Improving 4th Grade Primary School Students' Reading Comprehension Skills

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Abstract   The aim of this study was to carry out action research to investigate reading comprehension skills when using the SQ3R reading comprehension strategy. To that end, this strategy was used for improving the reading comprehension skills of 7 primary school 4th grade students who had problems with these skills. An action plan was prepared for 3hours a day on 3days a week for a period of 10 weeks. In the intervention process, the first author carried out this intervention with a classroom teacher. In this research, "Teacher's Diaries" and three different written forms, namely the "Reading Comprehension Test", "Student Interview Form" and "Student Observation Form" were used as data collection tools to provide research credibility. The results indicated that that the SQ3R-based reading program increased students' reading comprehension level. In light of data obtained from this study, student's ability to analyze texts visually, and their predictive and note-taking skills were found to be improved.

Keywords   Reading Comprehension, Comprehension Strategy, SQ3R

1. Introduction

Reading comprehension is defined as students' "acts of thinking and constructing meanings in pre-reading, while-reading and post-reading stages" [1-2]. It is one of the main language skills that require making inferences and understanding the details in written materials, and it is expected that it will be acquired by pupils at primary school [3]. In fact, reading comprehension is placed at the heart of many school subjects as it plays a key role in the process of cognitive development.

Certain character is tics of good readers come into prominence in the reading comprehension process [4]. Good readers:

- are active in the reading process and have purposes related to the text,
- analyze the text and make some predictions about the text before reading
- elicit the meanings of the words from the context
- use prior knowledge and check on its accuracy
- re-construct the meaning
- think about the characters and events in fictional texts and tend to summarize them
- consider reading to be a productive skill.

Reading comprehension is a complex process including reader's knowledge of vocabulary, the interaction with the text and their use of comprehension strategies [5]. An effective reading process depends on the effective use of reading comprehension strategies [6-7-8]. Hence, reading education should also include teaching of cognitive strategies [9] since they can contribute. These strategies can particularly help students who have difficulties in reading comprehension to understand the text better [10-11-12-13-14].

Reading strategies are divided into three groups: pre-reading, while-reading and post-reading strategies. Pre-reading strategies include preparing a reading plan, eliciting the topic from the first sentences of the paragraph, making predictions from the main titles, subtitles and visual information, activating prior knowledge, deciding where to focus, and determining reading speed. While-reading strategies involve making connections between paragraphs, taking notes on significant points, re-reading when attention is lost, underlining significant points, using a dictionary when the meanings cannot be elicited from the context, re-reading the parts that are difficult to understand, utilizing pictures, tables and diagrams, using textual clues, re-analyzing when conflicting information is encountered, and establishing connections between prior knowledge and new ones. The post-reading stage involves a number of other strategies, namely, summarizing the text, checking whether the reading goals are achieve do not, checking previous predictions, evaluating the main ideas of the text critically, taking notes for future reference, answering the questions which have been prepared, expressing the main ideas of text [15-16-17-18-19-20-21]

In addition to these general strategies, in the literature it is possible to see some other strategies and techniques for

different purposes. These strategies and techniques, written as acronyms, are [22-23-24]: Coop-Dis-Q(Cooperative Discussion and Questioning), DRA(Directed Reading Activity), KWL(Know, Want to Know, Learned), POSSE (Predicting, Organizing, Searching, Summarizing and Evaluating), PQRS (Preview, Question, Read, Summarize), SQ3R (Survey, Question, Read, Recite, Review), and SQ4R (Survey, Question, Read, Recite, Relate, Review).

SQ3R is one of the oldest and the most common reading strategies [25-26]. The SQ3R reading strategy is a technique that has been developed by psychologists and educators in order to provide a more productive and beneficial reading process. It helps students to improve both their comprehension and memorization, as well as their effective time management [27]. This strategy also helps students investigate, be active during the process of comprehension, and both interpret and remember the information/details in the text effectively, as explained fully below:

Figure 1. SQ3R Stage [22-23-28-29-30]

