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Designing Training Math in Fifth Grade (Based On Logical Approach) and the Role of It on Critical Thoughts, Behaviour and Students Academic Motivation

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Abstract

This is a reasonable approach to the design of teaching fifth grade math and its role in critical thinking, performance (academic achievement) and student motivation. Quasi-experimental research methods and population included 912 fifth-grade female students in Marivan city in the 2011-12 school year. 46 patients were selected as samples. The subjects to collect results were an RIO IQ test, the critical thoughts Watson and Gelizer test and research test and the range of AMS were known between 71 and 83 percent and the results were about 83 till 86 percent. After replication the subject of tests according to intelligence, sex and educational levels, with a choice of pre-test - post-test, 26 subjects in the experimental group and 20 patients were randomized to the control group. So the independent variable or discussion comparison, addition and subtraction of decimals fifth grade elementary math lesson based on a logical approach to the experimental group were trained in six sessions. The control group subjects were trained with traditional method. Data obtained from the pre-test and post-test and Covariance using SPSS software was used for analysis. Based on the results, the first and second hypothesis, respectively, with a significance level of 0/011 and 0/016 in 0/01 > P were approved and the third hypothesis significance level of 0/432 in 0/01 ≤ P was rejected. According to the results we can understand that the effect of instructional design approach, and the performance of learners and promote educational advancement of critical thinking in their concrete, however it has no effect of increasing motivation pervasive of learners.

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1. Introduction

When we planning educational programs for our students as teachers for daily lessons, courses (some courses on time), we engaged in educational planning. Instructional design and selection of prediction methods and materials in certain circumstances is to achieve more effective learning outcomes. (Fardanesh, 1387), in fact

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design, is a systematic approach to planning, development, management, and evaluation of training process that all these elements are individually in design education. This process should be clear and regular (Camp, 2004). Regular means existing a rational approach to identify, generate and evaluate a range of targeted strategies to reach desired educational goals. To be clear, is using the elements of this program in correct places (Saettler, 2004).

The base of Training designed is helping to learn easily. as summary we can say activity designed to solve the problem for achieving the human’s need and training all that is required for learning faster. This activity is including goals the way of offering, classification and ... (Fardanesh, 2008).

One of the important lessons of elementary school is Mathematics the reason of importance is studying math is helping people’s life and the society, it helps. Notwithstanding the importance of this lesson, we often see that some students don’t want to learn math and sometimes hate it. One of the main reasons that caused resentment among students is the lack of diversity in mathematics (Yazdchi, 2004).

Some observers believe that today the importance of leaving in complex and advanced world is to have the creative thoughts which is dynamic and productive. So learning mathematics can be the way for improving these thoughts (Shonfild, 1989, according to the Razavie, 2005, the p 10).

Critical thought create mind-body power in person to prepare for competing with challenges of the world. In recent years experts in training affairs concern of inability of the learners in critical thoughts. Though growth of the intellectual skill of learners always was a complex subject in training, but today become the crisis issue. (Abili, 2001, p. 2, according to the Myers).

The psychologists and teachers believe that the motivation is the most important key word and also explain for the different levels of performance. The concept of difference between the amount of effort for cohesion paperwork are explain with this when in educational system, problems like decreasing motivation occurs so this motivation is one of the main reasons for to be familiar with all kinds of designing patterns and making training in education and teaching process and teachers can be effective to elements in the educational system. (Seif, 2009) . In the present research, other research has been done before the sentence (Abbasi, 2001) in one research with the subject of skills training effect on growing critical thought they search about the effective of necessary tools to develop these skill and performance of students to study. Another research By Heshmian nezhad (2001), has been written with the subject of explaining framework about study programs on the base of critical thoughts with 8 ability. The results of Shabani (2001) research shows that the way of solving problems with group activation is playing the best roles for critical thoughts abilities. Dezhgahi (2008) in a research with the subject of critical thoughts explain challenge in front of independence and the main purpose of training so educational system for presenting especial mind is not the best way for thoughts growth. You also Gargari and et al (2007), said that the kind of methods of teaching have the best effect in training critical thought. Seratnik ’s research (1983) shows the fact that still many teachers, expend most of the time of their classes for talking or asking questions and only 1 percent of class time for answering thoughtful question (Quoting from Shabani’s judgment, 2001). Jitenda and et al (2001), in a research with this subject (the effect of using nine design criterion in mathematical education ) has found the group which was using this methods have the best performance at the end. Also they found that students who has study with classic methods of teaching in comparison with the other students who study with new training methods has the lower skill in critical thoughts. This issue shows that the duty of teacher is teaching, with creating self seeing and positive attitude towards the lessons of the students. Coz the teachers have the ability to exchange the routine exercise into pleasure one. Using various skills of teaching mathematics to each this goals is effective. One of the elements of educational technology, educational design is that every day specialized and newer patterns by designers, design and enter the world of education and training activities so teachers can use them in daily programs. Educational designed with logical approach can be easily with knowledge, understanding skills, complex argument, debate, the issue and the future generation.3 the main issues in the corresponding and possibilities. So the person can prove the value, accuracy and practical claims of information, and prevent accepting one side views and also prevent from defending of preferential views. An effective process learning should stimulate mental enthusiasm and pleasure sense that students from passive learner information role to play an active producer of the strategic knowledge.
In this research our goal was designing lessons educational approach based on Mathematical Logic and study its role in critical thinking, function (lesson progress), and motivation of the fifth grade girl student. The theory of an investigation are:
* Math instructional design approach based on logical activities, increasing critical thinking, in a population which is studying about.
* Math instructional design based on logical activities, and increasing performance (academic achievement), in a population which is studying about.
* Math instructional design based on a logical approach, increasing motivation in a population which is studying about.

