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The Effect of Reading with PQRST Technique: Intergroup Comparison

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ABSTRACT

The purpose of this study was to investigate the effect of reading with PQRST technique on the recalling levels of high school senior students. Research grounded on quantitative paradigm. Experimental model used with experimental and control groups with pre-test post-test design. Direct comparison method was implemented. Success of reading recall is dependent variable, *PQRST* and *normal reading* applications are independent variables. According to the results of homogeneity of variance test, data were found to be homogeneous ($p>.05$). The data obtained from the pretest-posttest results were found normally distributed ($Mean=4.06$, $Median=4.00$, $Mode=5.00$; ± 1); thus, parametric tests were used to analyze the data. The data were analyzed with independent samples t test. Thirty-two participants were divided into experimental and control groups and read the same text with two different ways. The experimental group read with PQRST, the control group read normally. It was found that the group studying with PQRST did not make any difference in comparison to normal reading in the immediate recall. However, in delayed recall, participants who read with PQRST recalled statistically better than the group who read normally. In addition, there was no statistically significant difference between reading normally and reading with PQRST, in terms of gain scores

Keywords: PQRST, SQ3R, reading, recall

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Introduction

Reading ability is one of the basic elements of quality education (Siah, 2010). This ability is necessary to perform daily life activities such as reading newspapers, reading textbooks, reading novels, reading user manuals, or reading web pages. That is to say, reading is an elementary need for life (Trauzettel-Klosinski, 1997). However, the important detail underlying the ability to read is to be able to read with aware (Estes, 1971). Not remembering or not understanding what you read can turn reading into a worthless ability. Diversifying reading processes with different applications, rather than normal reading, increases efficiency (Aygören, 2020). In this regard, rather than standard/normal reading, more active reading strategies increase retention and educational achievement (Gentile, 2003; Dale, 1969). One of the most effective (and old) reading strategies that have come to the forefront in recent years for effective reading is the SQ3R developed by Robertson in 1961 (Tadlock, 1978; Roe, 2011). Its roots go back to 1940s. SQ3R is a reading strategy that recommends students to read by following the stages of *Survey, Question, Read, Recite* and *Review* (Artis, 2008). The students look at the topics to get an idea about the text (survey); they generate questions about these topics and activate their prior knowledge (question); they then read the text and seek answers to the questions they have created; then, the students answer their own questions in their own words (recite); finally review all the information they have obtained (review) (Jairam, 2013; Martin, 1991). The new version of Robertson's proven SQ3R strategy, again developed by Robertson (1971), is the PQRST (*Preview, Question, Read, State, Test*) technique. In summary, PQRST is an improved version of SQ3R, but the last phase has been revised as a test rather than a review (Aygören, 2020). The steps of the PQRST technique are as follows (Wilson, 2009):

1. **Preview:** A general overview of the passage or text, i.e. a survey. It is just a few seconds of reading, superficial scanning or defining the main parts (Simatupang & Sihombing, 2012). These are applications such as reading the foreword, examining the table of contents, reading the chapter summaries, examining the titles, pictures, graphics, or charts (Turkington, 2000).
2. **Question:** Asking the key questions about the text. 5W1H may be used (Turkington, 2001). This step should be completed before reading the whole text. It is asking questions about what the student wants to know about the text (Simatupang & Sihombing, 2012). For example, suppose we are going to read a text about the "banning of the book named 1984". After a quick preview of the text, the student asked, "Why do people ban some books?", "Why was George Orwell's 1984 book banned?", "What did Orwell say about 1984?" can ask questions like. Students who ask such questions now have a purpose for reading. 'P' and 'Q' stages serve as a guide in the context of preparing the brain for what to read (Wormeli, 2005). The 5N1K technique can be used for students who have difficulty preparing questions in the questioning stage, and this application can make the stage clearer (Aygören, 2020). Questions to be asked to the important points of the text such as what happened, how the incident happened in the text, who was involved in the event can be used (Turkington & Harris, 2001).
3. **Read:** Reading the text fully and carefully to answer the questions. If possible, it should be read twice. Reading the text twice improves comprehension. However, there may not be much opportunity for this in the real world. Generally, people try to finish the job in one reading (Wormeli, 2005). When reading the text for the first

time, no notes should be taken or practices such as underlining on the first reading should not be done. Because it is not easy to understand the important points in the first reading. If a second reading is made, then the important points that are emphasized can be highlighted, highlighted, and notes can be taken (Turkington, 2000).

