

# READING MODELS IN L1 AND L2

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## Abstract

*This study describes and compares reading models applied in L1 and L2 research. Bottom-up, cognitive, interactive, connectionist and metacognitive models are outlined. In addition, summaries of some hypotheses used mainly in the second language reading as well as a few similarities and differences between reading in L1 and L2 are given.*

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## 1 Introduction

The majority of the world's population is thought to be able to read in their first language at some basic level [1]. However, we do not know on what level they are able to use their ability. Second language speakers vary from 470 million to more than 1 billion [2], but we do not know how many of them can read in the second or foreign language. Changes in economy and society have made reading a strategic issue all over the world. The ability to process different texts requires readers with developed literacy skills. A lot of researchers have been trying to find better methods to help students learn to how to read more efficiently in a short time.

Besides being a good reader in our mother tongue it is also necessary to be able to communicate in a foreign language not just to get a better job but also to do research, in our own professional field and to get information about the world news. English is the language of science and technology. Due to social and economic reasons multilingualism has become an important objective nowadays, which means that every citizen of the European Union is encouraged to learn two other languages besides his/her mother tongue[3].

As mentioned above research on reading is justified by multiple reasons. The definition of reading has changed a lot and has become quite complex due to the fact that in the last fifty years a number of sciences (linguistics, cognitive psychology, neural science, sociology, pedagogy) have examined it from different points of view. The traditional definitions were mainly data-driven; they searched for the meaning only in the text and did not take any other factors into consideration. Nowadays, the most commonly accepted definition of reading is the one created by Research and Development (RAND) Reading Study Group (RRSG) in 2002 as "the process of simultaneously constructing and extracting meaning through interaction and engagement with print." [4].

The title of the article refers to models. A model is a well known term used both in everyday life and in science as well. We learn certain patterns to tell us what to do or what not to do in certain situations. In science researchers create models to provide a framework within which research problems can be solved. "Model is a systematic and operative way of explaining certain aspects of language to show its structure or function" [5].

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## 2 Bottom-up models

The traditional or “bottom-up” model defines reading comprehension as decoding the information from the printed text, for example, symbols, letters, words, phrases and sentences serially. Nunan points out [6] that the reader is only a passive recipient; comprehension is the essence of the text [7] (Durkin, 1978). This approach focuses on how words are recognised, how long they are kept in working memory, when syntactic processing begins, and so on [8]. The bottom-up model suggests that reading begins with a reader processing the visual information exhibited by the text. She/he recognises the words, phrases, sentences and paragraphs from the visual images of graphemes. The following researchers seem to agree with this approach: Gough, [9], LaBerge & Samuels [10], Rayner and Pollatsek [11] Urquhart and Weir [12].

Pollatsek and Rayner model (1989) belongs to bottom-up models. The authors did research on eye movements during reading. When we read we continually make eye movements called saccades. Between saccades, our eye remains relatively still during fixations for about 200-300ms. The main purpose of saccades is bringing new information into foveal vision, where visual acuity is the highest [13]. Rayner and Pollatsek examined the velocity and duration of eye-movements. They studied what happened during the saccadic suppression. Some research shows that cognitive processes are suspended during the saccades [14].

Orthographic depth hypothesis can be applied to both teaching reading for L1 and L2 readers. It emphasises the importance of connections between orthographies of languages and reading process [15]. They suggest that in shallow orthographies the words are more easily to be identified. Deep orthographies encourage a reader to process printed words by referring to their morphology. For languages with relatively deep orthographies the new readers have difficulty learning to decode the words. As a result children learn to read more slowly. [16]. Orthographic depth indicates the degree to which a written language derivates from grapheme-phoneme correspondence. It depends on how easy or difficult it is to predict the pronunciation of a word based on its spelling. In shallow orthographies, the spelling-sound correspondence is direct; from the rules of pronunciation one is able to pronounce the word correctly. Shallow (transparent) orthographies, also called phonemic orthographies have one-to one relationship between its graphemes and phonemes, and the spelling of words is very consistent, for example, Serbo-Croatian and Italian. In deep (opaque) orthographies, the relationship is less direct, and the reader must learn the arbitrary or unusual pronunciations of irregular words, for example, English and Hebrew [17].

Bottom-up models were criticised because they put too much focus on grammatical and syntactical issues and do not try to integrate other factors into the comprehension process. Therefore, the concept of reading is oversimplified; however, grammatical and lexical elements are important components of the comprehension without which comprehension is impossible [18].

