

The Role of Visualization in EFL Learners' Reading Comprehension and Recall of Short Stories

Mohammad Ghazanfari

Sabzevar University of Teacher Education, Iran

ghazanfari62@gmail.com

Abstract

Generally speaking, lexical items that enter our minds through reading a text commonly leave us with pictures, sounds, echoes, and feelings in the mind. While the ability to produce images in the mind in the process of reading appears to be vital for greater comprehension and recall of texts, research has indicated that many poor readers seemingly do not visualize as they read. On the contrary, those readers who do typically visualize achieve greater comprehension and recall (see Tomlinson, 1997). In this study, in line with Wittrock's 'generative learning theory' (e.g., 1992), two fairly homogeneous groups of EFL undergraduates (N=50), after taking a reading comprehension test to ensure that their reading comprehension differences are not significant, were randomly assigned to attend a short-story course in two different sections—one serving as the experimental and the other as the control group, both studying the same short stories, and both being taught by the researcher as their instructor of the course. The experimental group was instructed how to form pictures in the mind—i.e., how to visualize—before reading, while reading, and after reading a short story, for example, by being requested to draw pictures of the characters, scenes, or settings in the story as they perceived them. The control group, however, did not receive any training with respect to imagery production and was not told to practice visualization before, while, or after reading the same texts as the experimental group did. The results of a reading comprehension test on the short stories that had been discussed in both

classes, and also a recall test, administered two weeks later, indicated that the “visualizers” significantly outperformed the “non-visualizers”, i.e., the control group, on both tests.

Keywords: visualization; mental imaging; L2 reading strategies; cognitive reading strategies; comprehension and recall of literary texts

1. Introduction

The traditional view of the four major skills in the field of language teaching and learning used to classify the skills in terms of the degree of the brain involvement, as it was assumed, in the process of performing the skill into two distinct categories: “productive” and “receptive” skills. Reading was categorized in the latter group, of course. However, thanks to the findings by researchers in the field, today such a distinction is no longer regarded to be valid. On the contrary, reading is now considered as an interactive skill, as a process of active and intentional thinking in which meaning is constructed through interactions between the printed page and the reader. Furthermore, the process of meaning construction is strikingly influenced by the reader’s prior experience and knowledge of the world (see, for example, Anderson & Pearson, 1984). The role of the reader in the process of meaning construction out of the text is so crucial that Widdowson (1979) maintains that meaning does not reside in the text, but rather any text has potential for meaning. In other words, it is the reader who takes advantage of that potentiality to construct his/her own meaning out of the text and to attribute certain meanings to the text. Moreover, the more actively the reader gets engaged cognitively in the process of reading, the greater his/her comprehension and retention of the text would be.

The ability to see pictures in the mind, namely, *visualizing*, in the process of reading and recalling of texts has been assumed to be one of the key features of the reading activity in the mother tongue, especially when one is engaged in reading a narrative or descriptive text. The point is that, as Tomlinson (1997)

maintains, such texts seem to have a greater potential for engaging the mind of the typical reader than other types of reading texts. Thus, it appears that, in order to better understand such texts better, readers need to turn their semantic contents into mental pictures—that is, into mental images painted by the readers themselves. However, while it has been generally accepted in the related literature that those L2 learners who are able to produce images in the mind when reading in the L2 achieve far greater comprehension and recall of the reading texts than those who do not, research has indicated that most L2 learners do not typically transfer the ability of mental picturing in reading L1 texts to reading in a second/foreign language, even when they are engaged in reading literary texts (see, e.g., Block, 1986; Tomlinson, 1997, 1998).

1.1. How is visualization viewed?

In the related literature, visualization has been defined as “the process of seeing pictures in the mind” (Tomlinson, 1997, p. 1). The term refers to all types of mental imaging or visual imaging produced in the mind especially while one is busy reading a narrative or descriptive piece of literature. As far as reading is concerned, the product of visualization is an image relevant to the events, scenes, characters, or ideas described in the text. Friedman (1974, as cited in Tomlinson, *ibid.*) defines visualization as “the reproduction in the mind of a sensation produced by a physical perception.”

