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A Comparison of Reading Models, Their Application to the Classroom and Their Impact on Comprehension

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Abstract. Reading, an important skill in any language, becomes more difficult in a foreign language. The investigation of expository text comprehension between language groups conducted in 1999 at Vytautas Magnus University and South Carolina University (Škudienė, 1999) showed that the students of both language groups (Lithuanian and English) performed better in literal comprehension tasks. On these grounds, the assumption was made that teachers emphasize a bottom-up rather than a top-down model of reading. The aim of the research was to investigate whether a top-down or a bottom-up model of reading is emphasized during pre-, while-, and post- reading activities at the intermediate level of the English language instruction. The results of the research exhibited that most of the pre-reading and while-reading activities used in reading instruction are based on top-down models while post-reading instruction is interactive with more emphasis on bottom-up models.

Introduction

"A reading model is theory of what is going on in the reader's eyes and mind during reading and comprehending (or miscomprehending) a text" (Davies, 1995:59). Models of the reading process try to explain and predict reading behaviour. They are the bases on which reading instructions are built. The proposed study focuses on the analysis of two main models of reading: bottom-up and top-down.

Traditionally, comprehension has been viewed as a reader's capacity to replicate a text (e.g. in summaries of facts, translations, or matching exercises). However, in recent years considerable research effort has focused on a conceptual model. According to Beaugrande, what readers comprehend is not sentences but conceptual content (Swaffar, 1991:39). A bottom-up model, which focuses on linguistic clues, builds literal comprehension of a text and a top-down model, which emphasizes the importance of background knowledge, builds global comprehension (Carrell, 1988; Swaffar, 1991).

Top-down models of reading can hardly be used at elementary levels of language instruction because, as Carrell and Coady argue, "knowledge of a minimum of 5000 words is essential to make top-down processing possible" (Swaffar, 1991:44). In contrast, bottom-up models are not useful at the advanced levels because students are able to decode graphical input automatically. Reading instruction at the intermediate level is more complex because both models are to be applied.

The aim of the research was to investigate whether a top-down or a bottom-up model of reading is emphasized during pre-, while-, and post-reading activities at intermediate level of the English language instruction (Figure 1).

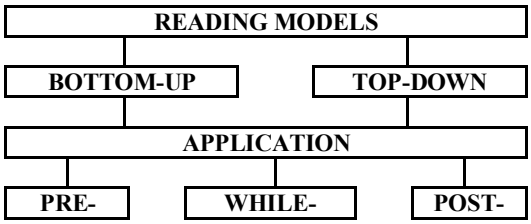

Figure 1. The research design

The results of the previous research (Škudienė, 1999) showed that the students performed better literal comprehension tasks. Therefore, an assumption was made that teachers emphasize bottom-up rather than top-down models of reading.

Method

Instrumentation

In order to obtain the necessary data on reading models applied by teachers a questionnaire was devised. The structure of the questionnaire was formed by the Fraenkel and Wallen (1993) study. It involved three multiple-choice questions on pre-reading, while-reading and post-reading (see Appendix) activities. The question on pre-reading activities gave 5 possible answers; the question on while-reading activities gave 7 possible answers one of which was divided into 3 possible sub-answers; the question on post-reading activities included 7 answers, one of which had 2 possible sub-answers. There was a supply-type item after each question which gave a respondent an opportunity to add other answers. The activities given in the multiple-choice questions were adapted from the books by Carrell, Devine, and Eskey (1988) "Interactive Approaches to Second Language Reading" and by Aebersold and Field (1997) "From Reader to Reading Teacher". Each activity emphasized either a bottom-up or a top-down process of reading. The pre-reading question was constructed of 2 activities based on a bottom-up approach and 3 activities based on top-down models; the while-reading question involved 5 activities based on bottom-up and 4 activities on top-down models; the post-reading

question included 4 activities based on bottom-up and 4 – on top-down models. The total numbers of both possible bottom-up and top-down answers were equal (418).

Sample

The questionnaire was administered to 38 teachers of an intermediate level of English instruction. The participants were from different schools and universities. None of them had followed courses specifically focused on reading comprehension teaching.