2. Method

This etiology is a kind of research with pre exam and post exam plan with control group. The statistics include all fifth grade girl students of Marivan whom were studying in 2011-12 school year and the total number was 912 girls. The number of elementary school girls is 19 and they were available for sampling. At the end Rizwan school was selected as the sample unit. The school has two classes of fifth grade. Randomly assigned to one of the classes as the experimental group and the other selected as control one. Number of units in the experimental group was 26 and control group was 20. Well in this study, the four categories tools had used:
1: Pioneer Riven children matrix used to be sure of the groups equality. Len and Kezlaskit (2002) for having the best result implementate this test on a sample of 259 Lithuania children and 2 years later they examine the exact test on this group again, and the result of it was 0/499.
2: Watson Glaser questionnaire Critical Thinking: The test after translating and editing to Persian for coordinating and match with social and cultural factors of Iran, were examined. The standardization process of Watson - Glaser critical thinking skills test , the last coefficient by the different research in Iran base on Cronbach's alpha test has been reported 0/70 (Mossalanejad, 2008; Islami Akbar et al, 2004) .
3: Researchers mathematical lesson test: using the Researchers mathematical lesson test for measuring the amount of performance of "progress lesson). These tests include pre test and post test from training subjects which was studied. For testing the performance 4 successful teachers in fifth grade were selected. Researchers in order to test selected accidentally 30 students from fifth grade elementary schools .first of all the study training program and then they receive the exam in two session during 10 days .so the effective of test were shown with testing again and with Pearson solidarity ratio formula and solidarity ratio 60% in The level of .0001.
4: Using academic motivation study (AMS) special students forms: Scale of student Motivation AMS Valrand Cronbach's alpha ratio was under 83% and 86 % according to motivation study test. The ratio of the re testing under the stimulating education motivation test within one month was between 71% to 83% . at the end we use covariance analysis for testing the hypothesis.

3. Results

In this part we explain researcher findings. According to this first we explain about characteristics of a description of statistical sample and then the hypothesis of research. To study the theories of research covariance analysis has been used.

<table>
<thead>
<tr>
<th>Group</th>
<th>Abundance</th>
<th>Percent</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>test</td>
<td>26</td>
<td>56/5</td>
<td>56/5</td>
</tr>
<tr>
<td>Witness</td>
<td>20</td>
<td>43/5</td>
<td>100/0</td>
</tr>
<tr>
<td>total</td>
<td>46</td>
<td>100/0</td>
<td></td>
</tr>
</tbody>
</table>
The table results show that from 46 persons of sample statistical sample, 26 units are in examine group and 20 units are in control group. In the other hand 43.5% are in control group and 56.5% are in examine group.

First hypothesis: training designing of math lesson in fifth grade based on logical approach has effect on girls s learning skills.

<table>
<thead>
<tr>
<th>Variable Statistics</th>
<th>Sample</th>
<th>Mean pretest</th>
<th>The mean post-test</th>
<th>Adjusted mean</th>
<th>F</th>
<th>Degrees of freedom</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>test</td>
<td>26</td>
<td>19/1923</td>
<td>30/3462</td>
<td>30.488</td>
<td>7.052</td>
<td>43.1</td>
<td>0.011</td>
</tr>
<tr>
<td>control</td>
<td>20</td>
<td>17/800</td>
<td>20/6500</td>
<td>20.749</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results table shows that scores of pre-test critical thinking in the experimental group, is (30.4889) and the control group is (20.749) with values of F (1,45) equals 7.052 statistically there is some difference (in level 0.01 > P) . according to result the average of student number in more than control group .at the end we can understand that designing training lesson in fifth grade based on logical thoughts increasing the critical thoughts of girls student . so logical hypothesis has been accepted and Contrary hypothesis has been rejected.

Second hypothesis: training designing of math lesson in fifth grade based on logical approach increasing the performance of girls student .