1.2. Review of related literature

Research indicates that many poor readers do not visualize—do not *see* pictures in their minds—as they read, while those readers who do typically visualize achieve greater comprehension and recall (see, e.g., Tomlinson, 1997). As Hobbs (2001) has pointed out, “to enter actively into the reading process, readers must be able to visualize, making the leap to transform printed symbols to actions, events, and ideas that are clearly visible in the mind’s eye” (p. 46).

Stevick (1986) believes that “words that have come into our heads from reading or listening commonly leave us with pictures, sounds and feelings in our minds.” Similarly, Denis (1982) suggests that the reading of descriptive or narrative texts by many readers “is accompanied by a sequence of visual images that express the semantic content of the text” (p. 540). In a similar comment, Brewer (1988) maintains that descriptive and narrative texts, in particular, tend to produce imagery in the mind during reading.

In his thorough discussion of the effects of imagery upon retention, Paivio (1979) states that imagery is centrally important in facilitating long-term retention. He explains that forming images facilitates recall by providing the learner with a meaningful representation of the material being studied. Paivio (ibid.) has also stressed the role that imagery can play in comprehension, explicitly commenting that “imagery contributes to reading comprehension” (p. 441). Moreover, he regards imagery as potentially facilitative in the retrieval of items from memory as well as in understanding and paraphrasing sentences. Research by Padron and Waxman (1988) also indicated that one of the three most frequently cited strategies by successful students was “imaging or picturing the story in your mind” (p. 148).

Allan Paivio (1979, 1986) has proposed the ‘Dual Coding Theory’ (DCT), which identifies two modes of processing information: imagery and language. Individuals who, according to the theory, utilize both modes of processing simultaneously have better comprehension and use of cognitive processes. On the basis of this theory, which suggests that verbal and pictorial memory exist as two interlinked but discrete long-term memory systems, Paivio (1979) makes a distinction between the manner concrete words, phrases or sentences and abstract ones are stored in the mind:

Concrete phrases or sentences, like concrete words, can be coded and stored in memory not only verbally but also in the form of *nonverbal imagery* [emphasis mine]. Thus if I say to you, ‘*The boy is peeling a green orange,*’ your understanding of the sentence is likely to include

The Role of Visualization in EFL Learners' Reading...

some kind of mental picture together with other implicit activities related to peeling oranges.... The input language code has 'flipped over' into a nonverbal one and, if I now ask you to remember the sentence, you might do so by remembering the objects and actions involved in the image and then reconstructing the sentence from it. (Paivio 1979, p. 450).

In the case of abstract sentences, such as *'The theory has predictive power'*, however, Paivio (ibid.) claims that the situation is different, as "they are likely to be stored in their verbal form" rather than in nonverbal images. Moreover, in 2000, the National Reading Panel published its review of scientifically based reading research found to support reading instruction. Mental imagery was identified as having "reliable effects on improving memory for text" (National Reading Panel 2000, p. 42), especially when used to recall individual sentences or paragraphs.

Nevertheless, it seems that research has so far had very little to say about whether or not L2 readers typically visualize while they read. For example, Eskey (1973, p. 171) in reviewing ways of teaching advanced reading commented that "no one knows exactly what reading is or how anybody learns how to do it", but in his discussion he makes no reference to visualization. Likewise, Block (1986, p. 465) maintains that little is known about what poor readers "actually do as they read, what the strengths and weaknesses of their strategic resources are, and how their reading differs from that of proficient adult readers".

However, she has not included visualization in the list of the reading strategies reported by the readers in her study. Another research project conducted by Knight, Padron and Waxman (1985, p. 789) intended to determine whether there were "differences in either the type or frequency of cognitive reading strategies reported by ESL and monolingual students". Few ESL students reported strategies which could be fitted into categories likely to involve visualization. The researchers came to the conclusion that "the primary

concern of second language students is the development of decoding skills, and not those cognitive strategies which enhance reading comprehension” (ibid., p. 791). Padron and Waxman (1988) reported a study of 82 ESL students who were given a Reading Strategy Questionnaire on the Stanford Diagnostic Reading Test they had already been administered, asking them to indicate which of the fourteen strategies on the list they had used while answering the test. They found that *imaging or picturing the story in your mind* was one of the strategies positively related to the students’ reading achievement.