Procedures

The teachers were contacted in Vytautas Magnus University during the conference in May, 2000. They were asked to volunteer in the study by filling out a questionnaire. The questionnaire was anonymous and there were no time limits.

Results

Descriptive statistics were conducted to show: frequency and percentage of total responses to the tasks in terms of two types (*bottom-up* and *top-down*) of reading models. Statistical analysis was executed on an IBM mainframe computer at Vytautas Magnus University using the SPSS package of statistical analysis programs for descriptive statistics.

Pre-reading bottom-up activities

'The possible answers to questions 3 and 5 in the multiple choice-section on pre-reading activities were based on bottom-up models of reading. The results showed that 10 teachers out of 38 use none of these activities. The bottom-up activities were circled 39 times by the remaining 28 teachers. BA3P (bottom-up pre-reading activity) activity was chosen by 20 teachers, BA5P – by 19 teachers. The frequency and percentage of total responses to pre-reading bottom-up activities are presented in Table 1.

Table 1. Frequency and percentage of total responses to pre-reading bottom-up activities

Types of activities	Frequency	Percentage
BA3P	20	51.3
BA5P	19	48.7
Total	39	100

BA3P – Prepare students for linguistic difficulties in the text.
BA5P – Give word-recognition/phrase-identification tasks.

Pre-reading top-down activities

The three possible choices of activities based on top-down models were circled 62 times by ten teachers. TA1P activity is used by 19 teachers, TA2P – by 13 and TA4P – by 30 teachers.

The frequency and percentage of total responses to pre-reading top-down activities are presented in Table 2.

Table 2. Frequency and percentage of total responses to pre-reading top-down activities

Types of activities	Frequency	Percentage
TA1P	19	30.6
TA2P	13	21.0
TA4P	30	48.4
Total	62	100

TA1P – Inform students about the topic of the passage.
TA2P – Give tasks, which invite the comparison between features of the students' culture and the target culture.
TA4P – Invite students' participation.

The data demonstrate that more teachers focus on top-down processes of reading (F=62) which, as it was mentioned above, builds global comprehension of a text rather than a bottom-up process of reading (F=39) which develops literal comprehension of a text.

While-reading bottom-up activities

The second question of the questionnaire was about the activities used during reading a text. BA1W, BA2W, BA6W, BA7AW and BA7CW exercises were based on bottom-up view to reading process. The eight teachers use none of these activities. The total of circled bottom-up activities was 50. Activity BA1W was chosen by 13 teachers, BA2W – by 11, BA6W – by 5, BA7AW – by 9 and BA7CW – by 12 teachers. The frequency and percentage of total responses to while-reading bottom-up activities are presented in Table 3.

Table 3. Frequency and percentage of total responses to while-reading bottom-up activities

Types of activities	Frequency	Percentage
BA1W	13	26.0
BA2W	11	22.0
BA6W	5	10.0
BA7AW	9	18.0
BA7CW	12	24.0
Total	50	100

BA1W – Focus on students' pronunciation, discrimination between sounds, intonation.
BA2W – Go through a text word-for-word concentrating on unknown words.
BA6W – Interrupt the reading process to explain grammatical units.
BA7AW – Translate unknown words.
BA7CW – Ask students to look unknown words up in the dictionary.

While-reading top-down activities

TA3W, TA4W, TA5W and TA7BW exercises were based on top-down models. They were circled 80 times. All of the teachers applied at least one of them to their classroom. Exercise TA3W was marked by 11 teachers, TA4W – by 15, TA5W – by 23 and TA7BW – by 31 teacher. The frequency and percentage of total responses to while-reading top-down activities are presented in Table 4.

Table 4. Frequency and percentage of total responses to while-reading top-down activities

Types of activities	Frequency	Percentage
TA3W	11	13.7
TA4W	15	18.8
TA5W	23	28.7
TA7BW	31	38.8
Total	80	100

TA3W – Require students to transfer information from a continuous text to some kind of grid or matrix.
TA4W – Interrupt the reading process and ask students to predict the following events.