## 3 Cognitive models

Kenneth Goodman developed the top-down model. His model is based on a miscue analysis he started in 1963. He analysed mistakes the students made while they were reading a story aloud which they had never seen before [19]. In the 1970s there were a lot of debates in the USA about how to teach children to read. While bottom-up model places the emphasis on word recognition, lexical and syntactic elements the top-down model focuses on the readers’ interest, background knowledge and reading skill strategies.

Goodman points out “Reading instruction in the last four decades has been word oriented. Basal readers have been built on this word centred view. “Phonics vs. whole word arguments are concerned with the best way to teach words. Miscue research has led us away from a word focus to comprehension focus. As we have looked at reading from a psycholinguistic perspective, we have come to see that the word is not the most significant unit in reading “[20].

The top-down view and interactive model suggest that the reader plays an important part in constructing the meaning to the written text. The reader constantly predicts the meaning of the text. Goodman suggests that the reader developed a level of automaticity recognising the words and sentences and able to predict the meaning of the text after the recognition takes place. Reading

comprehension as characterised by Goodman is a “psycholinguistic guessing game” [21]. Also, he includes an important factor, the reader’s background knowledge.

According to this model a reader moves from one sequence of cycle to another, makes hypotheses about the conceptual meaning of the text and minimises the dependence on visual detail. The model proposes that the circles overlap with each other as the reader constantly tries to predict the meaning of the text [22]. The top-down approach gets a lot of criticism because it does not distinguish appropriately between beginning readers and fluent readers [23].

Psycholinguistically oriented reading research along with the cognitive revolution in psychology established meaning as the core of reading. Comprehension and all literacy learning are grounded in the material motives of human interaction. As a result of this movement the basals changed. Phonics, with other skills, was backgrounded, and literature moved to the centre [24]. The whole language changed the face of reading instruction. “In accepting whole language, we tacitly accepted the premise that skills are better taught in the act of reading and writing genuine texts for authentic purposes than taught directly and explicitly by the teachers” [25].

Neither bottom-up nor top-down model can explain completely how meaning is constructed. Coady extended Goodman’s psycholinguistic model suggesting that it is important to emphasise that the reader’s background knowledge interacts with conceptual abilities and process strategies. By conceptual ability Coady means general intellectual capacity. In addition, he points out the importance of processing strategies which are various subcomponents of reading ability, including general language processing skills (e.g. grapheme-morpho-phoneme correspondences, syllable-morpheme information, syntactic information, lexical meaning and contextual meaning). [26]

#### **4 Interactive models**

The interactive view of reading comprehension involves bottom-up and top-down processing, or interactive process between the reader and the text. Different researchers created interactive models assigning different degrees of importance to the individual to-down or bottom-up components [27]. “Cognitive models and the current psycholinguistic hypotheses suggest that reading comprehension is an interactive process, they all agree on the fact that the reader’s background knowledge plays a very important part in reading comprehension” [28].

Rumelhart builds up his concept in his famous book “Schemata: The building blocks of cognition”, he writes about the importance of background knowledge which is stored in our mind in the form of schemata [29]. The knowledge stored in our schemata is all about concepts, for example about objects, events, sequence of events, situations, actions and sequence of actions. It’s like a private (unarticulated) theory about the nature of events, objects or situations. Schemata is rather knowledge than definition, they activate processes. Carrell & Eisterhold discuss the schema theory in their article [30] and illustrate the discussion of the culturally based and culturally biased background knowledge with sample reading passages which can be used to solve comprehension problems for EFL/ESL students.