'Survey' takes place in the pre-reading phase. In this stage, the main titles, subtitles and abstract and visuals are skimmed. Readers can develop a Basic idea about text. They then analyze the introductory chapter, and try to grasp the overall meaning from tables, diagrams and visuals. Finally, readers skim the summaries and questions at the end of chapters. In the 'Question' stage, the main title and subtitles, which were skimmed in the previous stage, are transformed into questions. In addition, different questions can be formed. Before reading thoroughly, asking some questions and searching for answers in text can be advantageous for effective reading. Then the text is read from the beginning to the ending order to answer questions. This stage is an "active" attempt to investigate the questions rather than "passively" going through line by line. At this stage different activities can be performed, such as underlining important sections or taking notes. After reading the text, students try to remember what they have read and to answer the questions with their

own sentences in their own words. Students can take short note store member the details. If they cannot remember them, they need to review the text. In the 'Review' stage, students look at the notes taken in the 'Reading' stage and try to establish patterns, and to check the information about content by reading any subtitles in the text. All important points and details are remembered. If necessary, the text is read again by the students.

Several studies have shown that students who experience difficulties in reading and comprehension can deal with such difficulties more effectively when they are taught the compression strategies explicitly [10-11-12-13-14-31]. Several studies [25-27-32-33-34-35] on different languages have reported the positive impact of utilizing the SQ3R reading strategy utilized in the process of reading for reading comprehension skills.

1.1. Purpose of the Study

The aim of this study is to investigate seven 4th grade primary school students' reading comprehension skills while using theSQ3 R reading strategy. This study aims to answer the following research questions:

1. Are there any differences between students' reading comprehension test scores before, during and after intervention?
2. How do students use the SQ3R reading strategy in this process?
3. What are students' opinions about this intervention?

2. Materials and Methods

This study has been designed as a qualitative action research study. Action research is a circular process of identifying and solving classroom or school problems while working collaboratively with various partners [36]. These kinds of research projects do not aim to generalize their findings or determine the ultimate truth of a learning theory. Here, the main goal is solving problems and providing development in the research context [37-38]. In action research, both qualitative and quantitative data can be used together. Moreover, researchers have some advantages, such as being able to conduct direct observations in the natural environment, to develop appropriate data collection tools, and to make new decisions depending on the data obtained in the process [38-39].

In this study, reading comprehension problems among 4th grade primary school students were considered. Within this scope, students' reading and comprehension levels were measured and it was clearly determined that these students reading comprehension skills were below standard. According to Güneş [41], primary school 4th grade students should be capable of reading 90 to 140 words per minute. Thus, in order to improve their reading comprehension skills an action research plan was prepared. This plan was for 3

hours a day for 3 days each week and it was implemented for 10weeks. The first author carried out this intervention with the classroom teacher.
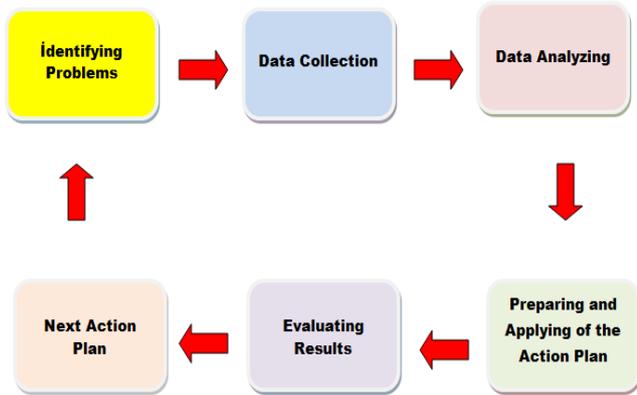

Figure 2. Action Research Stages [40]

2.1. Subjects

In this study, "criterion sampling", one of the purposeful sampling methods, was utilized for the sampling. 7 primary school 4[th]grade students who had reading comprehension problems were selected and they were given pseudonyms for this study. Four of these students were male and three were female. All students were 10 years old and had 2–4 siblings. As for the educational back ground of the students' parents, while all of the mothers were primary-school graduates, three of the fathers were primary school graduates and four were secondary school graduates. Regarding their parents' jobs, all of the mothers were housewives, three fathers were working as drivers, two were farmers and two were labourers. These students had changed 4 teachers in four years and they had sometimes had to take a break in their education because of the lack of teacher. It was determined that their fathers did not give a considerable amount of support and their mothers' support was limited. Moreover, it was observed that students' reading habits and their reading level were quite low. In their period of education they had been absent from school often. In fact, it is possible to claim that because of this, these students had problems with reading and comprehension skills.