4. State: Expressing the answers to the questions. The text can be read again if it is necessary. It is the student's summary of what he has read and expressing the main idea or theme (Simatupang & Sihombing, 2012). There are usually two types of main ideas / themes here. The main idea / themes, the first belonging to the author of the text, and the second to the readers. In the PQRST technique, instead of a general title, they are asked to find a main idea / theme for each sub-chapter / paragraph (Wormeli, 2005). At this stage, key questions can be answered out loud. The student can ask himself these questions. He / she can express or reflect on important points that he / she emphasizes. Half the time of the application of the PQRST technique can be spent at this stage (Turkington, 2000).
5. Test: Testing the information to be stored in long-term recall. Students can question themselves (Turkington, 2000). It is the student's self-test with questions or teaching another person what he has learned (Simatupang & Sihombing, 2012; Wormeli, 2005). At this stage, the student tests himself whether S/he can actually obtain the information. It is the student's self-questioning before a test. It is a study session about the text. The person questions the information obtained by himself (Turkington, 2000). It makes preparation to be able to respond appropriately to the questions that the teacher might ask (Ahuja & Ahuja, 2007).

When the application steps of SQ3R and PQRST technique are examined in terms of basic learning theories, it can be said that pre-reading and asking pre-questions have functions like advance organizers, thus more meaningful and permanent learning is realized (Ausubel, 1960).

In the literature, many studies on SQ3R can be found (Tadlock, 1978; McCormick, 1991; Artis, 2008; Carlston, 2011; Johns, 2013; Donald, 2014). Some studies can be found about PQRST but most of them are related to the field of psychology and neurophysiology (Wilson, 1987; Ciaramelli, 2015; Ruggeri, 2005). One of the most precise studies of the technique is Wilson's single-subject experimental study from 1987. Wilson read six new articles with an amnesia patient for eight days. Eight of the articles were read with the PQRST and eight with normal reading (Wilson, 1987). The order of text-reading techniques changed every day. Following the reading session, tests with one immediate delay and the other with a delay of 30 minutes were applied and the results were compared. In his study, Wilson found out that reading with the PQRST were more effective for recalling than traditional readings. According to Wilson, the PQRST found better short- and long-term recall results than traditional and multiple repetitive reading. Although the study is remarkable, it is unclear what results will be achieved when the same practices are applied to an ordinary student instead of a patient with amnesia. This uncertainty is the starting point of this research.

Therefore, it is thought that the research related to PQRST technique, will contribute to the educational sciences literature. It is important to investigate how effective PQRST can be in terms of more effective reading and recall of students. In this study, it is aimed to investigate the effects of PQRST technique, which is relatively new in educational sciences, on reading recall.

In the light of this thought and purpose, answers for the following questions was sought:

1. Is there any significant difference between the reading with *PQRST* and *normal reading*, in recalling immediately?
2. Is there any significant difference between reading with *PQRST* and *normal reading*, in recalling with delay?
3. Is there any significant difference between reading with *PQRST* and *normal reading*, in gain scores?

Method

Research grounded on quantitative paradigm. In the study pre-test-post-test quasi-experimental design has been utilized. The quasi-experimental approach, pretest-posttest and comparison group design is the measurement of the participants about the dependent variable before and after the experimental research (Karasar, 1999). Direct comparison method was implemented. Success of reading recall is dependent variable, *PQRST* and *normal reading* applications are independent variables. When homogeneity of variance test was implemented, the results were found to be homogeneous ($p > .05$). The data obtained from the pretest-posttest results were found normally distributed ($Mean=4.06$, $Median=4.00$, $Mode=5.00$; ± 1), parametric tests were used to analyze the data. In this regard, in order to find answers to the research questions, the data were analyzed with independent samples t test.

Participants

32 students at the age of 16-17-years attending university preparatory course joined to the study. All of the students were in the last year of high school and they all continued to equiponderant education. They come from different socio-economical areas of İzmir. Two groups were formed as experimental and control units. Group assignments made randomly from class list. The grouped form of the participants was as follows:

Table 1. The grouped form of the participants

Groups	N
Experimental group (Reading the test with <i>PQRST</i>)	16
Control group (Normal reading)	16

Materials

Experimental and control groups were taught the same text literally. The texts that may be appropriate for the research were investigated. The text already used by Aygören (2020) in a single-subject study on *PQRST* was considered appropriate for this research. A 500-word column titled 'İşıkla ileti sistemi: LiFi internet (Messaging system by light: Internet via LiFi)' of Edip Emil Öymen, who is an educator, academician, and a writer, was chosen. In the research, a text that does not go into political or controversial issues, but that can still attract the attention of the student and that can be beneficial was searched. As a result of this search, the column of educator, academician, and writer Edip Emil Öymen was selected and used with the permission of the author. The text has not been tampered with and has not been corrected. As a result of the examinations made before the research, no obvious grammatical, spelling, information error or

similar problems were encountered in the texts of the author, therefore the author's column was preferred. In this context, the reasons for using columns in research can be explained as follows:

- The author's educational identity and academic background,
- Spelling and grammar to be correct,
- Having clear texts,
- Striking articles on education and technology,
- The text is up-to-date and impartial.

