Journal of Applied Science and Agriculture, 9(3) March 2014, Pages: 1213-1217

AENSI Journals

Journal of Applied Science and Agriculture

ISSN 1816-9112

Journal home page: www.aensiweb.com/jasa/index.html

Designing The Pattern of Understanding-Based Teaching In The Lesson of Science And The Evaluation of Its Role on Thinking Skill Critical of Fourth Grade Primary

[1]Mokhtar Darvishi Azgale and [2]Zahra Rashidi

[1]PhD student, Department of Educational Sciences, Collage of Human Sciences, Tehran Science And Research Branch, Islamic Azad University, Tehran, Iran.
[2]PhD, Department of Educational Sciences, Collage of Human Sciences, Tehran Science And Research Branch, Islamic Azad University, Tehran, Iran.

ARTICLE INFO

Article history:
Received 20 December 2013
Received in revised form 22 February 2014
Accepted 26 March 2014
Available online 15 April 2014

Keywords:
Teaching, Science,Thinking Skill, Creative, Fourth Primary Grade

ABSTRACT

Background: Teaching method is one of the basic elements of the syllabus design and a general plan that assists the entire students to learn their lesson tasks and various knowledge, attitudes and skills in this regard**. Objective:** The purpose of this research was to design the pattern of understanding-based teaching in the lesson of science and the evaluation of its role on thinking skill criticle of fourth primary grade. The method of the present study was an applied type and the semi-experimental one. So, 60 students of fourth-grade of Javanrood Town were selected randomly during 2012-2013. Torrance creative questionnaire thinking questionnaire was applied to collect the related data. T dependent test was applied in order to compare the means of both groups. **Results:** The results showed that the completion of understanding-based model can be effective in students' producing various ideas at fourth grade primary school growing their knowledge in this regard the completion of understanding-based model can be effective in students' producing various ideas at fourth grade primary school growing their knowledge in this regard. **Conclusion:** the completion of the understanding-based teaching model was effective in the abilities of producing various ideas, new production and innovative affairs as well as the dependent details.

To Cite This Article: Mokhtar Darvishi Azgale and Zahra Rashidi., Designing The Pattern of Understanding-Based Teaching In The Lesson of Science And The Evaluation of Its Role on Thinking Skill Critical of Fourth Grade Primary. ***J. Appl. Sci. & Agric.,*** *9(3): 1213-1217, 2014*

INTRODUCTION

Teaching method is one of the basic elements of the syllabus design and a general plan that assists the entire students to learn their lesson tasks and various knowledge, attitudes and skills in this regard. A teaching pattern should have a theoretical foundation making the high potential teaching methods for reaching to the educational suitable consequences (Safavi 2010). Based on the carried out studies in 1990s and early 21th century, the tendency of the educational experts towards the teaching method is subjected to the categorization of these patterns in this case. Some patterns aimed at supplementing the related targets while other ones have got vast applications in this path. Some of these patterns are formal following regulations and special ways and some others have got informal features. These patterns seem to be very applicable in terms of educational purposes to supplement the whole personal, social and scientific targets potentially reaching to the main thesis of the entire teachers in this relation successfully (Safavi 2010). The categorization of these approaches or general teaching methods (Joyce and Weil 1992) has been categorized into four branches as following:

1- The social models family
2- The information processing family
3- The personal family
4- Concept-based family

This model has been compared with two dimensional traditional or the designing of lesson plan on the subject. These two dimensional models are concentrated on the realities and skills. But three dimensional models have been focused on the concepts, realities and skills. The three dimensional models can challenge the intelligent and emotions of the whole students in a higher level assisting them to take the best way in this regard. In this model, the whole realities are considered as the main target of the concept-based issues. But they have been used as instruments for accessing to the deeply meaning and understanding of the concepts and

Corresponding Author: Zahra Rashidi, PhD student, Department of Educational Sciences, Collage of Human Sciences, Tehran Science And Research Branch, Islamic Azad University, Tehran, Iran.
E-mail: Arashidi_md@yahoo.com

Journal of Applied Science and Agriculture, 9(3) March 2014, Pages: 1213-1217

approaches. (Erikson 2007, p: 19). Thus, due to the above mentioned statements, the present study is to investigate the concept-based model as one of the information-processing family.

