension measure were found for 21 of these 25 studies.
- In the study by Hawkins et al. (2010), treatment involved having the fourth-grade students pronounce each word and then the teacher read a definition and sentence for each word directly before students read the text; this improved passage comprehension compared with exposure during reading alone.
- Some studies used pre-teaching methods such as providing definitions, use of the word in context, and/or brief discussions about each word.
- Even brief interventions that provide information about word meanings were shown to have a positive impact on comprehension.
- Seven studies compared instructional approaches focused on greater active processing with a definition or

dictionary method. In 5 out of 7 cases, treatment involving more active processing had greater effects on a taught-word comprehension measures administered immediately following the intervention and in some studies, findings in favour of the active-processing groups were maintained at follow-up 4–6 weeks later.

- More attention to active processing has a stronger impact on comprehension of passages containing the taught words compared with more receptive approaches, such as exposure during reading, brief definitions, or a dictionary method.
- Providing students with strategies to support their word learning had added benefits for taught-word comprehension.
- Sixteen studies included measures of generalised comprehension. Only 4 out of 16 studies identified effects for at least one condition on the generalised comprehension measure (that is, taught words were not embedded in the comprehension passage).
- The studies provide little support fort the efficacy of long-term, multifaceted interventions for improving generalised comprehension.
- Two studies provide preliminary evidence that actively teaching students to monitor their understanding of vocabulary and using multipole, flexible strategies for solving word meanings may offer a promising approach to supporting students' comprehension of passages that do not contain pre-taught words.



Implications

- In almost all cases, it was found that teaching word meanings supported comprehension of text containing the target words.
- Instruction that focused on some active processing was typically more impactful than a definition or dictionary method for supporting comprehension of text containing the target words. However, it is not known how much instruction is sufficient, as supported by the speed-of-access hypothesis. However, young students (kindergartners) with less vocabulary knowledge may not yet be ready to benefit from the type of instruction typically provided in multifaceted vocabulary interventions.
- There is very limited evidence that direct teaching of word meanings (even long-term, multifaceted interventions of large numbers of words) can improve generalised comprehension.
- There is currently no empirical evidence that instruction using one or two strategies for solving word meanings will impact generalised comprehension.
- Studies that actively teach students to monitor their understanding of vocabulary and use multiple, flexible strategies for solving word meanings are a promising area for future research.

Book Reading and Vocabulary Development: A Systematic

Review

eTale 2022

This paper presents a review of high-quality empirical studies on book-reading practices in early childhood that have resulted in an increase in child vocabulary. Findings reveal that six strategies are consistently implemented throughout the studies, as follows: reading and re-reading texts, explicitly defining words, encouraging dialogue about book-related vocabulary through questions and discussion, re-telling, using props, and engaging children in post-reading activities.

Authors: Barbara A. Wasik, Annemarie H. Hindman, & Emily K. Snell

Source: Wasik, B.A., Hindman, A.H., & Snell, E.K. (2016). Book reading and vocabulary development: A systematic review. *Early Childhood Research Quarterly, 37*, 39-57. http://dx.doi.org/10.1016/j.ecresq.2016.04.003

This paper presents a review of high-quality empirical studies on book-reading practices in early childhood that have resulted in an increase in child vocabulary. Various aspects of effective book reading are examined. Findings reveal that six strategies are consistently implemented throughout the studies. These are reading and re-reading texts, explicitly defining words, encouraging dialogue about book-related vocabulary through questions and discussion, re-telling, using props, and engaging children in post-reading activities. This

review identifies critical remaining questions about how to optimise vocabulary learning through book reading that require systematic investigation to inform effective practice.

- Book reading is widely recognised as an important activity in the development of children's oral language and vocabulary skills.
- Although many early skills support later reading success, supporting early vocabulary knowledge improves reading in several ways: supporting comprehension of words that children decode, helping children more rapidly recognise words they are decoding, fostering phonological awareness skills that also support reading, and increasing children's understanding of teachers' instruction in reading and other areas.
- Improving early vocabulary is important for all children, but especially those in poverty.
- Active processing (defined as deliberate, attentive mental manipulation of ideas) is necessary if the learner is to understand, remember, and later use and apply new information.

Strategies for word learning

- A clear definition, explanation, or example that helps children understand word meanings should be provided.
- Teachers should provide appropriate opportunities to process words, with multiple exposures to words often being needed to build flexible, enduring mental representations.
- Opportunities should be provided for children to use words as they are processing and encoding them.

Benefits of book reading

- Book-reading represents a particularly potent context for learning words.
- Exposure to new words through book-reading can be

accompanied by parent or teacher explanations, as well as props and materials that further clarify word meanings.
- Books can be re-read and referred to over time.
- Words are generally introduced as part of a story providing a meaningful and motivating context.

The study

In this study, literature about book-reading and vocabulary development is reviewed. Five critical dimensions of the studies were identified: contexts in which the book reading was conducted, selection and nature of the words taught, measurement of word exposure, interventions strategies, and outcome measures and findings.

Research questions:

1. What is the methodological quality and comprehensiveness of the studies?
2. In what contexts are effective book reading studies implemented?
3. What is known about the words taught during these effective studies?
4. What instructional strategies are implemented during reading or extension activities to build vocabulary?
5. What is known about how interventions are applied?
6. What measures are used to assess vocabulary learning and how many words do children learn?

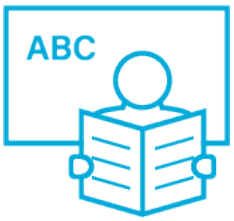
Methods

The review included 31 articles covering 36 studies.

