The effect of White Line (Khat-e-Sefid) educational software on English language learning of female students of grade one at high school in Sari

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Abstract

The main objective of this research is investigating the effect of White Line educational software on English learning of female students of grade one at high school in Sari. The method of this study was Quasi-experimental. The statistical population of this research consists of all grade one classes of high schools in Sari, district one in 2011-2012 that includes 47 classes and 1257 female students. The sampling method was convenient random sampling and the sample consisted of two classes each with 30 students. The method of data collection consists of two written tests for recognition and psychomotor domains and a questionnaire made by the researchers for the affective domain. The analysis of the obtained data of pretest and post tests' scores using independent samples t-tests showed that White Line educational software positively affected the three domains of learning, i.e. recognition, psychomotor and affective domains. The results of data analysis showed that there was a significant difference between the software group and control group at 0.05 level of significance.

Keywords: White Line educational software, Cognitive domain, Psychomotor domain, Affective domain

1. Introduction

All active and dynamic societies need to learn a foreign language to create relationship with other societies. Nowadays it is estimated that 60% of world populations are multilingual and English language is the most prevalent language in the world (Richards and Rodgers, 2008). In recent years, learning English as an international language for communicating with other cultures and different societies is of paramount importance in education and training. In this world, learning English is so important that UNESCO recognizes knowing English as one of the criteria for

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scholarship. Students' learning is not coincidental but it is the direct outcome of their learning experiences and opportunities; therefore, new ways should be searched to design such kinds of opportunities. One of these innovative ways is the use of technology and educational software in learning and teaching. For understanding the power of this technology, the familiarity with hardware and software is necessary but not sufficient. This idea should also be put into experimental research measuring its effect on the recognition, psychomotor and affective domains. In this research, attempts have been made to create an active and suitable setting for learning English through educational software. This study is aimed at measuring the effect of an educational software namely White Line (Khat-e-Sefid) on learning English as a foreign learning (EFL).

2. Learning

Learning can be defined in different ways: acquisition of knowledge and data, different habits, different skills, or as different ways of problem solving. Learning can also be defined as learning useful actions and behaviors and even learning harmful actions and behaviors. Therefore, learning covers a vast domain. Seif (2005) quotes Hergen and Olson (2005) as saying learning is the most important domain in psychology today and also is the most difficult concept to define. The most famous definition of learning is as follows:

Learning is the process of relatively permanent change in the behavior or the behavioral power that is obtained from the experience.

3. Learning domains

Educational psychologists have categorized educational objectives differently according to their features. The most famous classification known as Bloom's taxonomy was proposed by Bloom, Egelhart, Hill Krathwahl and Masia (Seif, 2005). In Bloom's taxonomy, educational objectives are divided into three domains: recognition, emotional and psychomotor. (Shaabani, 1992).

4. Recognition domain

The objectives of the recognition domain emphasize recall and reconstructing. For example, to solve a thinking problem, a person should know the main problem, and then he should arrange the obtained data and connect them to the methods, patterns and theories learnt. Recognition objectives are divided into six levels based on Bloom's taxonomy: 1. Knowledge, 2. Understanding, 3. Application, 4. Analysis, 5. Synthesis, and 6. Evaluation.

5. Affective domain

The aims of the affective domain are based on attitude, interests and values. Affective domain is classified into five classes from simple to difficult: 1. Understanding and paying attention, 2. Answering, 3. Valuing, 4. Value organizing, and 5. Internalizing values

6. Psychomotor domain

Educational objectives are based on psycho-motor skills. This domain basically includes practical skills of technical and vocational, physical exercise, art, laboratory working. This domain includes: 1. Observation and imitation, 2. Autonomous independent, 3. Carefulness in action, 4. Action's harmony, 5. Auto-pilot action

7. Learning theories and their relationship with language teaching

7.1. Behaviorist theory: Based on this theory, humans, like an automatic machine, react immediately to the stimulus from the external environment, and internalize experience during these actions and reactions, leading to learning. Based on this theory, learning is a kind of behavior like other activities. Based on the beliefs of behaviorists like B.F. Skinner humans learn first and second language like other behaviors by practicing, repeating and becoming conditioned, so that by continual repetition of dialogs and different practices he can learn a foreign language.
7.2. *Cognitive theory:* 1960s is the beginning point of new changes in learning psychology. In cognitive theory, the trainee owns the ability of thinking and recognition and doesn’t have a passive role in the teaching process contrary to the behaviorist theory.

7.2. *Constructivist theory:* 1990s was coincided with the formation and culmination of a new theory in the realm of learning psychology, namely constructivism. The difference between constructivism and cognitivism is the existence of background knowledge in trainees’ mind.

8. *Information technology applications in teaching and learning*

After World War II, in the second half of the 20th century, especially after 1970s, computer and other information technology were used in teaching and training as new tools of education and new interactive possibilities of such technologies caused users to think analytically and critically, leading to group work without spatial constraints.

9. *Review of Literature*

Mohammadi (2006) investigated the effect of communication and information technology on language teaching and learning and showed that there are many common points between language teaching patterns and language teaching and learning technology patterns. Zarei (2006) carried out a research on educational multimedia and teaching and learning processes. The results showed that educational multimedia can cover different styles of learning by using different elements such as text, audio, graphics, animation and video and creating a kind of multi-modal environment for learners. Meanwhile, application of multimedia can increase learners' motivation by using interactive possibilities. Shobeiry (2003) studied the effect of educational aid software of physics at grade three of high school on student's cognitive and affective domains. The results showed an increase in learning physics in students, a significant effect on the intrinsic motivation, the improvement of their attitudes, the fulfillment of some expected roles of teachers, and an increase in the interactions between students. Wei Zhu (2011) in the University of South Florida did a research on the effect of online learning on Chinese student's language learning motivation as a second language. The results showed that there were significant differences in students' second language learning experiences and motivation with different learning background. Emrick (2011) studied the effect of smart boards and educational software on the development of mathematics learning in students. The results showed that this kind of visual and interactive tool increased student's interactions with teachers and could improve the learning environment.