Designing the concept-based model:

Tension *et al* (1986) carried out important researches in relation to the learning concepts; these researchers compared two kinds of educational subjects together. In one method, the students have been given the concept definition and then the samples and examples. In another method, the samples and example were firstly given to the students and they have to define the related definitions in this case. The results of the present research showed that the second method the subjects and topics can persist for a long time in students' memory in this case. The model of concept perception has been designed based on this to help students in the process of learning; of course the studies of Broner are also effective in this regard in relation to the thinking way. In this model, the concepts and definitions have not taken directly at students' accessibility. First the samples of these concepts should be devoted to the related process such as positive and negative samples in this case. According to Bruner's viewpoint the recognition of the correct examples from incorrect ones is easy for the whole students. Indeed, the learners can recognize the necessary features before recalling the concept name. (Harirfroush, Sadeghi 2010, p: 8).

The model of concept perception can provide the analysis of the thinking way and effective growth stream for the entire students.

Steps of completing the concept model have three main approaches as following:

The selection of suitable understanding and its arrangement in positive and negative frameworks by teacher, the comparison of positive and negative samples with together and the hypothesizing of students

Accessibility to the concept:

Giving more samples, confirmation of a correct hypothesis, naming the concept and the utterance of definitions by teacher

Analysis of thinking way:

Group discussion about the hypotheses, the representation of thinking steam of students for accessing to the concept by student

Thinking skills:

It has got two dimensions:

1- Intelligence skills
2- Skills of higher thinking level

Usually the processing of information is the regular basis of the thinking process. The thinking skills is a collection of actions, steps and methods as well as regulations that they are always more complex than other methods. Two important skills in the process of thinking are as following:

1- Critical thinking skills
2- Creative thinking (Shaabani, 2011)

Critical thinking:

The educational experts look they observe the creative thinking as a productive and new way of thinking process; they are actually supplement together having common points in this relation. The creative thinking depends on the critical thinking. Due to the complexity of the thinking process and its inseparable dimensions in the process of completion, the lesson syllabus designs have to be the reflective of the realities in this case; the creative thinking leads to the high potential creation issues (Shaabani, 2011).

The experience of designing the understanding-based model based on thinking skill critical in Iran:

Mohsen Eslami (2003) in his thesis titled '' the representation of a pattern for designing and completion of reading critical thinking and the evaluation of its impact on the critical thinking and analysis writing'', carried out the representation of a pattern for designing the plan of critical reading for the students of teacher training university as well as constructing a contextual program for the investigation of this critical thinking on the optimization of the critical thinking and analysis writing and its sub-skills in this regard. The results of the research were considered as a context or an educational instruction for the teacher training courses. The research methodology was of a semi-experimental type of two non-similar groups with pre and post tests. The statistical sample includes two classes (every class has 30 students) of first and second year mathematics students of Tehran teacher training college. The experimental group was exposed to an experimental task group

Journal of Applied Science and Agriculture, 9(3) March 2014, Pages: 1213-1217

(participation at 8 sessions and totally 11 hours training of critical reading course) and it did not carry out for the observation group.

The California critical thinking skills test and the California basic training skills test were used for measuring the critical thinking and writing analysis in pre and post tests, respectively. The analysis of data through the test of independent groups showed that the program of critical reading and critical thinking can upgrade the deductive skills as a general skill in the sub-skill in the experimental group than the observation group significantly. However, the testing skill in experimental group did not show a significant difference with observation group. Also, the impact of writing analysis was significant as a skill on the sub-scales of uttering the ideas and support of ideas as well as arranging the topics. But in the skills of applying the words and suitable statements, the difference was not significant at both groups. Generally it can be concluded that the critical reading is a suitable method for the training critical thinking and writing analysis. Abbasi (2001) carried out the study of effective skills in nurturing the critical thinking in lesson plan of sociology trying to increase the critical thinking of the entire students. First, the context of the second year sociology book and its chapter 3 was recovered titling the social benefits due to the logical process of thinking and then the process of teaching was boosted as the problem-solving method. In addition, the students' tasks and activities were applied as a tool for increasing their critical thinking way and their function. The results represent the effectiveness and efficacy of the experimental group and the researcher has given some suggestions in this regard.