Long-term visual memory and methods for increasing memory were studied intensely in the late 1960s. Numerous studies examined the effects of pictorial representation when compared with verbal representation (cf. Paivio, 1979, 1986). Such an effect, labelled the “pictorial superiority effect”, clearly addresses the advantage of presenting material by means of visualization aids. Shepard (1967), for example, found that subjects in one study were 98% more accurate when recalling pictures or graphics than when recalling text.

In one of the few studies done in the 1970s, Anderson and Kulhavy (1972) reported that high school seniors who received imagery instructions before studying a text recalled no more ‘factual’ content than did a non-instructed control group. However, on further probing, through giving the subjects a questionnaire after the study, the researchers discovered that not all of the students in the imaging group actually created images (only 50% did), and many in the control group did create images (about one-third)! Comparing those subjects from both groups who actually used imaging with those who did not showed significant differences in favor of the imaging strategy. Bull and Wittrock (1973) compared the effect of experimenter-provided vs. learner-generated imagery with elementary school children. As predicted, results showed that the group that generated images performed significantly better than those who copied definitions. The results of a study by Kulhavy and Swenson (1975) with 119 fifth- and sixth-grade children also indicated a

The Role of Visualization in EFL Learners' Reading...

decided superiority for learners receiving imagery instructions. The instructed children, furthermore, recalled more semantic than verbatim test items.

In a series of four experiments to determine the readers' imagery abilities, Denis (1982) found that when subjects read a descriptive or a narrative text, 'high imagers' remembered the text better than 'low imagers'. He further claims that when subjects produce more images, their recall of a text increases.

Kourilsky and Wittrock (1987) investigated what effect the sequence of the use of verbal or imaging generative activities would have on economic understanding by high school students. They found that using verbal elaborations first, followed by imaging, significantly increased economic understanding. Likewise, Jimenez, Garcia, and Pearson (1996) identified 22 distinct reading strategies in a study of eight bilingual children identified as successful readers. Visualization has been mentioned one of the ten "reader initiated strategies" (p. 99) which the successful readers did use.

Finally, in Tomlinson's experiments (1997), those students who reported visualizing while reading a text tended to achieve greater comprehension and recall than those who did not. Finally, Sadoski and Willson (2006) conducted a six-year study in one school district, where they implemented a reading program involving visualization. The analysis of results indicated significantly greater performance on reading comprehension by students who participated in the program than the state average.

However, despite the significant role that visualization seems to play in reading texts, some researchers (e.g., Stevick, 1986; Tomlinson, 1997, 1998) maintain that most L2 learners do not usually visualize when engaged in reading narrative and descriptive texts. But those who do visualize achieve greater comprehension and recall than those who do not. Nevertheless, Tomlinson (ibid.), on the basis of his own research and experience, strongly believes that L2 learners can be helped to visualize when they get engaged in reading, which can contribute positively towards their development of greater reading proficiency.

1.3. Theoretical Grounding

1.3.1. Generative Learning Theory

As conceived by Wittrock (1974), the model of generative learning integrates several areas of cognitive psychology (cognitive development, human learning, human abilities, and information processing). The model has been claimed to be tested even in areas other than language teaching and learning. Bonn and Grabowsky (2001), for instance, remind us that the generative learning theory (GLT) is even applicable to the teaching of disciplines such as economics and mathematics, since “it is a model of learning from teaching. Its focus is upon what a teacher can do to facilitate comprehension and retention” (Wittrock & Alesandrini, 1990, p. 490). The learner is also expected to take an active role in this model, as “effective instruction causes the learner to generate a relationship between new information and previous experience” (Wittrock, 1974, p. 182). Therefore, it seems that cognitive strategies such as image production in the mind while one is engaged in reading a literary text, or simply visualizing, may also be inserted within the paradigm of generative learning theory.