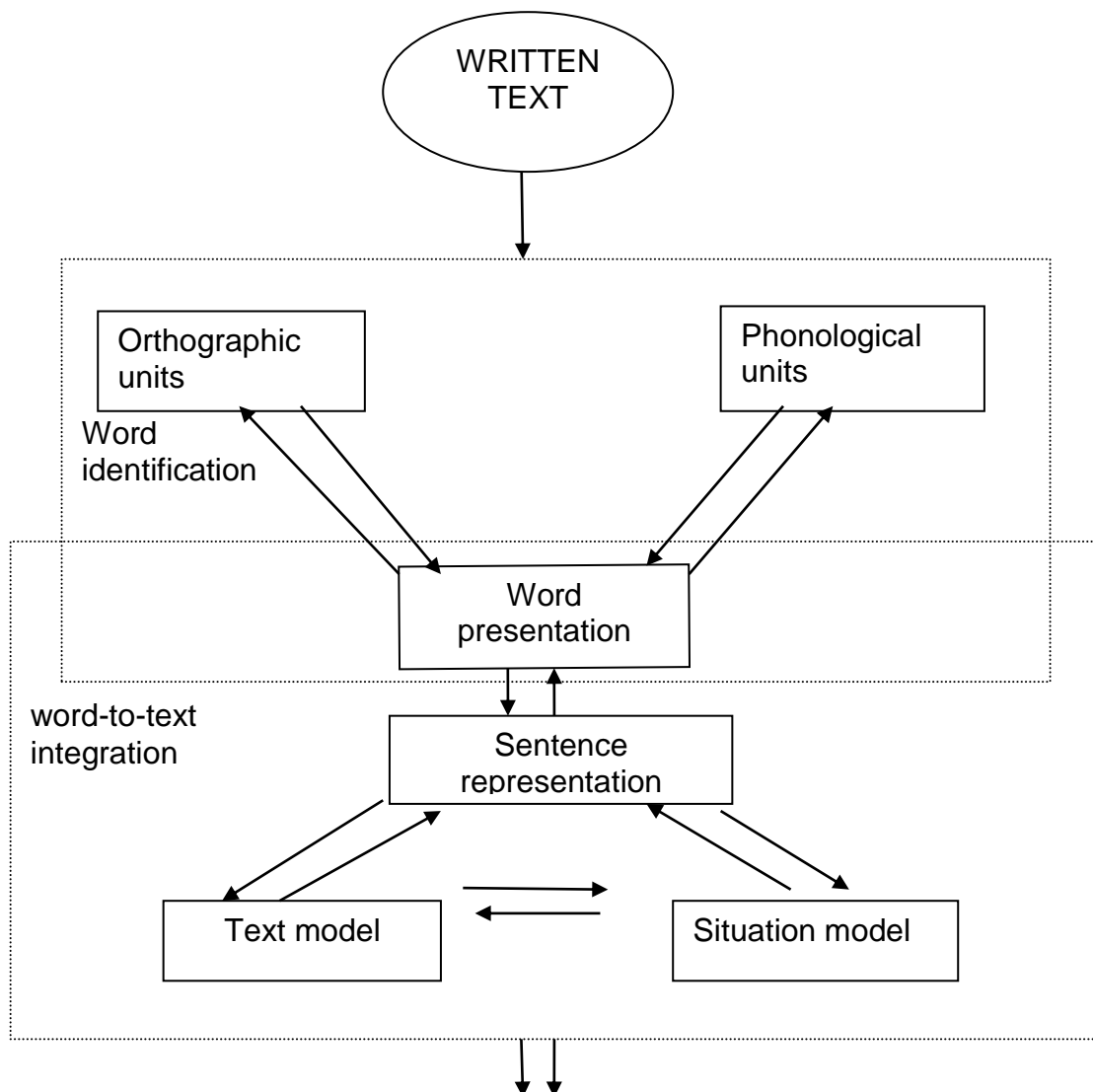
The schema theory suggests that our brain activates the schemata, which fit the situation, first the low level schemata is activated, it is a bottom-up process and it goes from the part to the whole and then the higher level schemata is activated to carry out conceptually driven processing. Identification of the whole is done through identification its parts while identifying the parts will be done by context. Final identification happens after both processes are ended. The process of interpretation is guided by the principle that every input is mapped against some existing schema and that all aspects of that schema must be compatible with the input information (Rumelhart, 1980). If somebody fails to understand the text, it can mean that the person does not have the right schemata or the clues from the text by the author are not sufficient. According to the traditional bottom-up theory failures to comprehend a non-defective communication are always attributed to language-specific deficits-perhaps a word was not in the reader’s vocabulary, a rule of grammar was misapplied and so on [31].

Although the schema theory was formalised by Rumelhart other researchers like Coady had already formulated similar views earlier. Carrell and Eisterhold compare models created by Coady and Rumelhart and point out that the basic concepts of both models originate from Kant.”New information, new concepts, new ideas can have meaning only when they can be related to

something the individual already knows [32]. They all agree on some fundamental ideas of comprehension, for example, a text only provides directions for listeners or readers as to how they should retrieve or construct meaning from their own, previously acquired knowledge.

Another influential interactive model was created by Perfetti who also suggests that understanding a written text includes both bottom-up and top-down processes as well. Therefore interactive models of reading [33] [34] [35] provide the best framework for studying of an individual variation in the development of the reading comprehension [36]. According to his theory comprehending texts involves the flexible use of different sources of information, including the integration of linguistic information with graphic information. When taking an integrated model of text comprehension as a starting point, important questions are how online text processing can be modelled, how it can actually take place, and how children learn to develop text comprehension skills [37].