Findings

- The studies were conducted in various settings, including the home, school, and combinations of both.
- In relation to the study context, group size and who read the story varied from being a one-to-one reading to a group reading with parents, teachers, or researchers being involved as readers.
- The number of words targeted during a single reading ranged from 2 to 29 words.
- The total number of words presented during an entire study ranged from 6 to 120.
- The number of times children were exposed to individual target words ranged from 2 to 15.
- Particular target words were selected mainly because they were thought to be unfamiliar to children.
- The length of the treatments varied from 2 sessions over 2 days to 108 sessions over either 7 or 9 months.
- The length of a book-reading session varied from 10 min to 30 min.
- Word learning strategies implemented in the studies varied, as follows: dialogic reading, defining words, questioning as a means of promoting discussion on vocabulary and comprehension of the book, re-telling, re-reading, using props to illustrate word meanings, and providing extension activities that promote exploration and discussion of vocabulary.
- Studies used different types of measures to assess learned vocabulary, such as naming a picture or defining a target word.
- The number of words assessed at post-test ranged from 9 to 55.

- Children in treatment groups learned between 4 and 12 words. Whilst this was not much, it was more than children in the control groups.



Implications

- Adult–child interaction during book-reading is critical for vocabulary learning to occur; word learning was enhanced when adults asked questions and engaged children in discussion about target vocabulary words.
- It is important to note that children still did not learn all the words they were taught; in many instances, they learned less than 25% of the words, regardless of the strategies used by adults, the number of books to which children were exposed, and the duration of the intervention.
- Those children in the intervention groups learned more words than those in the control groups, and when words were learned, knowledge was maintained over several weeks or months.
- The fact that well-conceived approaches to book reading only had modest effects suggests that something is clearly missing in the current understanding of how and why children learn words presented to them in meaningful and repeated contexts.

Getting Serious About Serious Games: Best Practices for Computer Games in Reading Classrooms

eTale 2022

In this article, myths about computer games are debunked and guidelines are presented from which students may derive greater benefits.

Authors: Erin M. McTigue & Per Henning Uppstad

Source: McTigue, E.M. & Uppstad, P.H. (2018). Getting serious about serious games: Best practices for computer games in reading classrooms. *The Reading Teacher, 72*(4), 453-461.

In this article, myths about computer games are debunked and guidelines are presented from which students may derive greater benefits.

- Computer games that support reading acquisition are already present in primary classrooms.
- It is necessary to understand how we can adjust our expectancies and practices to make optimum use of this technology.

Focusing on computer games in the elementary reading classroom

- Computer games have become universal in elementary

classrooms.
- By the early 2000s, 80% of elementary teachers in highly developed countries reported using computers for instructional reading support.
- The way computer programs are implemented makes a significant difference to student learning, with teacher-student interactions being critical.

Computer games for literacy learning

- Computer games are a subset of computer-assisted instruction (CAI).
- Computer games have specific goals, interactive elements, and can be rewarding for the participant.
- For serious games that are played in school, the goal is to learn, rather than purely entertainment.
- Serious games are usually self-contained and supplement the core curriculum through individualised drills, adaptive practice, and assessment.

How teachers implement computer games

- The value of integrating technology lies in how, not whether, it is used.
- Students benefit when teachers make thoughtful decisions about technology.
- Attention to implementation is needed.

The study

The study presents myths about the use of computer games for reading.

Myth 1

Students are always highly motivated to play computer games for reading. Students will be more engaged in literacy tasks with technology than with traditional formats such as pen and paper.

- The novelty of new games often evokes a short-term or situational interest.
- Games were not found to be more motivating than traditional instruction.
- Frequent computer game play in reading has been associated with lower reading interest.

Teachers' supporting motivation for serious games in reading

- Motivation stems from three basic needs: autonomy, competence, and relatedness.
- Teachers should explicitly inform students that although a learning game may be fun, it is a different type of game than those played outside school because the goal is to learn; unless students understand that competency is the goal, playing for fun will be the default aim.
- Teachers can model and encourage students to develop learning goals.
- We recommend that teachers present goals near the playing area and revisit them as a daily ritual before playing to maintain students' focus on learning.
- We recommend two types of peer collaboration: many games can be played with partners sharing one screen, while students benefit from having others witness their success in learning games.

Myth 2

Students are digital natives, which means they can jump right into a game with little instruction. Today's students, born immersed into digital technology, approach technology differently than previous generations.

- Generational status does not ensure technological competence.
- Experience and education are more important than age.

Teachers' support of students' skill in using games for literacy learning

- Teachers should introduce a target literacy concept without technology. Only after students demonstrate some competence should a computer game be introduced for practice and reinforcement.
- It is ideal for teachers to not only demonstrate how to use the game but also help students to connect the game with previous learning.

Myth 3

Computer games are interactive by design. Because games require players to make decisions, playing games should be interactive.

- Student use determines interactivity; games are only interactive when used mindfully.

Teachers' facilitation of students' mastery mind-set when playing computer games

- Modelling how to interact mindfully with serious games is essential for learning.
- The most essential step is coaching students to slow down during play and reflect on their choices.
- Teachers can think aloud when introducing a learning game.

Myth 4

Students readily transfer learning from games to their reading and writing. As teachers, we expect that literacy skills generalise between digital and analogue situations.

- Transfer cannot be assumed. This in one of the greatest challenges for game-based learning.
- Learning with computer games can be inert knowledge, which means students' only have that knowledge within a game context.
- Learning from games can be intuitive, meaning that it can be applied but not verbalised by learners.

Helping learning transfer beyond the game environment

- It is fundamental for teachers to be well informed of exactly what type of learning their students are practicing in a game. Teachers should play the game in student mode to fully understand the types of tasks given.
- Teachers should work to embed serious games into their overall instructional framework, rather than isolating games in a discrete centre or computer lab activity.
- Computer games can be embedded within a 45-minute lesson.

Myth 5

When students play learning games, teachers are freed up to support others. Computer games serve the dual purpose of teaching and classroom management.

- The teacher needs to be actively involved in all steps of the process: modelling, goal setting, tracking, and integrating instruction.

Implementing computer games to support learning and relieve demands on teachers' instructional time

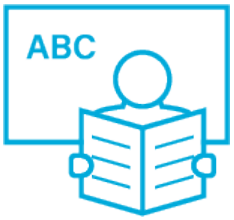
- Although we advocate students experience adult interaction to fully benefit from computer games, that

adult does not need to be the teacher.
- To facilitate students moving their knowledge from intuitive to generative, it is essential that students verbalise their learning. Adults should engage students in discussions about what they are learning in game play and ask insightful questions to help students connect learning to book reading.