The other reason for preferring this text was that necessary controls were already checked, and pretests and posttests were ready. In addition, the text to be read had no connection with the course subjects of participant students. Ausubel advocates working with unusual texts that do not relate to the student's interests, lessons, or prior knowledge (Ausubel, 1960). Other reasons for the selection of the text were: spelling and grammatical smoothness, comprehensible language, current and impartial issue, and being irrelevant to political issues.

Pretest-Posttest questions

In the research, a ten-question multiple-choice pretest and an equivalent ten-question multiple-choice posttest, about the text, were used. Tests, like the text, were taken from Aygören's (2020) study. According to Bloom's revised taxonomy, the test questions are at the remember level. The cognitive structure of the questions is related to recognizing and recalling in the Bloom's revised taxonomy (Krathwohl, 2002). Expert opinions were obtained in terms of the suitability of the test questions and then tests were prepared.

Scoring

In the research process, the success of reading recollection was emphasized. Accordingly, pretest and posttest scores evaluated in order to determine the success of retention. Incorrect answers were not counted. Only correctly remembered answers were considered. Retention questions were scored between 0-10. Gain scores scored between -10 and +10.

Procedure

The empirical research process lasted one hour. At process same text was read by both groups. The Experimental group read with *PQRST technique* and control group read with *normal reading*. Right after the reading process, ten-question test (*pretest*) was answered by the groups. The other test (*posttest*) was done after 30 minutes. Reading process took 10-12 minutes; pretest took about 5 minutes; 30 minutes delay time; posttest took approximately 5 minutes. The results of the tests after reading analyzed and compared by the researchers.

Results

In this section, the findings of the research are presented. Information summarizing the empirical process can be seen in Table 2. Additionally, Table 3 shows the statistical information of the results obtained by experimental (reading with PQRST) and control (normal reading) groups.

Table 2. Pretest, Posttest, and gain score findings

Exp. Group	Pretest	Posttest	Gain scores	Control Group	Pretest	Posttest	Gain scores
Participant 1	6/10	3/10	-3	Participant 1	2/10	5/10	3
Participant 2	8/10	6/10	-2	Participant 2	6/10	5/10	-1
Participant 3	6/10	5/10	-1	Participant 3	7/10	4/10	-3
Participant 4	6/10	6/10	0	Participant 4	6/10	3/10	-3
Participant 5	4/10	6/10	2	Participant 5	5/10	3/10	-2
Participant 6	2/10	2/10	0	Participant 6	1/10	2/10	1
Participant 7	3/10	4/10	1	Participant 7	2/10	2/10	0
Participant 8	4/10	3/10	-1	Participant 8	4/10	5/10	1
Participant 9	2/10	5/10	3	Participant 9	3/10	1/10	-2
Participant 10	3/10	6/10	3	Participant 10	2/10	1/10	-1
Participant 11	4/10	5/10	1	Participant 11	3/10	3/10	0
Participant 12	2/10	5/10	3	Participant 12	7/10	5/10	-2
Participant 13	6/10	5/10	-1	Participant 13	5/10	6/10	1
Participant 14	4/10	6/10	2	Participant 14	5/10	3/10	-2
Participant 15	5/10	3/10	-2	Participant 15	6/10	4/10	-2
Participant 16	6/10	4/10	-2	Participant 16	4/10	4/10	0

When a preliminary review is made about the data in Table 2; it is seen that, in the experimental group reading with PQRST, six participants reduced the number of correct answers, eight participants increased the number of correct answers. There was no change in two participants' correct answers. In the control group who read normally; nine participants reduced the number of correct answers and four participants increased the number of correct answers. There was no change in three participants' correct answers.

Table 3. Group statistics

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Pretest	Experimental group	16	4.4375	1.78769	.44692
	Control group	16	4.2500	1.91485	.47871
Posttest	Experimental group	16	4.6250	1.31022	.32755
	Control group	16	3.5000	1.50555	.37639
Gain scores	Experimental group	16	.1875	2.00728	.50182
	Control group	16	-.7500	1.69312	.42328

When a preliminary review is made about the data in Table 3; in the experimental group reading with PQRST, the mean of pretest’s correct answers was found to be 4.4, and also posttest’s correct answers’ mean was found to be 4.6. On the other hand, in the control group who read normally, the mean of pretest’s correct answers was found to be 4.2, and also posttest’s correct answers’ mean was found to be 3.5. That is, there is a decrease of 0.7.