2.2. Data Collection Tools

In this research, "Teacher's Diaries" and three different written forms, the "Reading Comprehension Test", "Student Interview Form" and "Student Observation Form" were used as data collection tools. Using observations, interviews and quantitative data together for triangulation is an effective method to provide research credibility [36-37]. Then, expert opinions about text equivalence were taken. According to the expert's opinions, the texts were accepted as proper and with .96 correlation, the texts were defined as equivalent. In the next stage, objective-based questions about the texts were prepared and after reliability studies, the lower reliability and discrimination-indexed items were eliminated.

Finally, a unique "Reading Comprehension Test" of 20 questions was compiled for each text. With regard to the "Student Observation Form" and the "Student Interview Form", these were designed to be suitable for all stages of the SQ3R Reading Strategy. The opinions of at least three experts were sought and received for draft versions of each of these forms before the final versions were approved. In addition, the process of implementing the strategy was video-recorded so that more detailed information could be collected.

Table 1. Demographic Information of Working Group

Student	Gender	Age	Number of Siblings	Mother's Educational Background	Mother's Job	Father's Educational Background	Father's Job
Enes	Male	10	3	Primary School	Housewife	Secondary School	Worker
İlknur	Female	10	2	Primary School	Housewife	Secondary School	Driver
Güler	Female	10	2	Primary School	Housewife	Secondary School	Driver
Şevval	Female	10	3	Primary School	Housewife	Primary School	Farmer
Ceren	Female	10	2	Primary School	Housewife	Secondary School	Worker
Mehmet	Male	10	4	Primary School	Housewife	Primary School	Driver
Umut	Male	10	4	Primary School	Housewife	Primary School	Farmer

2.3. Procedure

This research followed a pre-post test procedure. Eight texts which were suitable for the students' level were selected. Then these texts were adapted for SQ3R and activities were prepared. These activities were implemented for 3 hours a day and for 3 days a week during a 10-week period. In order to measure students' pre-reading, while-reading and post-reading comprehension skills the "Reading Comprehension Tests" were administered once before the application of the strategy, once after a period of 5 weeks and once after the end of the application. Moreover, during the intervention process, the "Student Observation Form" was used to observe how students were using the SQ3R reading strategy. At the end of the intervention, as noted, the "Reading Comprehension Test" was applied for the last time, and students' opinions about this study were obtained.

2.4. Data Analysis

Qualitative data obtained from this study were analyzed using qualitative content analysis, and quantitative data were analyzed with statistical analysis. For quantitative analysis, the SPSS20 package program were used, and as descriptive statistics, frequencies and me answer reemployed. The stages of SQ3R comprehension strategy were defined as the content codes in both the observation and interview forms, and they were analyzed.

3. Findings

3.1. Findings regarding the First Research Question

In order to answer the first research question, "*Are there any differences between students' reading comprehension test scores before, during and after intervention",* three different Reading Comprehension Tests were implemented. Students' test scores are shown in Table 2.

Table 2. Students' test scores in Reading Comprehension Tests

Students	Before Intervention	During Intervention	After Intervention
Şevval	40	55	70
Mehmet	65	80	85
Ceren	50	70	75
İlknur	40	60	70
Güler	25	50	65
Enes	45	65	80
Umut	25	35	45

