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The Effect of Descriptive and Quantitative Evaluation on the Achievement of Experimental Sciences of Fifth Grade Students in Dezfool During 2012-2013

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ABSTRACT

The present study aims to investigate the effect of descriptive evaluation on the achievement of experimental sciences of students included the descriptive evaluation and the traditional evaluation and compares these two groups, so the method of this research is of causative- comparative. The statistical population includes 5730 students (boys and girls) in their fifth grade in Dezfool during 1391-92 and the volume of sample includes 581 students (299 qualitative and 282 quantitative in 10 classes including the proposal of descriptive evaluation and 10 classes including quantitative evaluation) which were selected by multi-stage random cluster and for analyzing data, the t test was used for two independent groups as well as the descriptive statistics. The results of t test for two independent groups showed that there is significant relationship between the groups in their experimental sciences course ($P < 0.01$), so the achievement in two groups of descriptive evaluation and quantitative evaluation is different and the achievement was better in the descriptive evaluation group than the quantitative evaluation group.

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INTRODUCTION

Extremism aspect restricted enforcing the summative evaluation and formative evaluation to investigate the learning process of students. So, for solving the problem of summative and formative evaluation, the supreme council of education decided to change the quantitative scales (0-20) to qualitative and grading scales and use the materials of learning process evaluation such as portfolio and observation of behavior in schools (collection of approvals of council, 1382). According to this decision, the office of educational evaluation and educational affairs relating to the evaluation of achievement represented proposal which was enforced experimentally in Mehr (October 2004-2005) 82-83 in some schools. (Hasani, 1382).

Few years ago, the concern of the policy makers in educational system in Iran was the quantitative development of education and it included two important issues: one was increasing the accessibility to the education from all over the country and the other was the equal access to the education, but in recent years, these concerns turned into "quality development" from "access to education". The effective factors vary and they include in-service trainings and the curriculum improvement. One of the important factors in improving learning is considering the evaluation of education. (Hasani, 1388).

In order to evaluate the success of educational system for achieving the aim, it is essential to have an accurate evaluation system. Changes in evaluation system for improving the learning state are phenomena observed in most of the countries around the world (Seif, 1382). In our country, these kinds of measures have been adopted along with other countries. The evaluation in education system begins with the proposal of two-round exams and signifying the role of ongoing evaluation. Nazarinejad (1380) stated that one fifth of students in their first grade are rejected in exams and more than one third of elementary students drop out of school before graduating. Repeating the major in elementary level is costly for the government because the traditional methods of evaluation force the students to present the accurate and predetermined answers. With regard to replacing the descriptive evaluation by the quantitative evaluation in elementary level, the new approaches of educational system to use this evaluation, despite the results of few studies done in this field and the theoretical principles in descriptive evaluation, it is essential to compare the results of these two systems to determine if

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there is difference between the achievement of fifth grade students included the descriptive evaluation and the students included the quantitative evaluation in the course of experimental sciences regarding the changes in the kind of evaluation.

The Internal History of Research:

There are a lot of studies in this field. Amiri(1385), concluded that the quality of training– learning process, the accessibility of aims, the physical aspect and the level of psychological health in training environment-learning of students included the proposal of descriptive evaluation was better than that of students included the quantitative evaluation. The girl and boy students from different grades access to the social- aspect aim equally. Also, Behvari (1387), compared the viewpoints of teachers and managers about the quantitative and qualitative evaluation, the results showed that in comparing the qualitative and quantitative evaluations, there is significant difference between the aspects of improvement of students' behavior, improvement of learning in students , and the psychological health of students and there is no significant difference between two other aspects (difficulty of training – learning process and interaction among the parents of students , managers and teachers).

Olina&Salivan (2002) investigated the effect of techniques of class evaluation on the progression and insight of student. In this research, six teachers were devoted to the following experimental groups: A) without evaluation, B) teacher evaluation, C) individual evaluation plus teacher evaluation. This group gained higher grade than the group without evaluation and the students without evaluation had better insight to the curriculum compared to two other groups while the students with individual evaluation plus teacher evaluation were more confident to their ability for experimental achievements. The research by Olina&Salivan (2002) suggests that combing the self-assessment and teacher evaluation is effective. In this regard, teacher should supervise the self-assessment and year polls and evaluate the function of students.