“The lexical quality hypothesis” [38] developed by Perfetti expresses the basic idea that reading skills among readers is supported by their knowledge of words, including orthography, phonology, morphology and meaning. The identification of words is essential for understanding sentences. Studies on eye movements have revealed that skilled readers fixate on most of the words they read. It seems to indicate that word identification is at the heart of reading comprehension [39]. The reading of the text starts with the identification of individual words, i.e. the processes which convert the visual input into linguistic presentation. The reader must combine the meaning of each sentence and evaluate the information in the text in order to comprehend the text. The reader needs to use his/her prior knowledge so that he could do this evaluation. It is this level of comprehension that reflects the situation. The reader chooses the meaning appropriate to the situation [40], [41].



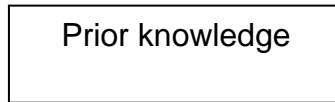


Figure 1. Verhoeven L. and Perfetti C. [42]

## 5 Connectionist models

In the 1960s and 70s scientists analysed normal and disordered behaviour and drew conclusions from the data. “Since the 1980s connectionist computational models have been built. The term “connectionism” refers to a theory that behaviour especially learning can be explained by neural networks. They have been used in the study of reading: how children learn to read, skilled reading, and reading impairment (dyslexia). The models are computer programs that simulate detailed aspects of behaviour [43]. The parallel distributed processing (PDP) variety was developed by Rumelhart, McClelland, and Hilton in 1986 [44]. These models consist of large networks of simple neuron-like processing elements that learn to perform tasks such as reading words or recognising objects. Seidenberg’s model was used to explore a more general theory of how lexical knowledge is acquired and used in performing several communicative tasks (speaking, listening, reading, writing), based on PDP principles [45].

Models help to understand the brain systems that control complex behaviour. The Connectionist dual Process (CDP) model is the leading computational model of reading aloud for English, Italian, and French. It is based on a connectionist dual route architecture first described by Zorzi, Houghton and Butterworth, [46] in which the emergent “division of labour” between lexical and non-lexical processing is grounded in the different computational properties of the neural networks that implement these processes. The direct spelling-to-sound pathway responsible for phonological assembly is the key to the model’s success in explaining a wide range of empirical data from studies on skilled oral reading, learning to read and reading disorders [47].

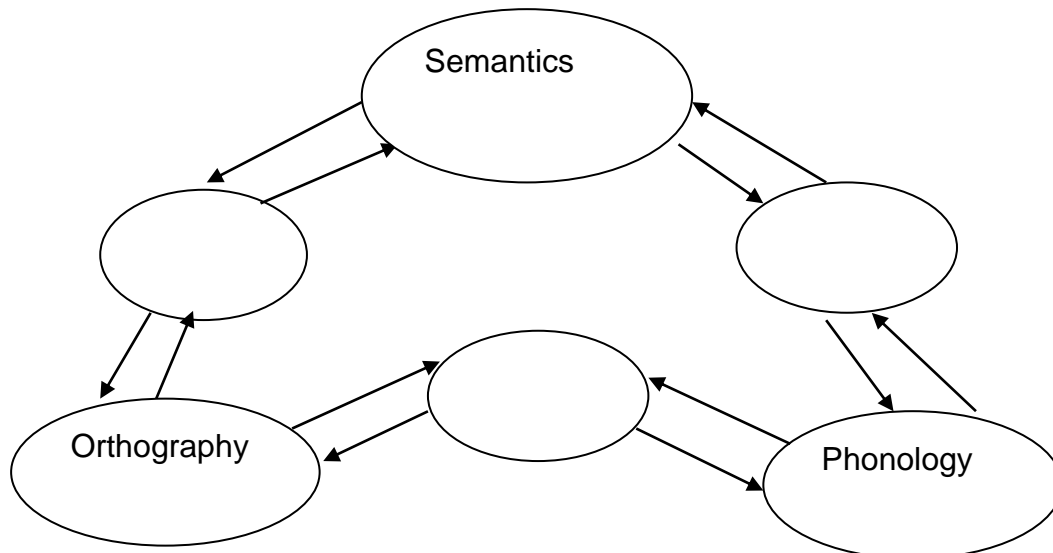


Figure 2. Seidenberg M. S. et. al: Connectionist model of word reading [48]

“Theoretical framework introduced by Seidenberg an McClelland in 1989 that has served as the basis for several implemented models of word reading collectively known as the “triangle model”,

these models differ in details and focus but are based on the same theoretical principles. [49]. Large ovals represent groups (“layers”), of units that encode different types of information: orthography (spelling), phonology (derived from pronunciation and sound) and semantics (meaning). Smaller ovals represent “hidden units,” which increase the computational capacity of the network and provide the basis for abstraction. Most models focused on the orthography and phonology mapping. Harm and Steinberg [50] implemented orthography-semantics and orthography-phonology-semantics components, using variant of this architecture [51].