It can be clearly seen that all student's test scores in the Reading Comprehension Tests increased. In this sense, we can say that the SQ3R comprehension strategy helps students increase their reading comprehension success. As seen in Graphic 1, thanks to this intervention Enes, Güler and Şevval's reading comprehension scores increased greatly but a similar improvement was not observed in Umut's scores.
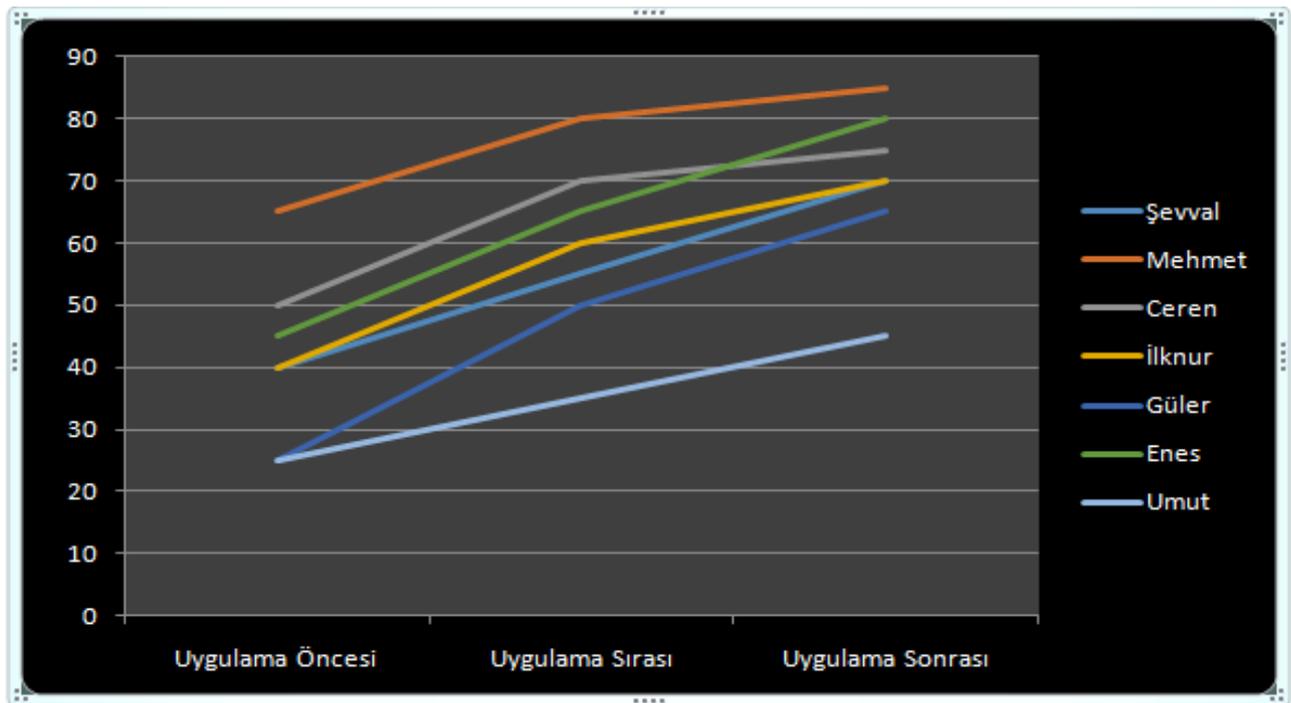
Graphic 1. Reading Comprehension Tests

3.2. Findings regarding the Second Research Question

In order to answer the second research question, "*How do students use the SQ3R reading strategy in this process?*" the students' behaviors during the intervention process were observed. All the stages of the SQ3R strategy were analyzed under different headings.

Survey: During the ten-week intervention period, it was observed that students prepared by using their prior knowledge, viewing the visual elements and studying the keywords before reading. With the exception of two of them, Umut and Güler, the students were able to implement t h e Survey stage in their reading process. Umut and Güler also had some problems in reading the visual cues. They tried to get an idea about the text from only one image instead of developing a common idea from different visual elements.

Questions: The success of this stage was found to not be as high as expected. At this stage, some students made predictions and created questions from only one image. Some students described the images as they appeared instead of formulating and answering questions. Two examples of this are given below:
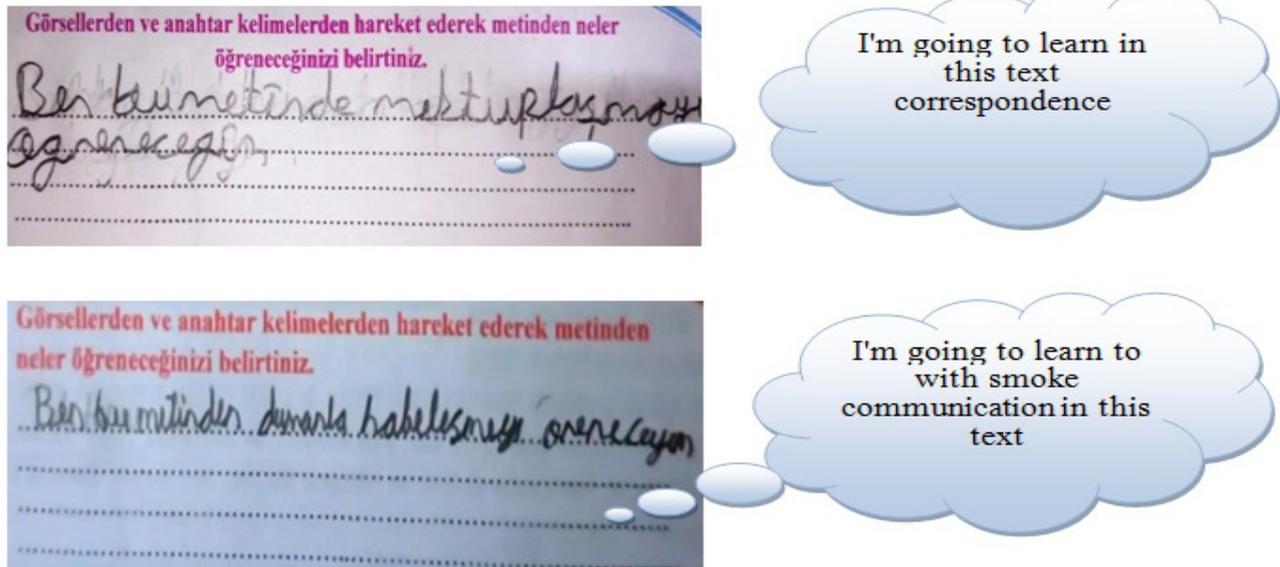
Figure 3. Predictions of students about texts