TA5W – Prepare students to skim by asking them to recognize the key sentences of a passage.
TA7BW – Ask students to predict the meaning of an unknown word from the context.

The data show that a top-down model is applied more often (F=80) than a bottom-up (F=50) model while reading a text in English classrooms at the intermediate level of language proficiency.

Post-reading bottom-up activities

The third question in the questionnaire concerned the activities used after reading a text. BA1A, BA3A, BA4A and BA5AA exercises were based on bottom-up theory. They were circled 86 times. All of the teachers used at least one of these activities. Activity BA1A was used by 26 teachers, BA3A – by 9, BA4A – by 22 and BA5AA – by 29 teachers. The frequency and percentage of total responses to post-reading bottom-up activities are presented in Table 5.

Table 5. Frequency and percentage of total responses to post-reading bottom-up activities

Types of activities	Frequency	Percentage
BA1A	26	30.2
BA3A	9	10.5
BA4A	22	25.6
BA5AA	29	33.7
Total	86	100

BA1A – Give fill-in exercises.
BA3A – Give tasks which require students to recognize verb inflections, comparative forms, derivational and other affixes.
BA4A – Ask students to memorize new words and expressions.
BA5AA – Give true/false or multiple-choice exercises in order to enhance comprehension.

Post-reading top-down activities

The use of activities based on top-down models is less frequent. The four possible answers –TA2A, TA5BA, BA6A, and BA7A – were circled 84 times. Each teacher uses at least one of these activities. Activity TA2A was used by 23 teachers, TA5BA – by 29, TA6A – by 26, TA7A – by 6 teachers. The frequency and percentage of total responses to post-reading top-down activities are presented in Table 6.

Table 6. Frequency and percentage of total responses to post-reading top-down activities

Types of activities	Frequency	Percentage
TA2A	23	27.4
TA5BA	29	34.5
TA6A	26	31.0
TA7A	6	7.1
Total	84	100

TA2A – Involve students into role-play.
TA5BA – Conduct a discussion on the topic to enhance students' comprehension.
TA6A – Ask students to write a summary or their own opinion on the topic.
TA7A – Teach students to employ mind-mapping techniques.

The data show that, in contrast to the situation in pre- and while-reading activities, bottom-up theory (F=86) rather than top-down (F=84) theory is more widely applied after reading a text.

The difference is not significant in the number of both kinds of activities applied. Thus, it may be said that reading instruction after reading is almost interactive, i.e. both bottom-up and top-down models are applied alternatively.

On the whole, the teachers' questionnaire shows that more attention in reading instruction is paid to top-down models (F=226) which means that reading is basically taught as an active, predictive process (Table 7).

Table 7. Frequency of total responses to bottom-up and top-down activities

Type of activities	Pre-reading frequency	While-reading frequency	Post-reading frequency	Total
Bottom-up	40	50	86	176
Top-down	62	80	84	226

The results of the questionnaire on the two kinds of reading activities used before, during and after reading the text, and the comparison in their usage were presented. Specifically, the results reveal that in pre-reading and while-reading activities top-down models of reading are used more frequently than bottom-up. However, in post-reading activities bottom-up models are used more frequently than top-down.

Discussion

The study aimed at assessing whether a top-down or a bottom-up model of reading is emphasized during pre-, while-, and post- reading activities at the intermediate level of English language instruction.

Pre-reading activities

As far as the pre-reading activities are concerned, the results showed that teachers emphasize top- down models more often (F=62). Examples of these are: what activates readers' background knowledge on the topic (TA1P, F=19), builds students' cultural background (TA2P, F=13) and encourages students to predict the events of a text to be read (TA4P, F=30). Such kinds of methods motivate students to read for purpose and provide a framework for the kind of information that students will read in the text. It emerged that the most popular pre-reading activity (TA4P, F= 30) was to predict the events of a text.

While-reading activities

With respect to the while-reading activities, top-down procedures are more frequently employed (F=80) than bottom-up (F=50).