Myth 6

Research-based computer games provide individualised instruction for struggling readers.

- Teachers provide instruction and games provide practice opportunities.
- Learning games can provide individualised practice for struggling readers.



Implications

When using serious games in early reading instruction, teachers should gain confidence in their content and pedagogical knowledge, carefully investigating the potential gains from the technology. We encourage teachers to critically analyse the limitations of serious games for reading, and before implementing, decide the extent to which such games are aligned with their pedagogical and content goals.

How to acquire increased benefits from serious games

1. Teachers should tell students explicitly that serious computer games are for learning.

2. Instruction for concepts should always be given before students practice them in a game.
3. Classroom structure should be organised so computer games are integrated with other literacy activities.
4. ‘Think-alouds’ should be used to model how to develop a mastery mind-set when playing games, such as how to slow down and what to do when a mistake is made.
5. Students should set skill-based learning goals before playing games.
6. Teachers should set up a tracking system to monitor students’ progress within games.
7. When students are playing games, questions should be asked to encourage thinking about the decisions they make.
8. Student should be allowed to work with peers when playing literacy games.
9. After game play, students should be encouraged to share one concept that they learned through the game.
10. Volunteers or paraprofessionals could be engaged to provide technical help, ask questions during game play, manage goal-setting, and track progress.

Review of Research on Mobile Language Learning in Authentic Environments

eTale 2022

This study reviewed literature on mobile language learning in authentic environments published from 2007 to 2016. Results showed that there was an increasing trend in publications. Students' perceptions of mobile learning technologies and language proficiency were the most common research topics.

Authors: Rustam Shadiev, Wu-Yuin Hwang, & Yueh-Min Huang

Source: Shadiev, R., Hwang, W.-Y., & Huang, Y.-M. (2017) Review of research on mobile language learning in authentic environments, *Computer Assisted Language Learning, 30*(3-4), 284-303, DOI: 10.1080/09588221.2017.1308383

This study reviewed literature on mobile language learning in authentic environments published from 2007 to 2016. Results showed that there was increasing trend in publications. Students' perceptions of mobile learning technologies and language proficiency were the most common research topics. The most frequently used technologies were smartphones, mobile phones, and personal digital assistants. Learning activities in most studies were conducted in classrooms and specified locations off campus. Authentic learning environments in most studies were familiar to students and learning activities were designed using an instructor-centred approach.

- Given that most people own mobile devices today, learning can be extended beyond a traditional classroom.
- Mobile technologies are reshaping learning and instruction by supporting, expanding, and enhancing course content, learning activities, and student interactions with instructors, peers, and learning content.

- An authentic environment (meaningful learning in contexts that involve real-world problems) is an important prerequisite for effective learning.
- Students are more inclined to learn as they apply new knowledge to solve daily real-life problems that they are likely to encounter frequently (as they occur in familiar, natural contexts).
- Scalability is the ability of language-learning programs to be adapted in a wide variety of contexts, whereas sustainability is the ability of language-learning programs to remain in use. Both are important for any language-learning program.

The study

This study focuses on mobile language learning in authentic environments.

Research questions:

1. What were the trends regarding authentic mobile language learning in related literature from 2007 to 2016?
2. What were research topics in the literature on authentic mobile language learning from 2007 to 2016?
3. What mobile technologies were used in authentic mobile language-learning studies from 2007 to 2016?
4. What methodologies were employed in authentic mobile language-learning studies from 2007 to 2016?

Methods

Research articles were searched using search terms such as mobile, language, learning, authentic, environment, and

multimedia from several databases.

Findings

- An increasing trend of publishing articles on mobile learning in authentic environments was identified for the defined period.
- Most reviewed studies focused on exploring student perceptions of language learning in authentic mobile environments.
- Students had positive perceptions in most studies.
- This review showed that mobile language learning had a positive effect on student language proficiency in most studies.
- The most commonly used technology was smartphones.
- Students learned material in class first and then practiced their language skills outside of school.
- Learning supported by smartphones positively affected language proficiency; students who used smartphones had higher learning motivation and performed better compared to those who used other methods.
- Student using mobile phones outperformed the control group in language proficiency.
- The most common target language in reviewed publications was English as a foreign language (EFL); English is currently the most popular language and EFL learners lack an authentic learning environment in which to learn their target language; mobile technologies offer great potential to overcome this limitation.
- The most common research subject group was university students; one reason for this was they were most likely

to possess their own mobile devices.

- All reviewed studies created authentic learning environments; however, they were created at various locations.
- A student-centred approach will enable real authentic learning environments to be built: students will visit places of interest, actively learn content that is meaningful to them, and solve daily real-life problems; accordingly, they will be able to learn a language by creating their own content.
- Most studies adopted both qualitative and quantitative methodologies; however, not many studies tested their approaches by designing experiments and analysing quantitative data.
- Future studies should assess the EFL proficiency of students who learn with mobile technologies and compare it with students who learn without technology. Future researchers should also collect data based on psycho-physiological measures.
- In terms of scalability, most reviewed studies conducted short-term learning activities with small sample sizes using the instructor-centred approach. With a student-centred approach, students demonstrated greater flexibility to explore locations according to their interests and create their own content.
- Long-term studies are needed with more participants who have greater flexibility to learn in authentic environments.
- A student-centred approach can be useful in terms of sustainability of learning activities supported by mobile technologies.
- It is suggested that a unified online learning platform for authentic learning needs to be created; such a platform will enable any students (or instructors) to enter and create and share content with others from the same (or different) school or to access content created by others.

- Google Maps or other similar services can be used as a learning platform for language learning.
- It is also suggested that learning in authentic environments should not be limited to one particular subject; when students visit authentic learning environments off campus to learn their target language, they may also learn other subjects such as science and practice related skills.

The Role of Selective Attention on Academic Foundations: A Cognitive Neuroscience Perspective

eTale 2022

This article reviews hypothesised links between selective attention and processing across three domains important to early academic skills.