Hence, three hypotheses are investigated in this research:

1. White Line (Khat-e-Sefid) software affects English language learning cognitive domain of female students at grade one of high school.
2. White Line (Khat-e-Sefid) software affects English language learning affective domain of female students at grade one of high school.
3. White Line (Khat-e-Sefid) software affects English language learning psycho-motor domain of female students at grade one of high school.

10. *Method*

In this research quasi experimental design was used for measuring the effect of White Line software on English language learning. Statistical population of this research consist of all female students at grade one classes of high school in district one in Sari. Two classes were randomly selected as the statistical sample consisting of 30 students each. For data collection, the following instruments were used in three different domains:

A) Cognitive domain: two written tests of vocabulary, reading comprehension, and grammar with 53 questions based on the first lesson of the first grade at high school in 2011.
B) Psycho-motor domain: student's oral and written production test.
C) Affective domain: a questionnaire made by the researchers.
For estimating test reliability, test-retest method was used and the Pearson correlation coefficient was computed as 0.70. And to estimate the reliability of the questionnaire, Cronbach alpha coefficient was computed as 0.85.

The statistical techniques to analyze the obtained data are as follows:
  a. Descriptive statistics: mean scores, percentages, histograms and tables related to pretest and posttest groups using SPSS software
  b. Inferential statistics: independent sample t-test.

11. Results

11.1. Descriptive statistics

In this research both groups were similar in number and 30 students were found in each group. (Table 1)

| Groups       | Frequency | Percentage |
|--------------|-----------|------------|
| experimental | 30        | 50%        |
| Control group| 30        | 50%        |

11.2. Inferential Statistics

In this research variables' normality was tested by Kalmagrov- Smiruoff test and it was found that p-value rate was more than 0.05 significance level. Hence independent samples t-test was deemed appropriate. (Table 2)

| Variables                  | P-value | Test result |
|----------------------------|---------|-------------|
| Learning cognitive domain  | 0.46    | Normal      |
| Affective domain           | 0.41    | Normal      |

12. Hypothesis Testing

According to table 3, the averages of both groups are the same and the result shows that the two groups were not different before the experiment; p-value was set at $\alpha \leq 0.05$. Thus the research hypotheses were rejected by 95% confidence i.e. there were no significant differences between the averages of the experimental and the control groups.

| Hypothesis | Groups     | Number | Average | Standard deviation | T      | $\alpha$ | p-value |
|------------|------------|--------|---------|--------------------|--------|----------|---------|
| Hypothesis 1 | Control    | 30     | 16.85   | 2.38               | 0.82   | 0.05     | 0.41    |
|             | Experimental | 30     | 16.38   | 1.99               |        |          |         |
| Hypothesis 2 | Control    | 30     | 1.99    | 0.88               | 1.38   | 0.05     | 0.89    |
|             | Experimental | 30     | 2.00    | 0.98               |        |          |         |
| Hypothesis 3 | Control    | 30     | 17.85   | 1.04               | 1.05   | 0.5      | 0.29    |
|             | Experimental | 30     | 17.56   | 1.04               |        |          |         |
According to table 4, the averages in the experimental group increased by 3 scores; whereas, the control group average didn’t increase indicating that using the software had a positive effect on language learning in the experimental group. Therefore the research hypothesis is confirmed with 95% confidence i.e. there is a significant difference between the average scores of learning domains in students after the treatment.

| Hypothesis | Groups  | Number | Average | Standard deviation | T   | α | p-value |
|------------|---------|--------|---------|--------------------|-----|---|---------|
| Hypothesis 1 | Control | 30     | 17.21   | 2.32               | 3.01| 0.05| 0.004   |
|             | Experimental | 30     | 18.68   | 1.30               |     |    |         |
| Hypothesis 2 | Control | 30     | 1.83    | 0.74               | 11.26| 0.05| 0.00    |
|             | Experimental | 30     | 4.00    | 0.74               |     |    |         |
| Hypothesis 3 | Control | 30     | 17.95   | 1.12               | 7.35| 0.05| 0.000   |
|             | Experimental | 30     | 19.66   | 0.60               |     |    |         |

In fact, test results showed that the educational software had a positive effect on students' English language learning and their interest that shows the superiority of this method to other educational methods without software.

13. Discussion and Conclusion

In this research, the effect of White Line educational software on English language learning in students was studied. The results of the first hypothesis showed that White Line software increased knowledge abilities and mental skills in students and caused more cognitive understanding.

Considering the result of the second hypothesis, it can be said that White Line software can increase interest, motivation, attitude, appreciation and learning valuing in students that was the origin of goal setting and a source of interests in English language learning in students.

Considering the result of the third hypothesis, it can be said that White Line software could improve practical, technical, vocational skills, physical exercises, written and audio activities in students so that after using the software they could listen and reply easily; besides, their handwriting improved.

Considering the research results it can be concluded that White Line educational software can be effective in the process of English language learning; therefore, it can be said that educational software was effective in English language learning and this result was in line with many research results like Bill Emrick (2011) and Zhu (2011) and Mohammadi (2006) Zarei (2006), Shobiery (2003).

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