Table 3. Number of Word Per Minute (NWPM) and Word Recognition Percentage (WRP)

Student	Before Intervention		During Intervention		After Intervention	
	NWPM	WRP	NWPM	WRP	NWPM	WRP
Şevval	48	75%	71	81%	93	88%
Mehmet	65	84%	91	89%	121	93%
Ceren	52	77%	83	84%	120	91%
İlknur	61	81%	89	85%	123	92%
Güler	57	78%	70	83%	96	90%
Enes	68	86%	96	92%	132	95%
Umut	35	63%	56	71%	65	75%

Reading: In this stage, oral reading, silent reading, echo reading and chorus reading were used. It was observed that all the students' reading levels increased. The students were eager for and involved in echo reading. The number of words read per minute and students' word recognition percentages are shown in Table 3. According to Güneş [41], primary school 4th grade students should be able to read at least 120 words per minute. In this sense, it is possible to see that both the number of words per minute and word recognition percentages were below this average and that only four participating students developed to the desired level.

Moreover, one of the aims of this stage was to develop students' skills in underlining important points in texts. In line with this purpose, the students did some exercises on underlining and at the end of this stage, it was clearly seen that student could underline important points in texts more effectively. An example of these exercises is given below:

Figure 4. Underscore important places in texts

Recite: At this stage, after reading the text, the students performed some reciting and summarizing exercises to allow them to remember the texts. After these exercises, all the students had made progress in their recitation skills, apart from Umuta nd Şevval. Umut and Şevval were below the expected level at this stage. In writing exercises about what they had been orally repeating, only about half of the written answers were found to be successful. It was clear that students were bored during the writing exercises and had some problems in relating them to what they had been repeating out loud.

Review: At this final stage, exercises to review the students' notes were practiced. Some re-skimming exercises were carried out with the students who could not remember the details of the text. After these re-skimming exercises, some assessment activities were performed. In these activities, multiple choice tests, short-answer questions and true-false questions were used. Umut was relatively less successful in these compared to the other students.

3.3. Findings regarding the Third Research Question

In order to answer the third research question, *"What are students' opinions about this intervention?",* focus group interviews were conducted and video-recorded. In these interviews students' opinions about the SQ3R strategy were analyzed. Students stated that working with keywords and making predictions about the text using the visual elements given and the keywords was like a game of mystery. In the intervention process, they stated that they struggled with summarizing the texts because they had not had many writing and summarizing exercises in their previous studies. However, at the end, they stated that the SQ3R strategy had contributed to their reading comprehension process. Some of the students' opinions about this study were as below:

İlknur: *"I liked working with keywords because with this exercise I could understand the texts."*

Mehmet: *"My reading performance increased and I liked echo-reading but summarizing was difficult."*

Enes: *"My first test score was very low but then my points increased. The pre-reading and post-reading exercises were very useful. I had never browsed the internet before this study, but now I know how to do it."*

Ceren: *"The reading comprehension questions were enjoyable. We had very different kinds of questions before. Before, we only used to do multiple choice tests."*

4. Discussion and Conclusion

This study showed that the SQ3R-based reading program increased students' reading comprehension skills. In the light of data obtained from this study, it can be seen that students' skills in analyzing visual information, predicting textual content and note-taking improved. Additionally, their number-of-words-read per minute and word-recognition percentages improved considerably. All in all, it can be clearly seen that the SQ3R strategy contributed both to students' reading and comprehension skills. Indeed, previous studies about theSQ3R strategy have also come to similar conclusions [42-43-44].

