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The effect of storyline method on students' achievements in 5th grade of science and technology courses

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Abstract

The aim of this study is to determine the Effect of Storyline Method on Student Achievement In 5th Grade Science and Tecnology Courses. This study was conducted experimentally on the 5th grade students studying at Alpaslan School in 2010-2011 academic year. 26 students were included in the study, 13 of them were chosen as the sample group and 13 of them as control group. The achievement level about the unit in sample group which were taught by storyline method was higher than the control group which was taught by teacher centered and traditional method. There was a meaningful significant favour of the control group. The instruction conducted by storyline method was effective on increasing the achievement level of the students.

Keywords: Storyline Method, Traditional Instruction Method, Science and Tecnology Courses

1. Introduction

The purpose of primary education is to raise individuals who can think, discuss, reason, and behave democratically. Achieving this is directly dependent on the methods utilized in primary education. In Turkey, generally traditional methods are applied for science education despite the recent advances. However, ample amount of research indicates that traditional methods are inadequate in improving students' success as opposed to other methods that require student participation (Aşan & Tahran, 2002; Atılboz, 2001; Demircioğlu, Demircioğlu & Ayas, 2004; Güvener, 2005; Korkmaz, 2001; Sezgin, 2002; Şahin & Parim, 2002).

Storyline method is based on the principle that students can contextualize the knowledge and retain and retrieve it more easily (Eagan, 1988), and that almost all children at different ages are willing to create stories because story is a major contextualization activity that starts during early childhood and prevails throughout the entire lifespan of individuals (Bell, 1988; Fusai, Saudelli, Marti, Decortis & Rizzo, 2003). In storyline method, all courses are considered as a whole, and links are built among all of them. Furthermore, storyline method gives active learning opportunities and makes students responsible for their own learning (Hein, 1991). One of the key properties of this method is that students, themselves, build new knowledge on what they've already learned and experienced. Students' imagination and problem solving skills are put into practice through active participation. What to teach through storyline method is determined in accordance with students' needs and interests, and subjects that provoke students' curiosity are prioritized (Harkness, 2011; Yiğit, 2007, 19). Moreover, this method provides an extremely strong structure and motivation for both students and teachers, and enhances mutual love and respect. Besides, it enables students to use the current technology. This method has a replicable and constantly changing nature (Bell,

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1990).

Chosen as the main aim of science education, research skills entail use of high level mental skills. This is consistent with the application process of the storyline method; and this method is thought to be effective in actualizing major goals of science course.

The aim of this research is to study the influence of storyline method applied in science and technology course at fifth grade primary education over students' academic success. Accordingly, answers to following questions have been sought.

1. Is there a significant difference between the pre-test scores of the experimental group and that of the control group?
2. Is there a significant difference between total pre-test and post-test scores of the experimental group in terms of their academic success?
3. Is there a significant difference between total pre-test and post-test scores of the control group in terms of their academic success?
4. Is there a significant difference between total pre-test and post-test scores of both experimental and control groups in terms of their academic success?

2. Method

2.1. Research Model

In this research, the influence of the independent variables—storyline method and traditional method—over the dependent variable—students' success—has been investigated. Along with this aim, a control and an experimental group were formed. Within this frame, this study has been modeled according to experimental model with “pre-test/post-test control group” (Karasar, 1982; Erden, 1993; Balci, 1995: 248). The hypothesis of the research is that “there is a significant difference between the experimental group learning through storyline method and the control group learning through traditional method; and the difference is in favor of the experimental group”.

2.2. Subjects

The subjects of this research are 26 students studying at Alpaslan Primary School in Kayseri, located in the middle region of Turkey, during 2010-2011 academic year spring term. Experimental and control groups were determined randomly. 13 students in each group were equalized.

2.3. Data Collection Tool

Achievement test developed by the researcher was used as the data collection tool. Test reliability was determined through split-half method. The results of the analyses indicated that the reliability of the test was 0.78. Moreover, a questionnaire developed by the researcher by getting help from students' psychology files, observation forms, and other questionnaires used in the literature was used for the equalization of students in two groups.

2.4. Implementation

The research was launched at Alpaslan Primary School in 2010-2011 spring term. Following the completion of the planned instruction, Oguzhan, Batuhan, and Zeynep from the experimental group shared their opinions about the method by saying “*I liked the subjects we studied, and I easily learned them. This was a different style for me. I had no difficulty in learning. I'm glad that we've studied this chapter with you*”; “*I hope we'll repeat this. All classes were easy*”; “*I learned very easily because we learned through games. I remember all of them. This was the first time I learned through use of stories*”, respectively.

2.5. Data Analysis

Analysis of the data obtained from the pre-test and post-test scores of the experimental and control groups concerning the variable was carried out through related group Wilcoxon test. Furthermore, unrelated groups Mann Whitney U test was employed in order to conduct the one way testing of the pre-tests and post-tests to be able to identify pre-experimental equalization and post-experimental levels of both groups.

3- Interpretation of Findings

Results of Mann-Whitney U-Test for the Pre-test Scores of Both Experimental and Control Groups

Prior to the implementation, there was no significant difference between the pre-test scores obtained from achievement test by both the experimental and control group ($U=80.00$, $p>0.05$). This result revealed that students in both groups were academically at a similar level before the implementation.

Results of Wilcoxon Signed-ranks Test for the Pre-test and Post-test Scores of the Experimental Group

Results of the analyses pointed that the difference between pre-test and post-test scores obtained from academic achievement test by the experimental group was significant ($z=3.92$, $p<0.05$). Considering the row totals of the different scores, the difference is in favor of the post-test scores. This result underpins that the storyline method used with the experimental group is effective over students' academic success.

Results of Wilcoxon Signed-ranks Test for the Pre-test and Post-test Scores of the Control Group

Analyses showed that there was no significant difference between the pre-test and post-test scores obtained from the achievement test by the control group ($z=0.460$, $p>0.05$). This means that traditional method used in the control group did not help improve student's success significantly.

Results of Mann-Whitney-U Test for the Post-test Scores of Both Experimental and Control Groups

Scores of the academic achievement test administered to both groups after the implementation differed significantly, and the difference was in favor of the experimental group ($U=38.50$, $p<0.05$). Considering the row means, post-test scores of the students in the experimental group were significantly higher than those of the students in the control group. For the primary education fifth grade science and technology course, this result displays that there is a significant difference between the academic success levels of the students in the experimental group instructed through use of storyline method and those of the students in the control group instructed through use of traditional method, and the difference is in favor of the ones in the experimental group. Therefore, one can conclude that storyline method is more effective than the traditional method in terms of improving students' academic success levels.

4. Conclusion and Suggestions

Instruction based on story method is an applicable option for Science and Technology classes, and it improves students' success. Therefore, it may be employed as an alternative method in order to promote students' achievements. In this sense, ministry of national education may incorporate this method into its instructional program for Science and Technology course. Furthermore, the extent of influence that this method has over students' attitudes towards Science and Technology course may also be investigated.

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