The central process of Wittrock’s model of reading comprehension is to get readers to think, to generate, that is, the process of constructing meaning out of words, sentences, paragraphs, and texts. In Wittrock’s own words, “Good reading ... involves generative cognitive processes that create meaning by building relations between the text and what we know, believe, and experience” (Wittrock, 1983, p. 600). Such a generation of relations among the parts of the text and between the text and one’s background knowledge, according to Wittrock, not only enhances comprehension but also involves the reader to build relations between the text and one’s knowledge and experience.

The generative approach to learning is consistent with current views of learning through reading which argue that meaningful understanding of the text is dependent upon the reader’s experience of the world. “You can understand the text only if you bring to it relevant experience of discourse and

The Role of Visualization in EFL Learners' Reading...

of context” (Fowler, 1996, p. 9, cited in Sheehan, 2003). In other words, the efficient reader should draw on previous experience and try to apply his/her personal world experience to the ‘ideational’ focus of the text, to use Halliday and Hasan’s (1976) terminology. Anderson and Pearson (1984) put stress on the fact that “the content of meaning is influenced by the text and by the contribution of the reader’s prior knowledge.” The importance of background knowledge for reading comprehension is so vital that Pearson (1985) emphasizes that in order to help students comprehend better, we should teach them more about the world.

The most essential and basic assumption of the generative model is that the learner does not receive information passively; he/she is actively engaged in the learning process, working to construct meaning out of the information found in the environment of learning. “For generative learning, the learner is the key—the controller of whether information is learned or not” (Grabowsky, 2001, p. 901).

1.4. Research Questions

In line with the pedagogical objectives of the study, the researcher has attempted to investigate the following pair of research questions:

1. Does practice of *visualization* as a generative study strategy by EFL learners bring about any variation in their *reading comprehension* of narrative texts?
2. Does practice of *visualization* bring about any variation in EFL learners’ *recall* of narrative texts?

1.5. Research Hypotheses

On the basis of the above research questions, the two following null hypotheses may be formulated. Hence, the statistical results of the study would either support or reject the null hypotheses.

Ho(1): Encouraging EFL learners to visualize in the process of reading narrative texts has no effect on their *reading comprehension* of such texts.

Ho(2): Encouraging EFL learners to visualize in the process of reading narrative texts has no effect on their *recall* of such texts.

2. Method

2.1. Participants

Fifty undergraduate, junior, EFL students, of both males and females, majoring in English literature at Sabzevar University of Teacher Education, Iran, participated in this study. The participant students were first given a reading comprehension pre-test to see if there are any significant differences among them with respect to their reading comprehension ability. They were then randomly assigned to attend a short-story course in two equal sections, both sections being taught by the researcher.

2.2. Materials and Procedure

As part of the course materials, three short stories were selected as the materials for the research project: Oscar Wilde's "The nightingale and the rose" and James Joyce's "Eveline" and "Araby". After randomly assigning the participants to two equal groups (each consisting of 25 students), the experimental group (i.e., the visualization group, or group A), in addition to being provided with conventional means of explaining the literary text by the instructor/researcher (e.g., with regard to some lexical items, the role of the characters vis-à-vis each other, rhetorical figures, etc.) was instructed and encouraged to visualize before, whilst, and after reading the narrative text in the class. They were asked, for example, to imagine the setting, the characters, and the scenes described in the story in their minds. For instance, they were requested to, "Try and see Eveline's face in your mind." Or the researcher told the students, "As you are busy silently reading the story, as soon as you come to

The Role of Visualization in EFL Learners' Reading...

a description of, say, a place, a landscape, a character, a situation, an object, or whatever that can be imaginable, do your best to form a picture of that in your mind and try to imagine it as vividly as you can.” The experimental group was also asked to draw some of the characters, objects or scenes depicted in the stories (for example, to draw Eveline while sitting by the window and thinking by herself, or to draw the encounter of the young student and the rose in Oscar Wilde’s story, and so forth) as they imagined them in their minds in the simplest manner they could. Or they were encouraged to summarize some portions of the stories by drawing a series of related pictures. The students were also advised to continue practicing visualization after they leave the class, when they are by themselves at home dealing with the reading material. It is worth reminding that the instructions were given orally in English by the researcher himself in the classroom.