With regard to the effectiveness of functional tests on different features of students, Nikto (2002) declared that these kinds of tests and spreading this evaluation in class lead to persuading the students to think openly and do the creative tasks. Woolfolk (2004) declared the reason of spreading these functional tests was compared to that of the objective tests in which there were a lot of objections against the objective traditional tests in the last two decades with respect to the fact that these kinds of tests evaluated the skills which were not observed in the real world. Santrock (2004), mentioned that we can ask the students to judge different activities. So, self-assessment is important in functional evaluation (Seif, 1384), these kinds of evaluations force the students to create and discover. Another kind of functional test which is well known was called portfolio (Seif, 1382). Portfolio includes combination of the tasks of a student which introduces his progress and success in a specific field (Murohy& David Shofer, 2001). According to Kleneowski (2002), the skills of thinking develop the analysis, creativity and metacognitive strategies. The portfolio, recording sheet of events, the inspection list or the behavior invoice, functional tests and other cases in system of descriptive evaluation are used and performed in the class by the teacher. Farzanpour (1389) compared the cognitive , emotional and psychological-motional function of students majoring in the second grade in Dezfool with regard to the descriptive and quantitative evaluation and concluded that: the students in descriptive proposal function better than the students in the quantitative evaluation proposal with regard to the cognitive field; also the scores of students in descriptive proposal was more than that of the students in quantitative evaluation regarding the emotional variables such as the quality of life in school and reaction of students to the class and school.

In psychological-motional aspect, the students in descriptive proposal function better than the students in quantitative proposal. Hasani (1390), in his research entitled the effect of qualitative and quantitative evaluation on reading skill of student in Karaj , concluded that; the mean of listening skill of students in descriptive evaluation was 6.75 and in quantitative evaluation was 6.40; which suggests that the students in descriptive evaluation were in better condition but this difference was not statistically significant. Regarding the ability of combing the letters, and reading ability, there is significant difference between the descriptive and quantitative evaluation groups and this difference is beneficial to the descriptive evaluation. Finally, the results showed the progress in reading skills of students included in qualitative-descriptive evaluation compared to other students.

Piri (1390), in his research entitled 'Comparison of skills and insights of third grade students in descriptive and quantitative proposal in elementary school of Dezfool', concluded that: the mean of skill test of students in quantitative evaluation was 20.69 and in descriptive evaluation was 32.03 and this suggested that in the course of experimental sciences , the level of accessibility to the learning skills in students evaluated by descriptive method was more than that of students evaluated by quantitative method and this difference was statistically significant. Finally, the results showed that the assessment strategies in descriptive evaluation proposal provided the necessary conditions for improving the learning skills and the descriptive evaluation plays important role in improvement of the quality of learning-teaching process enhancing the learning skills.

The External History of Research:

Van Evera (2006) investigated the effectiveness of formative evaluation feedback on function and motivation of students in guidance school in science course. The results showed that the feedback of formative evaluation lead to increasing the efficiency of students. Black & Williams (2006) in a study showed that the formative evaluation effected on the learning of students cognitively, socially and emotionally. Huebner (2009) in an article, entitled 'the balanced evaluation', declared that the final evaluation cannot update the teachers about the teaching methodology and provide the information which help the teacher improve the learning process. Green Stein (2009) in an article entitled 'every day in every class ', declared that " evaluation for learning is better than the evaluation of students' learning" and the evaluation leads to improving the learning of students when we consider it as inseparable part in learning-teaching process.

Changes in evaluation from final to formative, leads to improving the students' learning and so the evaluation turns into dynamic state from stable state and this change leads to improving the students' learning and efficiency of teaching. With regard to the effectiveness of qualitative tests on different features of students, Nikto (2002) declared that these kinds of tests and spreading this kind of evaluation in class lead to persuading the students to think openly and do the creative tasks. Toe & Kelarson & Matio (2010) in a research suggested that the descriptive evaluation in elementary level and lack of stress in class lead to improving the achievement.

MATERIALS AND METHODS

In this research, the ex post facto (causative-comparative) method was used.

Sampling Method:

The subjects of this research included all of the students majoring in fifth grade in Dezfool (238 classes) during (2013-2014) 1391-1392. In this study, the multi stage cluster sampling was used. In this research, the researcher divided Dezfool to five regions and selected four schools from each region and one fifth grade class from each school and totally 10 classes from descriptive evaluation and 10 classes from quantitative evaluation were selected. The test was completed for all of the students of these classes.