CDP++ model was invented by Perry, Ziegler, Zorzi, it extends CDP+ model, which can read English mono and bisyllabic English words, including stress assignment. The model has a lexicon of more than 32, 000 words [52]. Connectionist models of reading have been criticised for being too difficult to understand. These models focus on understanding isolated words, thus they complement other type of research on text comprehension” [53].

## 6 Metacognitive models

There have been a lot of changes in educational psychology as a result of the appearance of the cognitive view. Therefore, learning was no longer perceived as the conditioning of behaviour, but also as information processing. “In other words, learning became synonymous with the understanding and application of subject matter through declarative knowledge (i.e., knowing facts, concepts and principles), procedural knowledge (e.g.; knowing how to perform subtraction, multiplication, and division regarding mathematics) and conditional knowledge (e.g.; applying the correct tense in sentences)” [54], [55].

The first advocate of the metcognitive approach was Flavell, who as a young researcher travelled to Paris to study development of children’s memory skills. His study showed that older children were more aware of their memory skills than younger ones. His research led him to develop the concept of metacognition. According to Flavell metacognition is “knowledge and cognition about cognitive phenomena” [56], that is metacognition is the idea of thinking about one’s own thoughts.

He sets up four classes of phenomena: metacognitive knowledge, metacognitive experiences, goals (or tasks) and actions (strategies). “Metacognitive knowledge consists of one’s knowledge or beliefs about the world that “has to do with people as cognitive creatures and with diverse cognitive tasks, goals, actions, and experiences” [57]. Metacognitive knowledge can encourage the individual to get involved in and or leave a particular cognitive enterprise based on its relationship to his/her interests, goals and abilities. In his model metacognitive knowledge is characterised as combination of information around three knowledge variables – person, task and strategies- that will be effective in achieving the goals of the task [58].

The person category of knowledge includes the individual’s knowledge and beliefs about himself as a learner and a thinker, for example, the individual thinks about himself that he can better learn by reading than listening [59]. Goals and tasks are set according to the “person” category. Achievement of a goal draws heavily on metacognitive knowledge and metacognitive experience. Metacognitive strategies are designed to monitor cognitive progress. Metacognitive strategies are processes which control one’s own cognitive activities and ensure that a cognitive goal is reached. A person with good metacognitive skills and awareness uses these processes to oversee his/her own learning process, plan and monitor the ongoing cognitive activities. He also emphasises that these categories overlap and the individual works with a combinations and interactions of this knowledge. Metacognitive knowledge can be activated consciously or subconsciously [60].

Metacognitive experiences, Flavell (1979) second major conceptual entity, which include personal responses of an individual to his/her, own metacognitive knowledge, goals and strategies. These experiences can provide internal feedback about current cognitive enterprise, future expectations of progress or completion, and the degree of comprehension, for example, if the reader starts feeling anxious about not being able to understand something in the text that feeling can be a metacognitive experience [61].

Metacognitive knowledge can lead to a wide variety of metacognitive experiences, which Flavell describes as conscious cognitive or affective experiences that accompany and refer to

intellectual enterprises. Metacognitive experience can also be a “stream of consciousness” process in which other information, memories or earlier experiences may be recalled as resources in the process of solving a cognitive problem. Success, failure, frustration or satisfaction may determine his interest or willingness to pursue similar tasks in the future. Metacognitive knowledge and experience overlap [62], [63], [64].

Metacognitive research has made a great influence on literacy instruction in the last few decades. Results of current interactive and metacognitive research suggest that reading comprehension consists of different macro- and microprocesses with the background knowledge and as a result the reader constructs a mental picture of the text. Especially, skilled readers can make use of metacognitive strategies to monitor their comprehension [65], [66].