The control group (group B), however, was *not* asked or was *not* encouraged to apply such visualization practices (for example, not being requested to form pictures related to people, objects, situations, and so on in the mind; nor being asked to draw the characters, objects, or scenes in the story as they visualized them, etc.) in the process of reading the stories. In other words, the control group was merely taught by applying the conventional procedures of teaching literary texts (for instance, dealing with vocabulary, comprehension of some portions of the text, the role of characters in interactions with each other, etc.) and discussing figures of speech (e.g., metaphors, similes, etc.) in the same manner as these things were being discussed in the experimental class.

Moreover, during each session, in both experimental and control classes, the entire time of the class was devoted to dealing with the story being discussed and there was no specific time limit on accomplishing the reading by the students. To put it another way, the time spent on the task of reading by the participants was not considered a variable to be accounted for in the study.

2.2.1. The Reading Comprehension Pre-test

To have enough evidence on the participants' reading ability, the researcher gave them the reading comprehension section of a Michigan test. The results of this pre-test, of course, indicated that there were no significant differences among the students as to their reading comprehension ability.

2.2.2. The Reading Comprehension Post-test

One week after presenting the short stories to the two groups of participants, both groups were asked to take a reading comprehension, multiple-choice test, composed of 42 items, on the stories discussed in the classes. The students were given brief extracts of the stories, followed by comprehension questions, and were to choose the right answer for each item from among the four alternatives (see Appendix A).

2.2.3. The Recall Test

Two weeks after administering the reading comprehension test, both groups of participants were given a multiple-choice, recall test, composed of 30 items, on the content of the stories. In this test, however, they merely had to rely on their memories and what they remembered from the stories. They were asked about the events, the settings, the characters, and the relationships among the characters in the stories (see Appendix B).

3. Results

3.1. Results of the reading comprehension test

As it was mentioned earlier, the two groups of the participants were given a reading comprehension test one week after the three short stories had been presented and discussed in both classes by the researcher. Having scored the

test papers, the researcher computed the arithmetic mean (or simply, the mean) for each group (see Table 1, below).

As there were totally 42 items in the test, assigning one point to each correct item would add up to a maximum of 42 points. In order to compare the means, a t-test was run to see if the means were significantly different (see Table 2, below).

Table 1

Results of the reading comprehension test on the short stories

Group	N	Mean	SD
A (experimental)	25	33.64	2.84
B (control)	25	30.00	3.60

N=number of participants

SD=standard deviation

Table 2

Results of the t-test to compare the means on reading comprehension test

df	t _{obs.}	t _{crit.}	pvalue (α)
N-1=24	3.97	2.064	.05

df=degree of freedom

t_{obs.}=observed t

t_{crit.}=critical t

3.2 Results of the recall test

Two weeks after presenting the three short stories to the two groups of participant, a recall test of multiple-choice format, composed of 30 items, was administered in order to compare the two groups with regard to remembering the content of the stories. Thus, assigning one point to each correct item would add up to a maximum score of 30. The mean score on the recall test for each

group was separately computed (see Table 3 below). Then, for the comparison of the obtained means, a t-test was run (see Table 4 below).

Table 3
Results of the recall test on short stories

Group	N	Mean	SD
A (experimental)	25	27.52	2.10
B (control)	25	23.92	3.01

N=number of participants
SD=standard deviation

Table 4
Results of the t-test to compare the means on recall test

df	t _{obs.}	t _{crit.}	pvalue (α)
N-1=24	4.90	2.064	.05

df=degree of freedom
t_{obs.}=observed t
t_{crit.}=critical t

4. Limitation of research

I have to mention one more point with respect to the instructions given to the experimental group of participants, the results, and the analyses of the study. As I explained in the procedure of the study, when instructing the students how to practice visualizing, I did not ask them to try to make links between the cultural aspects of the literary texts and that of their own while they imagined the events, the behaviour of the characters, the way the characters interacted with other people, the locations, or scenes described in the stories. However, the students are likely to automatically create such links in their minds while reading the stories, especially, when they discover that there are certain cultural