Authors: Courtney Stevens & Daphne Bavelier

Source: Stevens, C. & Bavelier, D. (2012). The role of

selective attention on academic foundations: A cognitive neuroscience perspective. *Developmental Cognitive Neuroscience 2S* (2012), S30-S48.

This article reviews hypothesised links between selective attention and processing across three domains important to early academic skills. First, a brief review of the neural bases of selective attention is presented. Second, the developmental time course of selective attention is examined. Third, the processes of selective attention are related to three domains important to academic foundations: language, literacy, and mathematics. Fourth, the possibility of training selective attention is discussed. Fifth, the application of these principles to educationally-focused attention-training programmes for children are examined.

- Academic achievement is determined by a variety of factors including educational opportunity, socio-economic status, social aptitudes, personality traits, and cognitive skills.
- The ability to focus on the current task and ignore distractions (referred to as selective attention) appears to have reverberating effects on several domains important to academic foundations, including language, literacy, and mathematics.

What is selective attention?

- The term selective attention refers to processes that allow an individual to select and focus on particular input for further processing while simultaneously suppressing irrelevant or distracting information.
- Competing information can occur both externally or internally.

Neural bases of selective attention

How does selective attention modulate information processing?

- According to the Hillyard Principle (for example Hillyard et al., 1987), responses should be compared to the same physical stimuli to assess the effects of selective attention, while holding overall arousal levels and task demands constant so that the only difference is the focus of selective attention.
- Several studies report attentional modulation throughout multiple cortical and even subcortical processing areas.
- Attention alters the selectivity of neurons in the hierarchy of visual areas.

Mechanisms by which selective attention is deployed

- Selective attention is guided and controlled by both bottom-up signals and in a top-down fashion (for example, the intraparietal sulcus, frontal eye fields, and additional regions of the anterior frontal gyrus are important to the endogenous orienting of selective attention).
- While the effects of selective attention are most apparent in the cortical areas associated with the attended stimulus dimension, a fronto-parietal network is used across dimensions to deploy selective attention.

Neural mechanisms that actively manage competition from irrelevant stimuli

- Larger reaction time or differences in accuracy between compatible and incompatible conditions are an index of poorer attentional filtering ability. For example, the anterior cingulate cortex (ACC), thalamus, bilateral frontal regions, and portions of the fusiform gyrus are important. The ACC-frontal network is specifically engaged to manage response conflict.

Development of selective attention

- Many neural structures (including regions of the prefrontal and parietal cortex) demonstrate a protracted period of postnatal structural development lasting into at least the third decade of life. Thus, functional changes in selective attention may occur throughout childhood and adolescence.
- The ability to deploy and control selective attention continues to develop into early adulthood.
- The ability to select from competing stimuli and preferentially process more relevant information are available in very young children; however, the speed and efficiency of these behaviours improve as children develop.
- Selective attention can be recruited (even in young children) if sufficient cues are provided to direct selective attention.
- Individual differences during development exist in the capacity to deploy selective attention and modulate early neural processing. For example, children from low socio-economic backgrounds are poorer in selective attention.
- The ability to dynamically reallocate attention as task demands change and the ability to handle response conflict may be processes that matures more slowly.

Selective attention and academic performance

Language processing

- When processing speech, listeners learn to identify and predict word initial segments and selectively direct attention to those points in time to aid processing.
- Deploying temporal selective attention strategically may allow the listener to select and amplify processing of the portions of the speech signal most critical for comprehension.

- Early enhancement of word-initial processing is a neural mechanism available to young children and thus is a candidate critical mechanism for parsing and processing the continuous speech stream.

Literacy

- Unlike language processing where auditory selective attention is directed to critical points in time, reading requires visual selective attention to be focused spatially.
- Over the course of literacy acquisition, the brain needs to adapt processing systems to support the fast, accurate identification of written symbol strings.
- The left extra-striate cortex, known as the visual word form area (VWFA), is believed to respond preferentially during tasks that involve the automatic conversion of a visual to a linguistic form.
- There are developmental shifts in the lateralisation of the N170 (a component of event-related potential (ERP) that reflects the neural processing of faces, familial objects or words) to words during reading acquisition.
- Selective attention may be critical to the development of the VWFA, perhaps through the role of fronto-parietal attention networks, in shifting the focus of selective attention to different unit sizes (words, letters) during literacy acquisition.
- Deficits in selective attention occur among individuals with reading disorders.

Mathematics

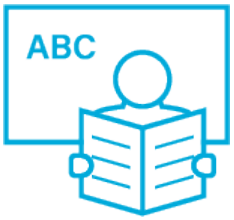
- Working memory skills are particularly important for dealing with word problems. This begins to highlight the interaction between working memory and selective attention.
- It is suggested that there is a link between attention and mathematics word problems skills that is mediated by

the effect of selective attention on working memory.

- Selective attention—and distractor suppression in particular—is important for regulating access to working memory and optimising working memory capacity.
- The links between selective attention and mathematics performance are clearly more speculative than those linking selective attention with language and literacy.

How can selective attention be trained?

- Action game play is related to enhancements in various aspects of attention, including selective attention over space, time, or objects.
- Action gamers more efficiently suppress unattended, potentially distracting information.
- Meditation improves attention in a practice-related manner, with the act of meditation engaging neural systems that support selective attention.
- Meditation experience initially enables greater recruitment of attentional control systems as the attentional task becomes more effortful; however, as expertise develops with extra training, meditation expertise may enable a focused state of attentional control to be achieved automatically.
- After training (six weeks of high-intensity training with a computerised intervention programme designed to improve language skills), children demonstrated greater effects of selective attention on neural processing.
- Children receiving Early Reading Intervention (Simmons et al., 2007, 2003) in addition to the regular kindergarten curriculum demonstrated increased effects of selective attention on neural processing.
- Some interventions designed to improve language skills may also train selective attention.
- Interactive adaptive computer games increased children’s attention and IQ.