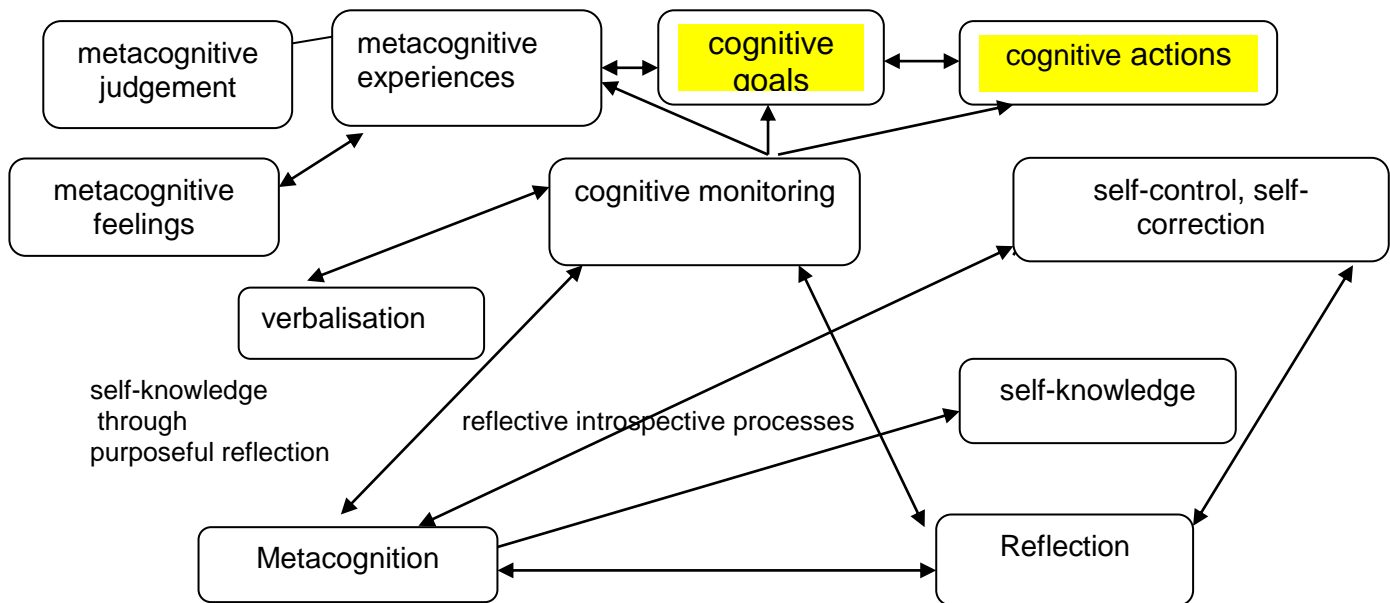


Figure 3. Flavell's model of cognitive monitoring [67]

Griffith P. L., & Ruan J. [68], suggest applying metacognitive strategies to teaching reading. They think that metacognition helps find the right instruction to an individual task. Metacognition involves a higher level of cognitive process; therefore teachers will be more aware of their students' cognitive and basic skill development. Metacognition literacy instruction might help to develop lifelong learners and writers who enjoy reading and writing and use literacy to improve themselves and make their society better.

One of the most significant views on reading comprehension is the one developed by the Research and Development (RAND) in 2002 (RAND) Reading Study Group (RRSG) defined reading as “the process of simultaneously constructing and extracting meaning through interaction and engagement with print.” [69]. It consists of 3 elements: the reader, the text and the activity or purpose of reading. The RRSG created a heuristic to show how these elements interrelate in reading comprehension, and how this relationship functions in a larger sociocultural context that shapes and is shaped by the reader and interacts with each of the elements throughout the process of reading [70]. Research and development program carried out by RAND was initiated due to a fact that American students performed badly compared to students in other countries in international tests. The other factor was an increasing need for high school graduates with high degree of literacy, including the capacity to comprehend complex texts.

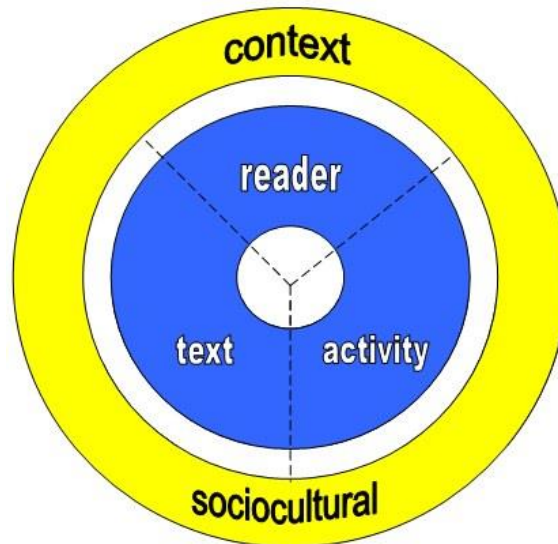


Figure 4. A Heuristic for Thinking about Reading Comprehension [71].

According to the approach represented by RAND processing the text involves decoding the text, higher level linguistic and semantic processing, and self-monitoring for comprehension – all of which depend on the reader’s capabilities as well as on various text features. The reader uses his/her capabilities, motivation, knowledge and experiences to comprehend the text. These attributes vary considerably among readers. Although a lot of research has been done to enhance those attributes instructionally the education still has to do a lot to improve some readers’ limited vocabulary and linguistic knowledge. In addition, it is very difficult for education to find out how to build on those readers’ first-language comprehension skills [72].