The international experiences have been given in relation to the designing of an understanding-based model on the thinking skill:

Bredderman (1981-1983) covers the vast sciences plans of primary classes by the application of the processing information. His reports represent the positive impacts of this method on creation and learning the science lesson.

El-Nemr (1979) concluded the following results according to his research on the training of biology lesson applied by the processing of information method in this case.

Hillok (1987) in his research carried out on training of writing showed equal results with above mentioned studies. In fact, the impact sizes 0.60 on the related approaches are reported from their understanding-based issues in compare to training the same topics without the establishment of the topic in teaching methodology.

Method:

The methodology of the present study is an applied type due to its purpose and the semi-experimental method was also applied to collect the related data. **Statistical community:** the research community of the research includes the entire students of fourth-grade of Javanrood Town during 2012-2013. Based on the statistics of the town's management, the number of the students is 250 ones. **Sample and sampling method:** the clustering sampling method was applied to select the sample in this study. For the reason, a school was accidentally selected among ten governmental schools. The related school had two fourth grade classes that every class had 30 students and then the researcher grouped the class into an observation and experimental group. By the use of three similar researches, the sample volume was selected 60 people in this study (30 in observation and 30 in natural sciences group).

Data collection instrument:

Hassan Shaabani' critical thinking questionnaire:

This measures students' critical thinking skills degree before and after the completion of understanding-based model; it includes three subscales:

Comparison, recognition and judgment that it is consisted of 27 questions and 60 scores; 9 questions is subjected to the comparison with 14 scores, 8 questions as the recognition with 16 scores and 10 questions about the judgment with 30 scores (Shaabani 1999).

Technical features of data collection method:

The validity coefficient of Hassan Shaabani's critical thinking questionnaire was obtained r = 0.93 using retest method in this case. It was very satisfactory that has been also used for the contextual validity. In measuring the contextual reliability, the manipulation test was given to ten people of teacher training college established in Tehran. The entire comments were collected and they were mostly agreed in this regard and there were no any questions in this regard. The unnecessary questions were also eliminated from the study. As a result, 27 questions were left as the final optimized measuring questions having the three features of comparison, recognition and knowledge judgment in this path. The factor analysis was applied to measure the reliability of the related structure. In this method, the high correlation was existed between the factors and transforming thinking factor (Shaabani 1999).

Data analysis method:

Journal of Applied Science and Agriculture, 9(3) March 2014, Pages: 1213-1217

In order to compare the means of both groups, T dependent test was applied that the degree of DF equals n-1 in this study.

Results:

The representation of the findings of a research can have various forms due to its arrangement. The representation of this arrangement is an imperative issue that has to be planned before; the best way of structural arrangement is to represent the related findings due to the research questions (Sarmad, Bazarghan and Hejazi 2004)

Table 1: comparison of post scores of paying attention in observation and experimental groups

Indices / groups	N	M	Std dev	M std err	M fract	T	Df	Sig
Observation group	30	10.53	1.43	.26	0.77	2.263	29	P =0.031
Experimental group	30	11.30	1.00	0.18				

As it shown in table 4, the obtained degree for T statistics test equals 2.263 at 0.05 sig level ($p< 0.05$); hence, it can be concluded that along with 95% confidence level the hypotheses H0 and H1 are confirmed; that is, there is a significant difference between the observation and experimental groups. Based on this and due to the mean scores of producing various ideas of experimental group (11.30) is higher than the observation group (10.53). The fraction of these means is 0.77 positive; so, it can be concluded that the completion of understanding-based model can be effective in students' producing various ideas at fourth grade primary school growing their knowledge in this regard.

Table 2: comparison of post scores of recognition in observation and experimental groups

Indices / groups	N	M	Std dev	M std error	M frac	T	Df	Sig
Observation group	30	11.88	1.34	0.25	0.67	2.567	29	P =0.016
Experimental group	30	12.55	1.39	0.26				

As it shown in table 5, the obtained degree for T statistics test equals 2.567 at 0.05 sig level ($p< 0.05$); hence, it can be concluded that along with 95% confidence level the hypotheses H0 and H1 are confirmed; that is, there is a significant difference between the observation and experimental groups. Based on this and due to the mean scores of producing various ideas of experimental group (12.55) is higher than the observation group (11.88). The fraction of these means is 0.67 positive; so, it can be concluded that the completion of understanding-based model can be effective in students' producing various ideas at fourth grade primary school growing their knowledge in this regard.