Butler [32] carried out a similar study in high school biology lessons. Students were divided into two groups, experimental and control. The experimental group took the lesson with the SQ3R strategy. Their academic success and attitudes towards the lessons were found to be better than those of the control group, which is in line with the positive impact found in our study. Also, Fisher [33] used this strategy with social Science textbooks in order to provide more meaningful learning and his study also found SQ3R very helpful for reading and comprehending the texts.
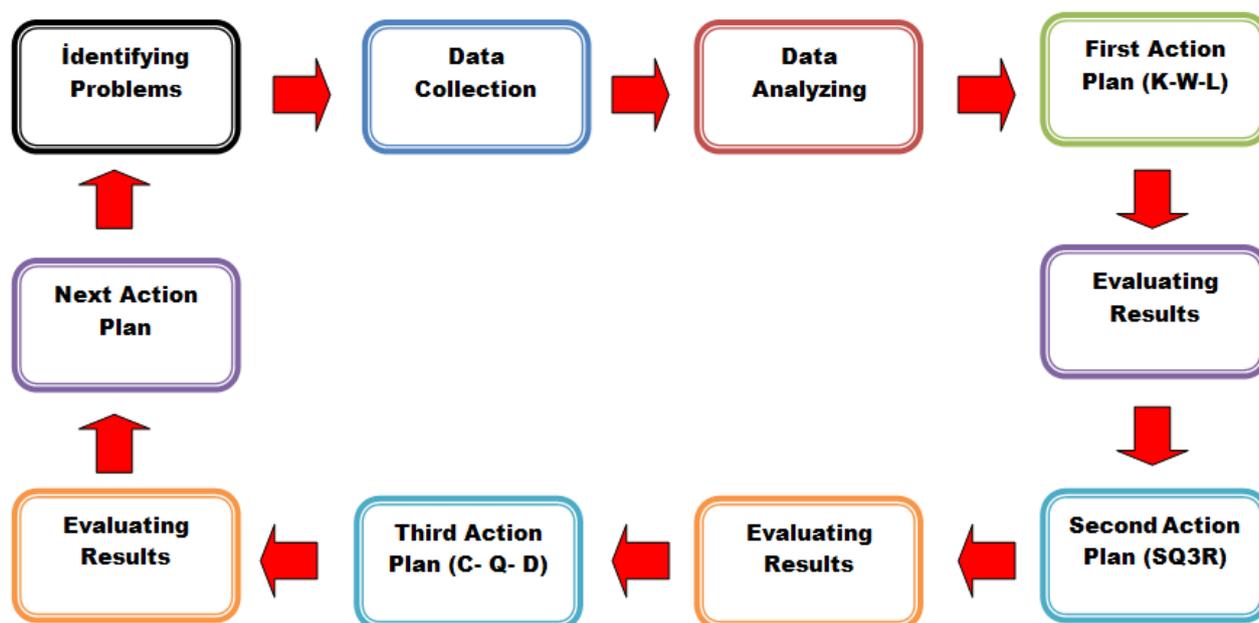
Figure 5.   Proposed Action Research

Students' attitudes towards this intervention were positive and it can be claimed that SQ3R can be used for improving the cognitive and affective skills of primary school students who are struggling in reading and comprehension. However, it should be taken into consideration that students may experience some difficulties at some stages of this strategy. In this study, for instance, students had some difficulties in the 'Recite' stage. In this stage, students had problems when they tried to give oral and written reports about what they had understood from the text. Teachers and researchers planning to use this strategy should pay more attention to this stage. In particular, teachers should spend more time on various activities/exercises for improving students' oral skills from the first year of primary school.

Action research studies usually conclude with different action research suggestions. With this in mind, a different action research plan which could be carried out at the primary school level was developed in this study. As shown in Figure 3, this intervention plan contains three circles. In the first circle, the relatively simple strategy of **KWL** (*"What I Know?"* (K), *"What I Want To Know?"* (W), *"What I Leaned?"* (L) was used); in the second circle, the SQ3R reading comprehension strategy, and in the third stage, Collaboration-Discussion-Query (CDQ) can be used. While the first circle provides more working time to students for working on texts, the second stage provides improvements in surveying, researching, reading and note-taking skills. With regard to the third circle, by group working, discussion and query skills can be improved.

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