The second component in the approach is the text. The study concludes that texts have changed in the last thirty years. Nowadays, readers have to be able to understand a wide range of different text types, which makes it difficult for teachers to select the appropriate text for their students. There are different types of reading such as skimming (getting the gist of the text) or studying. In addition, there are huge differences among texts. There are categories and dimensions, in which they differ, for example their discourse genre, structure, media form, sentence difficulty including vocabulary, syntax and content [73].

RAND suggests there is a number of factors which determine whether somebody becomes a good or a poor reader, for example, fluency in word recognition, oral language ability, along with differences in the reader’s motivation, goals, and purposes. There are sociocultural influences, group differences, inter-individual differences, intra-individual differences. Poor reading can be the result of the following factors: deficit in phonological skills, word recognition is not appropriate, missing vocabulary and linguistic knowledge, syntactic competence, phonological and syntactic and pragmatic awareness [74].

## 7 Reading in a second or foreign language

Reading in L2 shows a lot of similarities to reading in L1. Due to the complexity of the reading process it is difficult to give a simple definition. According to Grabe and Stoller (2011) “Reading is always purposeful not only in the sense that readers read in different ways based on different purposes, but also in the sense that any motivation to read a given text is triggered by



some individual purpose or task. Reading is also a comprehending process and it is also a learning process. Finally, reading is a linguistic process” [75].

A huge number of studies have been trying to analyse whether L1 reading skills have to do with L2 reading skills or there are other factors, for example, L2 language knowledge which has a bigger impact on L2 reading skills. Reading in the first language is important for studying L2 reading abilities because L2 reading involves a dual-language system. Even in the case of advanced level learners of English it is very difficult to exclude L1, especially when there is a difficult and complex concept is to be discussed and a precise definition is crucial [76], [77], [78], [79].

According to Grabe & Stoller mastering reading comprehension in L2 requires complex skills. L2 learner has to have a very wide range of language competencies. Learners must have some experiences in connection with learning to read in L1 and some linguistic knowledge of their L1, and this knowledge can either support the development of their reading skills in L2 or it can become a source of interference. In addition, “L2 learners must broaden their linguistic knowledge at the same time, deal with transfer effects, and learn to use L2-specific resources (e.g. translation, glosses, bilingual dictionaries), among many other factors. If this were not enough, the L2 reader learns in the L2 with a two-language processing system. The development of L1 reading also takes a considerable amount of time. Seldom are L2 learners given as much time to develop strong reading abilities, despite similarly demanding expectations for success [80].

Grabe & Stoller define two important terms: skill and strategies. “For us, skills represent linguistic processing abilities that are relatively automatic in their use and their combinations (e.g. word recognition, syntactic processing). Grabe does not agree with the statement that strategies are sets of abilities under conscious control of the reader. He suggests that the distinction between skills and strategies is not entirely clear because of the very nature of reading. The term reading processes refers to the cognitive activity involving skills, strategies, attentional resources, and their integration. The term abilities is used as a general term that covers comprehension skills, strategies and knowledge resources available to the reader” [81].

Learning a second/foreign language has become very important mostly for economic and societal reasons, therefore researchers started to examine the methods to make second or foreign language teaching more effective. Researchers could not find out the reason why some majority children who study in bilingual programs develop excellent reading and cognitive skills in both languages L1 and L2 while minority children, for example, Mexican children develop poor academic skills in both languages. The phenomenon is called semilingualism [82].

First, Cummins J, (1979) developed his famous hypotheses about connections between reading abilities and language knowledge in L1 and L2. He wrote about his research on teaching reading to bilingual children. He suggests that bilingualism can be achieved only on the basis of developed first language skills. “Linguistic threshold” hypothesis proposes that there may be threshold levels of linguistic competence that bilingual children must attain in both languages in order to avoid cognitive disadvantages and to allow the potentially beneficial aspects of bilingualism to influence their cognitive and academic functioning [83]. The hypothesis argues that students must have a sufficient amount of L2 knowledge to make effective use of skills and strategies that are part of their L1 reading comprehension abilities. In addition, “the language knowledge is more important than L1 reading abilities up to such point at which the learner has enough L2 knowledge to read reasonably fluently” [84]. The language threshold theory is generally accepted because it is thought that it is strongly supported by recent L2 research [85].

Cummin’s other famous hypothesis is called (1979) [86]. The Developmental Independence Hypothesis, which maintains that experience with either L1 or L2 can promote the development controlling both languages. According to Cummins “the development of competence in a second language (L2) partially functions of the type of competence already developed in L1 at the time when intensive exposure to L2 begins” [87]. The hypothesis suggests that literacy skills can transfer, given sufficient motivation and exposure to the L2 [88].