Implications

- It is important to separately assess distractor suppression and signal enhancement. These two aspects of selective attention can operate independently, and each may have unique relationships with particular academic skills.
- Some children may need more cues to support their selective attention capability. This may involve limiting distractors or presenting more opportunity for orientation so that a child is prepared to deal with distractions.
- Attention skills can be enhanced and distractor suppression may be especially modifiable.
- In a classroom context, there may be significant benefits in incorporating attention-training activities into the school context.
- To the extent that training and support for selective attention is valued, it may be leveraged as a force-multiplier across domains.

The Development of Academic Coping in Children and Youth:

A Comprehensive Review and Critique

eTale 2022

This review synthesised findings from 66 studies that focus on academic coping among children and youth from 2nd to 12th grade. Process studies suggest several pathways through which coping can contribute to academic success: by promoting persistence, mediating the effects of personal or interpersonal resources, and buffering students' performance from academic risk.

Authors: Ellen A. Skinner & Emily A. Saxton

Source: Skinner, E. A. & Saxton, E. A. (2019). The development of academic coping in children and youth: A comprehensive review and critique. *Developmental Review, 53*,100870, https://doi.org/10.1016/j.dr.2019.100870

This review synthesised findings from 66 studies that focus on academic coping among children and youth from 2nd to 12th grade. Results indicated that multiple approaches to academic coping predict educational performance and functioning, especially motivationally-relevant outcomes. Process studies suggest several pathways through which coping can contribute to academic success: by promoting persistence, mediating the effects of personal or interpersonal resources, and buffering students' performance from academic risk. At every age, adaptive coping was more likely for students who experienced higher levels of personal and interpersonal assets, whereas

maladaptive coping was higher among students with elevated levels of personal vulnerabilities and lower levels of interpersonal supports.

- To fulfil their educational potential, children need to learn how to deal constructively with the challenges and setbacks that they will inevitably encounter in their academic work.
- The notion of a coping repertoire presumes that students can show a range of coping responses over the arc of any stressful episode—from helplessness to comfort-seeking to strategising
- The profile or balance of students' ways of dealing with stressors determines whether their reactions will be adaptive or maladaptive over time.
- Conceptually, research on academic coping is found at the intersection of three large and loosely related fields: coping, education, and developmental science.

Core ways of coping in the academic domain

- *Adaptive*: problem-solving, information seeking, support seeking, self-reliance, accommodation
- *Maladaptive*: escape, helplessness, social isolation, delegation, submission, opposition

The study

The aim of this review was to highlight the importance of research on the development of academic coping. It included 66 investigations that examined academic coping among children and youth. Different ways of academic coping used across

studies were classified into approximately 12 core categories.

Research questions:

1. Does coping play a role in students' academic functioning and success, and does this role differ for children and youth of different ages/in different grades?
2. What strategies do students use to cope with academic stressors, and does this pattern change as children and youth get older/move to higher grades?
3. What kinds of personal factors contribute to adaptive and maladaptive coping, and do these differ for children and youth of different ages/in different grades?
4. What kinds of interpersonal and classroom factors contribute to coping, and do these differ for children and youth of different ages/in different grades?

Findings

Does coping play a role in students' academic functioning and success?

- There were positive links between academic performance (such as grade point average) and one type of adaptive coping (problem solving), and for profiles that combine multiple adaptive families of coping.
- Multiple negative connections with academic performance were found for two maladaptive families of coping; namely, escape and opposition, and for profiles combining several maladaptive families.
- In general, findings indicated that students who utilised coping approaches from several adaptive

families (specifically, problem-solving, support-seeking, self-reliance, and profiles that combined multiple adaptive families) showed higher levels of most markers of positive functioning, including persistence and re-engagement in the face of setbacks, self-regulated learning, feelings of effectiveness in dealing with stress, use of deep processing while learning, and life satisfaction.

- Students utilising adaptive coping also showed lower levels of many indicators of poor functioning, especially giving up, burnout, and psychopathology.
- Taken as a whole, the connections between adaptive coping and academic functioning demonstrated a clear pattern of global age/grade differences: most of the significant correlations were concentrated in studies of children in Grades 3–8 (ages 8–14 years).
- Cumulatively, findings suggested that signs of poor academic functioning were more likely to be found among students who utilised coping from three maladaptive families: escape, social isolation, and opposition, as well as profiles combining multiple maladaptive ways.
- Longitudinal studies found evidence that coping can predict changes in academic performance or functioning over time.
- Initial levels of coping from all of the adaptive families (as well as adaptive profiles) predicted improvements in motivational functioning, feelings of effectiveness, and exam performance over time.
- Findings for maladaptive methods of coping suggested that in general, initial levels of maladaptive coping (as well as maladaptive profiles) predicted decline in motivational functioning and feelings of effectiveness.
- Support was identified for the notion that the effects of coping are exerted on school grades through the impact on students' persistence and whether they give up when they encounter academic difficulties.
- Problem-solving or adaptive profiles of coping were

found to mediate the positive effects of: ongoing engagement, challenge appraisals, positive emotions, classroom structure and peer support, emotion management, and mastery of goal orientations.
- Maladaptive coping was found to be a pathway through which other factors exerted a negative impact on students' performance or potentiated burnout. These factors included high levels of disaffection, negative affect, and avoidance goal orientations, as well as low levels of classroom structure.

What strategies do students use to cope with academic stressors?

- Students typically responded to academic difficulties with adaptive strategies, especially ways of coping from problem-solving families (such as direct action and strategising), support-seeking (such as seeking comfort from parents), and information-seeking (such as going to teachers for help) as well as productive families, such as accommodation (positive reappraisal, commitment) and self-reliance (self-encouragement or positive emotion regulation).
- In general, students were less likely to rely on coping from maladaptive families, but when they did they tended to use escape (especially wishful thinking, but also minimisation and avoidance) or submission (such as self-derogation, self-blame, and rumination). Some methods from other unproductive families were used, such as helplessness, social isolation, delegation, and (most rarely) opposition (blaming others and venting).
- Across the elementary school years of middle childhood, problem-solving was generally high and was shown to increase. During early adolescence, problem-solving then declined. Starting in middle adolescence, problem-solving again began to increase.
- During the elementary and middle school years,

utilisation of support-seeking remained high and relatively stable. Starting in mid-adolescence, support-seeking began to increase and continued increasing to the end of high school.