For the purpose of the study, pretest, posttest and gain score results of the experimental group using PQRST and the control group reading normally were compared. In this regard, the data were analyzed with independent samples t test. t test results can be seen in Table 4.

Table 4. t-test Results

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pretest Differences	.286	30	.777	.18750	.65491
Posttest Differences	2.255	30	.032	1.12500	.49896
Gain scores’ Differences	1.428	30	.164	.93750	.65650

In terms of the first research question, ‘Is there any significant difference between reading with PQRST and *normal reading*, in recalling immediately?’, it was revealed that there is no significant difference was found between the two groups (.777). In this situation, it was concluded that there was no difference between PQRST and normal reading in terms of recalling the reading immediately.

The second question that is tried to be answered for the purpose of the research, ‘Is there any significant difference between reading with PQRST and *normal reading*, in recalling with delay?’, it was shown that there is a significant difference was found between the two groups (.032). In the light of these findings, it was concluded that reading with PQRST had a better effect on recalling in long-term than reading normally.

According to the third question of the research, ‘Is there any significant difference between reading with PQRST and *normal reading*, in gain scores?’, it was seen that there is no significant difference was found between the two groups (.164). In the light of the data, there is no significant difference between PQRST and normal reading.

Discussion, Conclusion and Suggestions

In the immediate recall, the reading style does not make any difference. The reasons why there was no difference, in both groups, may be that the students did not motivated sufficiently, that they did not understand PQRST technique enough, that the time to assimilate the read text was inadequate or that the reading techniques do not make a difference in terms of remembering in immediate recall. Wilson (1987) who worked on an amnesia patient, found that the reading with PQRST was not significantly effective than reading normally, in terms of recalling in the immediate. Ciaramelli et al. (2015) performed a very similar study on patients (with prefrontal cortex injury) and found that the reading with PQRST was significantly effective. In a similar study by Aygören (2020) on a single-subject but normal student, it was concluded that normal reading was more successful in the immediate recall. In Aygören's study, however, the student read one time with PQRST and four times normally. It should not be overlooked.

Another result of this study showed that the used PQRST technique helped the readers to remember better in delayed recall. Similar results were found in Wilson (1987), Ciaramelli et al. (2015) and Aygören (2020). It is evident that PQRST is effective in the delayed recall. The reason for these results can be considered as more active reading process of PQRST readers. There are many studies in the literature that prove the effects of PQRST on reading comprehension (Chapman, 1976; Simatupang, 2012; Miqawati, 2014; Apriliaswati, 2014; Malia, 2015; Duran, 2019). Understanding level is a higher level of remembering according to Bloom's taxonomy. A student who comprehends will remember well. According to Bloom, you need to achieve the previous step in order to move to the upper levels (Bloom, 1956). It has a cumulative hierarchy. In other words, if you can move to the upper level, you have already achieved the lower level. In this context, these studies, which prove the effects of PQRST on comprehension, can be interpreted as the effect of PQRST on recall.

Results showed that, reading styles does not differ much in terms of gain scores. The reason why there was no difference between the two groups in terms of gain scores could be considered as the students in the experimental group were not yet accustomed to PQRST technique and they could not get rid of the normal reading habits of years. However, after time has passed, it has been found remarkable that reading with PQRST increased the number of correct answers recalled. When the data in Tables 2 and 3 handled carefully, in terms of gain scores, we can see that scores of PQRST increased (+0.4) while the scores in normal reading were reduced (-1.7). Under normal circumstances, knowledge tends to decrease over time but when reading with PQRST, the remembered knowledge is increased. A similar finding was obtained in Aygören's (2020) study. These results are promising in terms of PQRST technique. This finding may be the subject of different studies. The findings of this study leave some research questions to be investigated in the future studies. *Firstly*, in the future research, it may be suggested that students in the experimental group get familiar with the technique by making trial implementation before the actual implementation and then it can be suggested to start experimental implementation. Thus, it would be possible to understand whether how much PQRST is effective on recalling in immediate recall. *Secondly*, in order to get better understanding about the effect of PQRST on both immediate recall and delayed recall, it may be suggested that more comprehensive research with different groups of students should be done on more than one text. *Thirdly*, it is recommended to carry out an experimental process after the students are familiar with the PQRST technique by performing such implementations more than one and also testing very-long-term recall.

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