Some bottom-up exercises such as: BA1W (F=13) which put emphasis on the letter-to-sound procession through a text, BA2W (F=11) which focus on the smallest units in constructing the meaning of a text and, as mentioned above, destroys students chances to comprehend the main idea of a text, BA7CW (F=12) which deals with the explanation of the grammatical units encountered in the

text or looking up an unknown word in the dictionary thus interrupting the normal reading process that may build comprehension of separate pieces of a text and BA7AW (F=9) which involves the translation of unknown words during the process of reading and makes students rather passive readers, inhibit the global comprehension of a text and discourages students' interpretations of a text.

The overall picture that has emerged is that teachers in many cases rely on a top-down procedure during the reading and use such activities as: TA3W (F=11) which encourage students to use the available clues in the ongoing text and see how meaning accumulates throughout the text; TA4W (F=15) which asks students to predict the contents of the next part of a text and helps them to develop strategies for contextual guessing; TA5W (F=23) which relates to the skimming process as a quick and superficial reading of a text in order to get the gist, and the most popular activity TA7BW (F=31) which asks students to predict the meanings of unknown words from the context and helps them to become more active readers.

Post-reading activities

According to the questionnaire results the post-reading activities almost equally differentiate between the models. However, a little bit more attention is paid to a bottom-up (F=86) than a top-down (F=84) model. Among the most frequently utilized bottom-up exercises are: BA1A (F=26) which deals with fill-in exercises and asks for accurate answers based on mechanical clues and is no guarantee of comprehension or coherent self-expression (Swaffar, 1991:33); BA4A (F=22) which may have a negative impact on comprehension too because when students know that their vocabulary will be tested they are more likely to adopt systematic textual decoding than to resort to extensive guessing; BA5AA (F=29) which fails to teach students to express their relative perceptions because it asks about unconnected facts only. The above mentioned practice helps to concentrate on recognition and recall the so-called lower-order cognitive tasks and draws heavily on retentive capability (Swaffar, 1991:71).

The top-down activities implemented in this mode are: TA2A (F=23) which is the role-play type of training to be used when appropriate background knowledge is to be developed or activated; TA5BA (F=29) which functions to teach students to interpret the text and, most important, give students a chance to benefit from the thoughts and knowledge of their classmates; TA6A (F=26) which involves summary writing and allows students more control over the language as well as build their global comprehension of a particular text**.** TA7A (F=6) which unfortunately is not frequently used, helps students to select the key content from a passage and represent it in some sort of visual display (Carrell, 1988:249).

It was assumed that teachers emphasize a bottom-up rather than a top-down theory because students performed better in literal comprehension tasks in the test made by Škudienė (1999). However, the assumption was rejected: teachers employ more often a top-down (F=226) rather than a bottom-up (F=176) model of reading. Figure 2 shows inconsistency between reading instructions and comprehension.

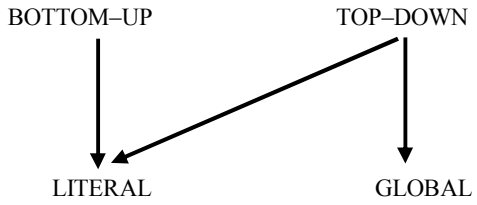

Figure 2. Inconsistency between reading instruction and comprehension

There are several possible explanations for this inconsistency. The first one is that reading instructions emphasizing top-down theory are not sufficiently well-developed and that teachers fail to teach students to use higher-order knowledge in generating the meaning of a text. The students acquired the skills of word recognition at elementary levels, and they are not able to acquire the skills of predicting about meaning at intermediate levels. Thus, it is easier for them to simply recognize the words on the page. When students are not able to engage successfully in an appropriate degree of knowledge-based processing, they overrely on text-based processes and try to construct meaning from the textual input only.

The second explanation is that the students suffer from what Samuels and Kamil (1988) called a "meaning is in the text" belief. It is common to classroom settings where reading is often done for the teacher's purposes, and where reading comprehension is usually tested by question answering for a grade. Students fail to correctly answer questions about texts that require extra-textual knowledge. When Spiro interrogated such students informally, they appeared to be perfectly able to answer the same questions. To the question why they did not utilize the same knowledge to answer after reading, the students responded that they thought they were not supposed to (Carrell and Eisterhold, 1988:79).