<table>
<thead>
<tr>
<th>Variable Statistics</th>
<th>Sample</th>
<th>Mean pretest</th>
<th>The mean post-test</th>
<th>Adjusted mean</th>
<th>F</th>
<th>Degrees of freedom</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>test</td>
<td>26</td>
<td>3/1400</td>
<td>17/0385</td>
<td>17.061</td>
<td>6.368</td>
<td>43.1</td>
<td>0.016</td>
</tr>
<tr>
<td>control</td>
<td>20</td>
<td>2/8375</td>
<td>13/4750</td>
<td>13.506</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results show that the scores for pre-test of academic performance in the experimental group, is (17.061) and the control group is (13.506) with the values F (45 and 1) equals 6.368 statistically there is some difference (in the 0.01 > P) . As you see the average of student number of examine group is more than control group so we can understand that designing training lesson in fifth grade based on logical approach increasing the performance of girls. So logical hypothesis has been accepted and Contrary hypothesis has been rejected.

Third hypothesis: designing training math lesson in fifth grade based on logical approach increasing the performance of girls.

<table>
<thead>
<tr>
<th>Variable Statistics</th>
<th>Sample</th>
<th>Mean post-test</th>
<th>The mean post-test</th>
<th>Adjusted mean</th>
<th>F</th>
<th>Degrees of freedom</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>test</td>
<td>26</td>
<td>103/3846</td>
<td>144/0769</td>
<td>146.360</td>
<td>0.629</td>
<td>43.1</td>
<td>0.432</td>
</tr>
<tr>
<td>control</td>
<td>20</td>
<td>131/5500</td>
<td>137/9500</td>
<td>140.750</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results show that the scores for pre-test of academic performance in the experimental group, is (146.360) and the control group is (140.750) with the values F (43 and 1) equals 0.629 statistically there is no difference (in the
p>0.01). As you see the average of student number of examine group is more than control group, so we can understand that designing training math lesson in fifth grade according to logical approach increasing the performance of girls. So logical hypothesis has been rejected and Contrary hypothesis has been accepted.

4. Conclusion

In relation to the first hypothesis we can say designing training math lesson based on logical approach, increases critical thoughts fifth grade girl students. The results show that there is difference between the total score of examine group and control group. So we can conclude that designing training math lesson in fifth grade student based on logical approach increasing, critical thoughts of girls. The results of this hypothesis have similarity with. Hashemian nezhad (2001), Abbasi (2002); Shabani (2001); Dezhgahi (2008); Gargari and et al (2007) researching. The reasons for coordination is that the design incorporating changes human hands made structure. Today, schools take the opportunity of thinking from learners with transmitting a large repetitive and non meaning practice. (Shabani, 2002).

Second theory research about designing educational mathematic lesson based on the logical approach is increasing the performance of (lesson progress) fifth grade girl students. The results of this hypothesis according to Jitendra and et al (2001). Students for solving the problems of mathematical information should analysis information to choose the best decision. Designing training based on learning orient. Learning orient means the teacher know the way of performance. (Gosse tafsen 2002, according to the Mahdavi). Also the opportunities given to the teachers for selecting their own goals and methods of learning under certain conditions. This change in perspective, from the stage of learning to educating, cause a changeable model for training places. (Gosse tafsen and his colleagues, 2009, p.14, according to the Mahdavi).

Third theory: designing training math lesson based on logical approach is increasing girl performance. The results show that there are differences between the total scores of exam group and control group. The results theory with previous research; Jitenda and et al (2001), Ellen’s jinn and lavik just (2000) according to Mahdavi and et al (2010). Having motivation for learning is relating on curiosity, interesting of learners. And the ability of them. This student solve their problems easily and expend more time for their own lessons, so their learn more and they continue their education after high school. One of the reasons for lack of meaningful research is low time of exam coz motivation change during the time and affective on behavior. (reeve, 2005 according to the Mahdavi and et al (2010). Though the average of scores in control group was a little more than and examine group in pre exam.

More than several decades of the presence of technology and design educational training courses in mathematics passes, but still is has not the best place of its own. In recent decade's coz of expanding the range of mathematics, compression of programs and speed of teaching has been increased. Suddenly the student face with a multiple information and formula but they are not ready for accepting these information. So we should select especial way to prepare students for accepting these information so they can understand their lesson well and easily and they don’t lost their motivation. Training math without supporting information make the math lesson boring and not attractive so using these instrument make math lesson more attractive and pleasure. Student in elementary always have curiosity sense about what is happening around them. Math help them to understand the truth of life's events and solve their problems. Useful question of teacher from the student can help them to solve the problems. The teacher question should increase the motivation of student, according to solving the problems they can activate their critical thoughts and forecast the logical way for solving the problems.

References


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