The Role of Visualization in EFL Learners' Reading...

elements in a given story that seem close to their own culture. For instance, the setting, the theme, the locations, the emotive atmosphere, and many other elements in the story by Oscar Wilde, discussed above, seem to have a Persian coloration. (As a matter of fact, the motif of the love of the nightingale to the rose has been widely reflected, though often metaphorically, in classical Persian literature, in particular, in the poetry by well-known poets like Rumi, Sa'di, Hafiz, and others.) Therefore, it would seem natural for the students to develop cultural bridges between the elements of the target text and their own native culture.

Nevertheless, the present research did not aim to account for such cultural aspects, neither in the instructions provided for the students to encourage them to visualize, nor in the analysis of the products of their visualizing attempts (for instance, the drawings they produced of the characters). Hence, the issue is worthy of being considered for further research with this respect in future studies by other scholars or the researcher himself.

5. Discussion and conclusions

In the introduction, in line with pedagogical objectives and orientation of the study, two research questions were proposed: the first asking whether getting EFL learners to visualize would have any effect upon their *reading comprehension* of narrative texts, and the second questioning if the strategy would have any impact on their *recall* of narrative texts. Furthermore, on the basis of these research questions, a pair of null hypotheses were also proposed—assuming that the implementation of visualization strategies would have no effect either on EFL learners' reading comprehension ability or on their recall of the narrative texts.

As it was mentioned, there were no significant differences in reading comprehension between the groups at pre-test, while there were significant differences among them at both the reading comprehension post-test and the

recall test. Therefore, the differences may be attributed to the practice or non-practice of visualization by the participants.

The obtained mean scores by each of the two groups on the reading comprehension post-test indicated that the experimental group (i.e., the visualizers) obtained a higher mean than the control group (33.64 versus 30.00, respectively), which turned out to be significant. By setting α (the p value) at .05, according to the table of the t distribution, the critical value of t (i.e., $t_{crit.}$) would be 2.064, while our obtained t (i.e., $t_{obs.}$) is equal to 3.97 (see Table 2, above). Therefore, with $t_{obs.}=3.97$, $df=24$, $p<.05$, and $t_{crit.}=2.064$, as the observed value of t exceeds its critical value, we can reject the first null hypothesis (see 1.6., above), denoting that practicing visualization by EFL learners before, whilst, and after reading literary texts would positively influence their reading comprehension of narrative texts—namely, would enhance their reading comprehension capability of such texts.

In a similar manner, the mean scores obtained by the experimental and control groups on the recall test, as displayed in Table 3, above, indicate that the experimental group by attempting to visualize in the process of reading short stories obtained a significantly greater mean than the control group. With regard to the results of the t -test, which was run to compare the obtained means on the recall test, the second null hypothesis proposed in 1.6., above, is also rejected. That is, according to Table 4, above, with the critical value of t being equal to 2.064, the obtained value of t being equal to 4.90, $df=24$, and $p<.05$, once more the null hypothesis, assuming that visualization by EFL learners would have no effect upon their recall of narrative texts, is rejected. The rejection of the null hypothesis, in this case, would suggest that applying visualization in the process of reading narrative texts does improve EFL learners' recall of such texts. To put it another way, the visualizers significantly outperformed the non-visualizers on the recall test in the same way as they did on the reading comprehension post-test.