Self-report measures show various methodological limitations and the questionnaire employed in the present study is not exempt from these limitations. For instance, the subjective evaluation of how frequently the two models of reading are applied might not correspond to the actual use of both strategies. However, the consistency of the rating patterns that emerged suggests that the instrument managed to identify a common system of reading instruction. Furthermore, no social desirability or compliance effects seem to have occurred, because there is no reason suspect that participants had distorted their spontaneous responses in order to make them match the expectations.

Conclusions

The aim of the research was to investigate whether a top-down or a bottom-up model of reading is emphasized during pre-, while-, and post-reading activities at the intermediate level of the English language instruction. The composed questionnaire filled in by the 38 teachers of different institutions served as the instrument of the research. The research showed that most of the pre-reading

and while-reading activities used in reading instruction are based on top-down models while post-reading instruction is an interactive emphasizing of bottom-up models. Therefore, the conclusion was reached that teachers see reading as active, predictive process which in larger pieces of a text, aids readers' comprehension. The results of the research on the application of the activities were not consistent with the view that top-down models build global comprehension. Consequently, the conclusion was drawn that the application of the activities was not sufficiently well-developed or that students think detailed recall of the information in the text, and not the ability to interpret it, is needed for a good grade. The inconsistency proposes that the effects of reading instruction on comprehension demand further studies as well as the analysis of much more data.

Taking into account the results of the study, three suggestions for classroom applications can be made. First, teachers should be more enthusiastic in involving students' participation in reading comprehension skill development. Second, teachers should be provided with more theoretical information on teaching reading. Third, students need to be encouraged to be more active in the classroom. Finally, teachers should take into account the primary importance of a global comprehension skill at the intermediate level of language instruction and novel competence.

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Vida Škudienė

Skaitymo modelių lyginimas, jų taikymas klasėje ir įtaka supratimui

Santrauka

Straipsnyje pristatoma dviejų pagrindinių skaitymo modelių "apačia-viršus" ir "viršus-apačia" taikymo anglų kalbos vidutinio lygio grupėse analizė. Tyrimo instrumentu buvo pasirinkta anketa, sudaryta remiantis Franenkel ir Wallen (1993), Carrell (1988) ir Aebersold (1997) pateiktais pasiūlymais. Konferencijos, kuri vyko Vytauto Didžiojo universitete 2000 metų gegužės mėnesį metu buvo surinkti duomenys iš 38 atsitiktinai parinktų mokytojų ir dėstytojų iš įvairių Lietuvos mokyklų ir universitetų.

Kaip parodė tyrimo rezultatai, "viršus-apačia" skaitymo modelis yra taikomas dažniau negu "apačia-viršus" kas leido teigti, kad mokymo procese yra labiau akcentuojamas visuminio teksto supratimo gebėjimo lavinimas. Prielaida, kad skaitymo mokymo procese yra labiau akcentuojamas "apačia-viršus" modelis, kuris lavina pažodinį teksto supratimą, nepasitvirtino. Remiantis tyrimo duomenimis buvo padarytos išvados: 1) visuminis skaitymo supratimo gebėjimas nėra pilnai ir išsamiai lavinamas, 2) studentai nesupranta visuminio teksto supratimo reikšmės, 3) mokytojai ir dėstytojai neturi pakankamai informacijos apie visuminio skaitymo supratimo gebėjimo lavinimo svarbą. Siekdami padėti besimokantiesiems įgyti taip reikalingų visuminio skaitymo supratimo žinių, mokytojai ir dėstytojai turėtų lavinti aukštesniojo skaitymo supratimo lygmens gebėjimus, mokyti aukštesniojo skaitymo lygmens strategijų, pvz., kaip reikia atskirti svarbius informacinius vienetus nuo papildomos informacijos vienetų, taip pat mokyti teksto apibendrinimo strategijų.

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