- Although findings were sometimes scant or inconsistent, evidence was generally found that demonstrated multi-directionality, in that different ways of coping seemed to follow different normative pathways.
- During the elementary school years of middle childhood, most trends indicated a constructive balance of high adaptive and low maladaptive coping, accompanied by some improvements; most notably, increases in problem-solving and decreases in two maladaptive ways of coping—escape and opposition.
- Starting in early adolescence, students' use of adaptive methods of coping (such as problem-solving and accommodation) began to decrease, while maladaptive methods began to increase, especially escape, submission, and opposition.
- By mid-adolescence, these problematic developmental trends ended; most methods of coping plateaued showing stability across high school, and two adaptive ways of coping (problem-solving and support-seeking) again began to improve.

What kind of personal factors contribute to adaptive and maladaptive coping?

- The most consistent correlates of problem-solving were markers of perceived academic competence, including perceived control over stressors, overall academic perceived control, scholastic competence, self-efficacy, and agency for effort and ability.
- Consistent connections with problem-solving were found for markers of motivation, including mastery goals, intrinsic motivation (including preference for challenge and curiosity), and multiple indicators of relative

autonomy and value, including introjected and identified self-regulation.

- Markers of belonging or attachment were correlated positively with problem-solving.
- Support-seeking was higher for students who evinced higher levels of autonomy, aspiration, belonging, engagement, positive affect, and appraisal that combined relatedness, competence, and autonomy; lower levels were found among students who reported more catastrophising appraisals, emotional reactivity, and anxiety/fear.
- Profiles of adaptive coping were also positively correlated with appraisals of controllability, perceived competence, mastery and performance goals, intrinsic motivation, value, self-esteem, and positive emotions. They were negatively correlated with attribution of failure to stable causes and work avoidance goals.
- Escape was utilised more often by students who evinced higher levels of negative emotions, lower levels of academic competence/control or higher external control; escape coping was also found to be more likely for students who showed higher levels of stress, disaffection, catastrophising, and neuroticism, and less likely for relative autonomy, belonging, global self-worth, positive emotion, engagement, and the positive personality characteristics of openness and agreeableness.
- Submission coping was higher for students who reported higher levels of negative emotion and lower levels of self-esteem, belonging, and engagement, and (less consistently) lower academic competence and higher maladaptive control. Relative autonomy was consistently lower for students who relied more on submission coping.
- Opposition coping was more likely to be utilised by students reporting lower levels of perceived control or competence and higher levels of unknown and external control, lower self-esteem, and higher negative emotions. Opposition coping was also related to higher

levels of boredom, catastrophising appraisals, and disaffection, and lower levels of mastery goals, task value, belonging, positive affect, engagement, and (less consistently) relative autonomy. Similar patterns were identified for helplessness, social isolation, and delegation.

- Students with motivational assets (such as higher levels of perceived competence, intrinsic motivation, valuing school, relative autonomy, belongingness, and engagement) were more likely to use adaptive methods of dealing with challenges and setbacks and less likely to rely on maladaptive methods of coping.
- Students with motivational or personality vulnerabilities (such as higher levels of disaffection, threat/harm appraisals, catastrophising, external control, emotional reactivity, or neuroticism) were more likely to rely on maladaptive methods of coping and less likely to cope adaptively.
- Girls used higher levels of support-seeking than boys.

What kinds of interpersonal and classroom factors contribute to coping?

- Problem-solving coping was more likely to be utilised by students who perceived goal structures as more mastery-oriented and who reported more teacher support expressed through more supportive teacher-student relationships, more teacher involvement, structure and autonomy support, and higher levels of classroom structure.
- In terms of parenting, problem-solving coping was higher for students whose parents held more mastery-oriented goals and whose families and parents provided more support for learning and motivation, and where parents were authoritative.
- Support-seeking was more likely to be utilised by students who reported more positive relationships with their teachers, higher levels of classroom structure,

more family support for motivation and learning, peer support for learning, and more general peer support.

- Higher levels of escape were identified for students whose teachers were considered more likely to hinder their motivational need, whose classrooms were organised around ability goals, whose teachers and parents were more focused on performance goals, and whose mothers were more controlling and provided either positive or negative opinion that was conditional on their academic success.
- Lower levels of escape were identified for students who experienced greater structure from their parents and teachers and more support from their peers.
- Students who utilised higher levels of submission coping viewed their teachers and parents as more likely to prioritise performance goals. Moreover, they perceived their teachers to have more behaviours likely to hinder their motivational needs, and their parents as providing less structure and more positive opinions that were conditional on academic success.
- Students who showed higher levels of opposition coping viewed their parents and teachers as more focused on performance goals, and their teachers less focused on mastery goals, more likely to obstruct their motivational needs, and with less warmth.
- Students who relied more on opposition coping viewed their parents as more neglectful and less authoritative.
- In general, studies indicated that students who experienced support in school (via close student-teacher relationships, positive teacher context, high classroom structure, teacher provision of involvement, structure, and autonomy support, or teacher mastery goal orientations) or at home (via positive parenting contexts, parental involvement, structure, autonomy support, authoritative parenting, parental mastery goals, or support for learning) as well as from peers were more likely to use adaptive coping profiles,

especially problem-solving and information-seeking, and to some extent support-seeking.
- They were also less likely to rely on maladaptive profiles of coping, especially escape and opposition, and to some extent, submission.