References

- Anderson, R. C., and Kulhavy, R. W. (1972). "Imagery and prose learning", in *Journal of Educational Psychology* 63, pp. 242-243.
- Anderson, R. C., and Pearson, P. D. (1984). "A schema-theoretic view of basic processes in reading comprehension", in P. D. Pearson (ed.), *Handbook of reading research*, New York: Longman, pp. 255-291.
- Block, E. (1986). "The comprehension strategies of second language readers", in *TESOL Quarterly* 20, pp. 463-494.
- Bonn, K. L., and Grabowski, B. L. (2001). Generative learning theory: A practical cousin to constructivism (Paper presented at the Joint Mathematics Meetings, New Orleans). Retrieved December 10, 2007, available at: http://www.math.mtu.edu/~klbonn/GLT_in_New_Orleans.html
- Brewer, W. F. (1988). "Postscript: Imagery and text genre", *Text* 8, pp. 431-8.
- Bull, B. L., and Wittrock, M. C. (1973). "Imagery in the learning of verbal definitions", in *British Journal of Educational Psychology* 43(3), pp. 289-293.
- Eskey, D. E. (1973). "A model program for teaching advanced reading to students of English as a foreign language", in *Language Learning* 23, pp. 169-184.
- Halliday, M. A. K., and Hasan, R. (1976). *Cohesion in English*, London and New York: Longman.
- Hobbs, R. (2001). "Improving reading comprehension by using media literacy activities", in *Voices from the Middle* 8(4), pp. 44-50.
- Jimenez, R. P., Garcia, G. E., and Pearson, P. D. (1996). "The reading strategies of bilingual Latina/o students who are successful English readers: Opportunities and obstacles", in *Reading Research Quarterly* 31(1), pp. 90-112.
- Knight, S. L., Padron, Y. N. and Waxman, H. C. (1985). "The cognitive reading strategies of ESL students", in *TESOL Quarterly* 19, pp. 789-792.

- Kourilsky, M., and Wittrock, M. C. (1987). "Verbal and graphical strategies in teaching economics", in *Teaching and Teacher Education* 3(1), pp. 1-12.
- Kulhavy, R. W., and Swenson, I. (1975). "Imagery instructions and the comprehension of text", in *British Journal of Educational Psychology* 45, pp. 47-51.
- National Reading Panel (2000). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction.
- NIH Publication No.00-4754.Washington DC: National Institute of Child Health and Human Development. Retrieved September 21, 2008, available at: <http://www.fcrr.org>
- Padron, Y. N., and Waxman, H. C. (1988). "The effect of ESL students' perceptions of their cognitive strategies on reading achievement", in *TESOL Quarterly* 22, pp. 146-150.
- Paivio, A. (1979). *Imagery and verbal processes*, Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers.
- Paivio, A. (1986). *Mental representations: A dual coding approach*, New York: Oxford University Press.
- Pearson, P. D. (1985). "Changing the face of reading comprehension instruction", in *The Reading Teacher* 38, pp. 724-738.
- Sadoski, M., and Willson, V. L. (2006). "Effects of a theoretically based large-scale reading intervention in a multicultural urban school district", in *American Educational Research Journal* 43, pp. 135-152.
- Sheehan, R. (2003). The reader as a productive consumer of text; activating schemata and exploiting lexical networks to assist text processing. Retrieved April 19, 2007, available at: http://www.philseflsupport.com/readers_productive.asp
- Shepard, R. N. (1967). "Recognition memory for words, sentences, and pictures", in *Journal of Verbal Learning and Behavior* 6, pp. 156-163.

The Role of Visualization in EFL Learners' Reading...

- Stevick, E. (1986). *Images and options in the language classroom*, Cambridge: Cambridge University Press.
- Tomlinson, B. (1997). *The role of visualization in the reading of literature by learners of a foreign language* (Unpublished PhD thesis, University of Nottingham). Microfilmed version: The British Library, British Thesis Service.
- Tomlinson, B. (1998). "Seeing what they mean: helping L2 readers to visualize", in B. Tomlinson (ed.), *Materials development in language teaching*, Cambridge: Cambridge University Press, pp. 265-78.
- Widdowson, H. G. (1979). *Explorations in applied linguistics*, Oxford: Oxford University Press.
- Witrock, M. C. (1974). "Learning as a generative process", in *Educational Psychologist* 11(2), pp. 87-95.
- Witrock, M. C. (1983). "Writing and the teaching of reading", in *Language Arts* 60(5), pp. 600-606.
- Witrock, M. C. (1985). "Teaching learners generative strategies for enhancing reading comprehension", in *Theory into practice* 24(5), pp. 123-26.
- Witrock, M. C. (1990). "Generative processes of comprehension", in *Educational Psychologist* 24(4), pp. 345-376.
- Witrock, M. C. (1991). "Generative teaching of comprehension", in *Elementary School Journal* 92, pp. 167-82.
- Witrock, M. C. (1992). "Generative learning processes of the brain", in *Educational Psychologist* 27(4), pp. 531-41.
- Witrock, M. C., and Alesandrini, K. (1990). "Generation of summaries and analogies and analytic and holistic abilities", in *American Educational Research Journal* 27(3), pp. 489-502.