Table 3: comparison of post scores of judgment in observation and experimental groups

Indices / groups	N	M	Std dev	M std err	M fract	T	Df	Sig
Observation group	30	11.77	1.34	0.25	0.67	2.567	29	P =0.011
Experimental group	30	12.44	1.39	0.26				

As it shown in table 6, the obtained degree for T statistics test equals 2.567 at 0.05 sig level ($p< 0.05$); hence, it can be concluded that along with 95% confidence level the hypotheses H0 and H1 are confirmed; that is, there is a significant difference between the observation and experimental groups. Based on this and due to the mean scores of producing various ideas of experimental group (12.44) is higher than the observation group (11.77). The fraction of these means is 0.67 positive; so, it can be concluded that the completion of understanding-based model can be effective in students' producing various ideas at fourth grade primary school growing their knowledge in this regard.

The results of the study show that the participant students have shown an increasingly increase in their understanding-based concept teaching model particularly at the thinking skills (creation and critical thinking ways); in other words, the men scores of experimental group is 94.6 and the observation group is obtained 90.93 in the study. Also the completion of T dependent test with DF = n-1 has shown that the calculated t = 5.187 is larger than the T table; hence, the zero hypothesis is rejected and the research hypothesis is confirmed in this regard. In other words, the participation of fourth grade students in the program of understanding-based teaching model has been effective on their thinking skills increasing their thinking skills, too. The results of the present study are coincident with the researches of Joyce *et al* (2002), Tennyson, Karchiarla (1986), El-Nemr (1979) and Hillock (1987).

Journal of Applied Science and Agriculture, 9(3) March 2014, Pages: 1213-1217

Conclusion:

In this present study the understanding-based teaching model has been carried out at the fourth grade students. The results of the study represent that the participation of fourth grade students in the program of understanding-based teaching model has been effective on their thinking skill increasing their thinking skill. Every three hypotheses were confirmed; that is, the completion of the understanding-based teaching model was effective in the abilities of producing various ideas, new production and innovative affairs as well as the dependent details.

REFERENCE

Abbasi Effat, 2001. study of effective skills on critical thinking in lesson plan of sociology during 2000-2001, a thesis for MA, Tehran SAMT Publication

Abbasi Effat, 2001. study of effective skills on critical thinking, Tehran teacher training college

Bredderman, T., 1981. Elementary school process curricula:A meta-analysis. ERIC Document Reproduction Service, ED pp: 170-333.

Bredderman, T., 1983. Effect of activity- based elementary science on student outcomes:A quantitative synthesis .Review of Educational Research, 53(4): 499-518.

El- Nemr, M.A., 1979. Meta-analysis of the outcomes of teaching biology as inquiry .Boulder:University of Colorado.

Eslami Mohsen, 2003. representation of a model for designing and completing the critical reading and the study of its evaluation on the critical thinking and analysis writing, a thesis for MA, teacher training college

Lynn, H., Erickson, 2007. Concept-based Curriculum & Instruction For the Thinking Classroom

Harirfroush Zahra and Sadeghi Mehrnaz, 2010. collection of books at active training affairs of understanding-based teaching model, training sciences publication

Rezaiee Saieed and Manoochehri Mahshid, 2008. study of validity, reliability and normology of Torrance creation test among Tehran high school teachers, magazine of Tehran university psychology affairs, 38th year, 3: 47-68.

Safavi Amanollah, 2010. General Methods and Techniques of Teaching.

Sarmad Zohreh, Bazarghan Abbas, Hejazi Elaheh, 2004. research methodologies in behavioral sciences, Tehran: Aghah Publication.

Shaabani Hassan, 1999. impact of problem-solving as group task on critical thinking way and students' educational progression at fourth grade of Tehran, a thesis for PhD at lesson planning, teacher training college

Shaabani Hassan, 2011. advanced teaching method, Tehran: SAMT Publication, 5th printing

Tennyson, R.D. and M. Cocchiarella, 1986. An empirically based instructional design theory for techi