Summary

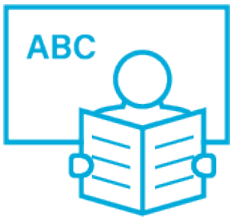
- Students who scored higher on two indicators of adaptive coping (problem-solving and adaptive profiles) that combined multiple constructive methods of coping, were more likely to achieve higher grades and achievement test scores. They were also likely to demonstrate better academic functioning, including higher levels of engagement, interest, feelings of effectiveness in dealing with school-related stress, adjustment to school transition, use of deeper learning strategies, pro-school behaviours, persistence, optimism, well-being, and life satisfaction.
- Students who scored higher on four indicators of maladaptive coping (escape, social isolation, opposition, and maladaptive profiles) were more likely to demonstrate lower academic performance and were more likely to evince poorer academic functioning, including higher levels of disengagement, effort withdrawal, feelings of ineffectiveness, difficulty adapting to school transitions, use of surface learning strategies, giving up in the face of difficulties, school-related burnout, and suspensions from school. (These connections held across grade levels and ages.)
- Students generally responded to stressors with adaptive strategies, primarily from the families of problem-solving, information-seeking (help-seeking), and support-seeking (comfort-seeking), as well as from other productive families such as accommodation (positive

reappraisal) or self-reliance (self-encouragement).

- Students were less likely to rely on coping from maladaptive families; however, when they do they tend to use escape or submission (self-blame), and sometimes helplessness, social isolation, or delegation, and (most rarely) opposition, such as blaming others.
- From ages 7–11 years, children demonstrated high and steady levels of adaptive coping, with some indications of improvement toward the end of elementary school. At the same time, children showed relatively low levels of maladaptive coping, which may decrease even further as students reach the end of childhood.
- Early adolescence (ages 11–14 years) brings disruption in smooth functioning and adaptive coping declines. At the same time, reliance on maladaptive coping increases.
- During middle and late adolescence (ages 15–18 years), both adaptive and maladaptive coping seem to stabilise.
- In general, students cope more productively when they evince higher levels of perceived competence and control, relative autonomy, belonging, self-esteem, engagement, and mastery goals as well as lower levels of catastrophising appraisals, disaffection, and feelings of stress, anxiety, or threat.
- Students cope more adaptively when they see their peers, teachers, and parents as more focused on mastery goals; view their relationships with teachers as positive and with their parents and teachers providing higher levels of motivational and learning supports; experience their parents as authoritarian while providing unconditional positive regard; and their peers providing higher levels of support for learning and general support.
- Compared to boys, girls tend to utilise more support-seeking when they encounter academic difficulties.
- Academic coping has the potential to buffer students' academic outcomes from the otherwise deleterious effects of some stressful life experiences.
- Adaptive coping may provide a motivational advantage

(including increased persistence or coping efficacy) whereas maladaptive coping may act as a motivational liability that contributes to discouragement and withdrawal of effort.

- Students' coping can predict changes in their academic performance and functioning over time; for example, adaptive coping predicts increased persistence and reduced likelihood of giving up.
- The most constructive ways to cope can be found among members of the problem-solving family, most likely because academic stressors are typically controllable and amenable to tactics such as acting directly, strategising, and exerting effort.
- Other adaptive ways of coping (such as information-seeking and self-reliance) are consistent correlates of good academic functioning.
- In terms of maladaptive families, the most consistent connections with poorer functioning are found with the methods of coping utilised least often at every age; namely, those from the 'opposition' family.



Implications

- Middle or late elementary school may represent important developmental windows for interventions to enhance students' personal motivational resources and to prevent the decline in coping for early adolescents over the transition to middle school.
- Researchers and practitioners should examine the 'deep structure' of classroom culture closely to understand how schools typically frame and respond to academic

‘problems’ and ‘failures’ in relation to coping.

- Reconsideration of all aspects of the student experience is advised, including the messages children and youth receive about learning goals, the creation of a sense of common purpose, the nature of the academic work students are assigned, penalties for mistakes and failure, the role of social comparison and competition, whether assignments and exams can be retaken, and how to build the trust and quality of students’ interpersonal relationships with teachers, friends, and classmates.
- A developmental approach to coping suggests that interventions should not aim to shield children and adolescents from academic stressors. Instead, educational and intervention programmes should be designed to carefully expose students to demands and challenges that are developmentally calibrated and individually manageable in nurturing contexts where multiple supports are available.
- Academic stressors can provide opportunities for students to build their ‘coping muscles’, developing a flexible repertoire of effective tools for dealing with problems and setbacks while also learning how to coordinate coping with situational requirements and the support of social partners. This may be especially important for students to learn how to recover and benefit from failures.

I Can Do This! The

Development and Calibration of Children's Expectations for Success and Competence Beliefs

eTale 2022

The present study presents a review of work on the development of children's and adolescents' expectancy and competence beliefs of academic achievement domains across the elementary and secondary school years and how these are calibrated to their performance. Expectancy and competence beliefs for different achievement tasks decline as children move from kindergarten through to 12th grade. With age, children's expectancy beliefs relate more strongly to their performance in achievement-related activities, which impact motivation and self-regulation for exams.

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The present study presents a review of work on the development of children's and adolescents' expectancy and competence

beliefs of academic achievement domains across the elementary and secondary school years and how these are calibrated to their performance. The work reviewed stems from prominent achievement motivation theories: expectancy-value theory, social cognitive theory, self-worth theory, and self-determination theory. Expectancy and competence beliefs for different achievement tasks decline as children move from kindergarten through to 12th grade. With age, children's expectancy beliefs relate more strongly to their performance in achievement-related activities, which impact motivation and self-regulation for exams.

- Constructs of expectancies for success and broader competence beliefs have a long history in the achievement motivation field.

Expectancy-value theory

- Atkinson (1957, 1964) developed this theory to explain different achievement-related behaviours, such as striving for success, choice among achievement tasks, and persistence.
- Individual achievement behaviours are determined by achievement motives, expectancies for success, and incentive values.
- Expectancies for success refers to children's beliefs about how well they will perform on upcoming tasks.
- Beliefs about competence or ability refer to children's evaluations of their competence in different knowledge areas.

Social cognitive theory

- Bandura (1977, 1986, 1997) emphasised human agency and perceptions of efficacy as major determinants of individuals' efforts to achieve.
- Self-efficacy is a multidimensional construct that can

vary in strength, generality, and level of difficulty.

- Outcome expectations are beliefs that certain behaviours will lead to certain outcomes.
- Efficacy expectations are beliefs about ability to perform the behaviours necessary to produce the outcome. These are the major determinants of goal setting, activity choice, willingness to expend effort, and persistence.
- Self-efficacy is determined by previous performance, vicarious learning, verbal encouragement by others, and physiological reactions.