Researchers have been trying to find out how L1 reading skills contribute to L2 reading skills. Bernard’s model predicted that 50% of second language (L2) reading scores are attributed to second language knowledge and first language (L1) reading ability. In this model, these two factors

compensate for deficiencies in each other. Levi McNeil (2012) [89] accepts this model, but suggests the necessity to extend the model. The proposed model predicts the shifting contributions of L2 language knowledge, L1 reading ability, strategic knowledge, and background knowledge to L2 reading. In the original compensatory model Bernard [90] predicted the contribution of L1 reading ability increases over time. However, McNeil states "that studies reporting data from participants with higher levels of L2 proficiency suggest that L1 reading ability is a stronger predictor of L2 reading than L2 language knowledge for this population" [91].

The Language Threshold Hypothesis can also be extended by the larger issue of transfer. Transfer refers to the idea that L2 readers will use their L1 knowledge and experiences to help them carry out L2 tasks. The transfer occurs, for example, with phonological knowledge, morphological knowledge, topical knowledge, general background knowledge, problem-solving strategies and inferencing skills [92], [93]. According to Grabe & Stoller the transfer sometimes helps the learner sometimes it does not.

Apart from the definition of reading there is another important similarity between reading in L1 and L2 is that people have several purposes to read and each purpose emphasises different combinations of skills. A simple definition does not reveal the many skills, processes people use for comprehending, for instance, it does not explain how reading is carried out. It is not highlighted how the ability to draw conclusions then interpret the meaning varies with the reader's second language (L2) proficiency. It does not address the social context either [94].

Grabe lists the purposes of reading:

1. Reading to search for simple information,
2. Reading to skim quickly
3. Reading to learn from texts
4. Reading to integrate
5. Reading to write
6. Reading to critique texts
7. Reading for general comprehension [95]

As in reading in the first language the importance of bottom-up processes for reading in L2 is often highlighted by researchers, for example, Bernard (1986) [96]. His constructivist model emphasises prior knowledge, word recognition, phonemic/graphemic and syntactic awareness in L2 [97]. Opinions that L2 readers do not need knowledge of grammar, which occasionally appear in the L2 literature, are wrong. L2 students need some foundation of structural knowledge and text organisation in the L2 for more effective reading comprehension "[98].

Most researchers believe that language knowledge is an indispensable requirement for teaching reading for L2 learners. "The general need to teach vocabulary, grammar and discourse structure in L2 settings from the very beginning acts as a support for early reading development highlights the second difference. L2 readers often develop a greater awareness of the L2 itself as part of their reading resources" [99].

However, there are some linguistic and processing differences between L1 and L2 readers. For instance, learners start earlier to learn to read in their first language than in the second. Therefore students have a significant initial linguistic resource base in their first language when they start learning L2. Nonetheless, many L2 students begin to read simple sentences and passages almost at the same time as they learn the language orally. L1 learners have a huge tacit vocabulary in L1 when they start reading in L2. [100]. There are several other differences which influence reading in L2. These are the following: differing levels of L1 reading abilities, differing motivations for reading in the L2, differing amounts of exposure to L2 reading, differing kinds of texts in L2 contexts, differing language resources for L2 readers. [101].

## 8 Conclusion

The purpose of this study was to give an outline of various models, approaches and hypotheses shaping our views on teaching and learning reading in the first and second/ foreign languages. Starting from the traditional bottom-up models, the most significant top- down, interactive, metacognitive and connectionist models were summarised. These models overlap and the current ones combine the features of different traditional approaches. Almost all current models highlight the importance of phonemic awareness, word recognition, morphological and syntactic processing. According to Freebody & Anderson “The vocabulary instruction is strongly linked to reading comprehension” [102]. Both interactive and metacognitive approaches emphasise the importance of background information and schemata. The study delineates some hypotheses in connection with learning to read in a second or foreign language, for example, The Developmental Independence Hypothesis and The Language Threshold Hypothesis. The Orthographic Depth Hypothesis is applied both in research for reading L1 and L2. Hypotheses and approaches are followed by a brief description of the main similarities and differences between learning to read in L1 and L2. Finally, I would like to finish the study with the RAND’s concept which focuses on the role of the teachers who undertake the difficulty of helping their students develop their reading skills. “We know that teaching is so complex that the current teacher education programs cannot adequately prepare novice teachers to engage in such practice that reflects the existing knowledge base about reading. We know that this situation is particularly difficult for special education, ESL, and bilingual teachers” [103].

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