Appendix A: Examples of Reading Comprehension Test on Short Stories (42 items)

A. On “Eveline”

1. “The children of the avenue used to play together in that field—the Devines, the Waters, the Dunns, little Keogh the cripple, she and her brothers and sisters. Ernest, however, never played: he was too grown up.”

Ernest didn’t play with the children of the avenue because he was

- a. too young
- b. disabled
- c. too exhausted
- d. much older than others

2. “He took her to see *The Bohemian Girl* and she felt elated as she sat in an unaccustomed part of the theatre with him. He was awfully fond of music and sang a little.”

The Bohemian Girl refers to

- a. a book
- b. a novel
- c. a piece of drama
- d. a song

B. On “Araby”

“When we returned to the street, light from the kitchen windows had filled the areas. If my uncle was seen turning the corner we hid in the shadow until we had seen him safely housed.”

1. The underlined phrase above suggests that

- a. it was part of the children’s game
- b. they were afraid of his uncle
- c. they were hiding from their parents
- d. they tried to frighten other people

The Role of Visualization in EFL Learners' Reading...

“Her image accompanied me even in places the most hostile to romance.”

2. Which statement is not true?

- a. The boy carried the girl's picture everywhere.
- b. The boy thought a lot of the girl.
- c. It seems that he had fallen in love with her.
- d. He thought of her even in places that did not have anything to do with love.

“While she spoke she turned a silver bracelet round and round her wrist. She could not go, she said, because there would be a retreat that week in her convent.”

3. The first sentence above suggests that the girl

- a. was proud of herself
- b. liked her bracelet very much
- c. intended to make fun of the boy
- d. felt embarrassed and nervous

C. On “The Nightingale and the Rose”

‘One red rose is all I want,’ cried the Nightingale, ‘only one red rose! Is there no way by which I can get it?’

‘There is a way,’ answered the Tree; ‘but it is so terrible that I dare not tell it to you.’

1. Why is the tree frightened of telling the Nightingale the truth?

-Because producing a red flower

- a. requires soft music during the night
- b. needs the moonlight
- c. requires painting by her blood
- d. is a matter of life and death

2. 'Ah, on what little things does happiness depend!'
The sentence suggests that
- a. happiness may be attained easily
 - b. only little things bring happiness
 - c. even trivial things may bring happiness
 - d. happiness may not be attainable through trivial things

Appendix B: Examples of Recall Test on Short Stories (30 items)

A. On "Eveline"

1. Who bought the field in which the children of the avenue used to play?
- a. a man from Belfast
 - b. a sailor
 - c. someone from London
 - d. an Irish man
2. Where was Eveline sitting while she was musing?
- a. in the room where her mother had died
 - b. in the hall
 - c. at the window
 - d. on the porch

B. On "Araby"

1. The wild garden behind the house contained a central
- a. straggling bush
 - b. apple-tree
 - c. willow-tree
 - d. rose-tree

2. "At last she spoke to me." Whom does "she" refer to?
- the girl the young boy loved
 - Mangan's sister
 - the boy's aunt
 - both a & b

C. On "The Nightingale and the Rose"

1. The nightingale's nest was in
- an apple-tree
 - a rose-tree
 - a cliff
 - an oak-tree
2. "If you want a red rose," said the tree, "you must"
- build it by moonlight
 - build it out of music
 - stain it with your own heart's blood
 - a, b, & c