Self-concept and self-worth theories

- Self-concept is defined in terms of competence beliefs.
- Self-worth is defined as an overall sense of value as a person.
- Children who do less well than their peers are most at risk for losing self-worth and can develop strategies such as not trying or procrastinating to protect their sense of competence.

Effectance motivation and self-determination theory

- Effectance motivation (White, 1959) refers to the drive to engage in exploratory and mastery behaviours even when basic bodily needs are fully sated (as demonstrated by species from rats to humans).
- This theory states that the goals are to acquire competence and to influence one’s environment.
- Deci and Ryan’s (1985, 2000, 2016) self-determination theory focuses particularly on the role of autonomy and intrinsic motivation within development.
- Self-determination theory states that intrinsic motivation is only possible when individuals freely choose their own actions.
- Self-determination theory states that competence,

autonomy, and relatedness are fundamental human psychological needs.

Development of expectancy beliefs

- Children aged 2.5–3.5 years start to show self-evaluative, non-verbal expressions following a successful or unsuccessful action.
- Developmental progression occurs between the ages of 5 and 12 years in relation to beliefs about ability, effort, and performance: at ages 5–6 years, effort, ability, and performance are not clearly differentiated in terms of cause and effects; at ages 7–9 years, effort is understood to be the primary cause of performance outcomes; at ages 9–12 years, children begin to differentiate ability and effort as causes of outcomes; however, they do not always apply this distinction. Adolescents clearly differentiate ability and effort and understand the notion of ability as capacity.
- It is likely that children's expectancies become more accurate once they are able to distinguish between effort, ability, and outcome more clearly.
- Children who believe that intelligence can continue to grow through their own efforts will persist on achievement tasks even where they may not be doing well; in contrast, children who believe that a particular ability (such as maths) reflects a stable, unchangeable entity are likely to give up when they start to experience difficulty succeeding at tasks requiring this ability.
- When individuals attribute their failures to stable, internal, and uncontrollable causes, their expectations for future success diminish and their motivation for engaging in the tasks on which they are failing reduces.
- Many young children are quite optimistic about their competencies in different areas, and this optimism changes to greater realism and (sometimes) pessimism for

many children.

How are expectancy-related beliefs related to performance?

- The relationship between children's expectancies and performance strengthen across the school years.
- Students' ability self-concepts and value attributed to maths measured in high school could predict their college major choice.
- Students' expectancies predict future performance even when controlling for previous performance.
- Self-concept and achievement are both mutual causes and effects.
- 'Calibration' is defined as the difference between students' expected and actual performance.
- Students who are well-calibrated have accurate expectations of their performance, and students who are poorly calibrated over- or under-estimate their level of performance; thus, calibration can affect students' motivation, study behaviour, and achievement.
- Personal, environmental, and social factors can influence students' calibration accuracy.
- Higher-performing individuals are often better calibrators than low performers, and task- and item-level calibration accuracy decreases with more difficult tasks.
- Parents, teachers, and peers can influence students' domain- and task-level calibration.
- Students' calibration accuracy has important consequences for their well-being, motivation, self-regulation, effort, and performance.

How do parents influence their children's beliefs?

- Parents can directly communicate their own beliefs to their children through criticism and praise.
- Providing children with process praise (praising effort

and learning) rather than person praise (praising the child's intellectual capacity) leads to higher motivation and perceived competence among children.
- Parents can provide opportunities for their children to become involved in various domain-specific activities, such as playing maths board games or going to science museums.
- The extent to which parents' behaviour is autonomy-supportive (providing some structure but allowing children to explore their environment and make mistakes) versus controlling (exerting external pressure to lead children toward certain behaviours) can influence the development of children's own competence beliefs.

How do teachers influence children's beliefs?

- When children start school, they begin to be evaluated by their teachers in systematic, formal, and normative ways. Partly as a result of this evaluation, they start to engage more systematically in social comparison with peers as way of judging their own abilities.
- Teachers' general expectations for their students' performance and teaching efficacy (confidence in their ability to influence their students through their teaching) predict students' school achievement.
- Teachers who feel they are able to reach even the most difficult students, who believe in their ability to affect students' lives, and who believe that teachers are an important factor in determining developmental outcomes, communicate these positive expectations and beliefs to their students.
- Person-specific expectations may be one of the most direct social influences on students' developing expectancy beliefs.
- Teachers' expectations for individual students are directly related to how well the student has achieved in the past; what is critical is how these perceptions

translate into the teachers' actual behavioural interactions with each of the students.

- During elementary school, students are often grouped by ability within classrooms for instruction in subjects such as reading and maths. In middle school and high school, between-classroom ability grouping or tracking is used more commonly, particularly in certain countries.
- It is believed that learners will be more motivated to learn if the material can be adapted to their current level of competence. The results for students placed in low ability and non-college tracks do not confirm this hypothesis.
- One important concern about ability grouping is to determine the relevant social comparison group for particular students.

How do peers influence children's beliefs?

- Peers have a major impact on children's development of expectancy-related beliefs and motivation more generally.
- As children go through school, they increasingly choose to spend time with other children they perceive as similar to themselves.
- Peer groups can operate as 'normative contexts' that influence how members of the group behave.
- Peer groups have norms for their expectancies for school achievement and effort; such norms were one of the markers that differentiated the groups in this study.

Interventions to foster students' expectancy-related beliefs

- Attribution retraining generally involves changing individuals' failure attribution from a belief that failure is due to a lack of ability to lack of effort. The aim is to improve students' task persistence and

performance.

- Telling children to ‘try harder’ without providing specific strategies designed to improve performance may be unsuccessful if children increase their efforts and still do not succeed. Thus, combining strategy and attribution retraining provides greater success.
- Students’ mindsets can be changed from fixed to growing by emphasising how their brains grow and change through learning. This can lead them to revise their beliefs about intelligence.
- Self-efficacy training generally involves providing students with feedback to enhance their self-efficacy, as well as giving them some skill training so they can master the tasks they undertake.