The Materials of Data Collection:

The required data for the history of research were collected by investigating the evidences and documents of library and other data were collected by field study using the research-made test for evaluating the achievement of experimental sciences. To design the questions of this test, in addition to the aims and contents of the sciences textbook of fifth grade, the comments of experts were considered. To obtain the descriptive results, the statistical indexes, tables, graphs, frequencies, mean and standard deviation and to obtain the inferential results, the t test for both groups were used.

The Research- made Test for Academic Performance:

This test included 36 questions of which 14 questions were true-false, 17 questions were multiple-choice and 5 were essay questions which were answered by the testees. The validity of this test was determined to be 0.82 based on the comments of the experts and some teachers. The stability coefficient of this test was determined to be 0.83 by retest. This test included 20 scores for each student. The maximum score was 20 and the minimum was zero.

RESULTS AND DISCUSSION

Mean, standard deviation and variance of achievement in experimental sciences for the students included the descriptive evaluation and those who were included the quantitative evaluation was represented in Table 1.

Table 1: The descriptive indexes of achievement for the students included the descriptive evaluation and quantitative evaluation in the course of experimental sciences

No.	Variance	SD	Mean	groups	indexes tests
299	5/98	2/44	15/76	Qualitative	Sciences
282	4/25	2/06	13/99	Quantitative	

As shown in Table 1, the mean of scores of students included in descriptive evaluation was more than that of students included the quantitative evaluation.

The Results of the First Hypothesis:

To analyze the data of this research and test the hypothesis, t test for both independent groups was used. The results are shown in Table 2. In this table, both groups of descriptive evaluation and quantitative evaluation were compared.

Hypothesis: There is significant difference between the achievement of fifth grade students in descriptive evaluation and that of the students in quantitative evaluation

Table 2: The results of t test for comparing the descriptive evaluation and quantitative evaluation in experimental sciences

Sig	df	t	SD	Mean	No.	Groups	Indexes tests
0/01	579	9/39	2/44	15/76	299	Qualitative	Sciences
			2/06	13/99	282	Quantitative	

Based on Table 2 which suggests the t test of both independent groups, the mean of qualitative group is 15.76 and SD equals 2.44, also in quantitative group, mean equals 13.99 and SD equals 2.06, t statistics is 9.39, df is 579 and the P value is less than 0.01. It shows that there is significant difference between the function of students with descriptive evaluation and that of students with quantitative evaluation. So the hypothesis entitled "there is significant difference between the achievement of fifth grade students in descriptive evaluation and that of the students in quantitative evaluation" is accepted.

Discussion:

The results of data analysis is discussed,

The results of hypothesis of the research:

T test for investigating the achievement of fifth grade students included the descriptive and quantitative evaluation showed that: there is significant difference regarding $P < 0.01$. The level of achievement is different between the descriptive evaluation and quantitative evaluation and the achievement of students with descriptive evaluation was better than that of students with quantitative evaluation.

The results of this study were consistent with the results of research done by Kord (1381), Rezaie (1385), Van Ora (2006, as cited in Sharifzadeh, 1389) and Kobisezen&beveridge(2009).

In order to clarify these results, we can say that, evaluation in qualitative and quantitative forms results in different results in the class. In traditional system of evaluation, the learning properties which are able to be quantitative are considered. This trend draws the quantitative evaluation toward unilateralism and it is attempted to move to unilateral education rather than the multilateral and comprehensive process.

Neill & Medina (1989) believe that pressure resulting from teaching the contents for getting better score and reducing the time for teaching the main contents cause the content of tests convert to the content of lesson and test play the role of curriculum. The experience of instructors and teachers showed that the teachers teach the contents of test or the sections which are more likely to be questioned instead of dedicating themselves to teach the textbook contents and the aims of study. The theoretical principles of descriptive evaluation are based on the structure oriented theory.

The structuralists believe that learning should not be different from the natural forms and the real situations of life is basic for learning and there is relationship between perceiving one concept and using it in new situations. In the fourth aim of descriptive evaluation, it is concluded that this proposal moves toward accessing the aim of lesson rather than considering the content of lesson. To achieve this aim, the teacher should consider the process of teaching-learning instead of the content. The qualitative-descriptive evaluation attempts to achieve this aim by considering the teaching-learning process because the qualitative evaluation investigates all of the aspects of students and the changes of their nature accurately, that's why it's more variable method for evaluating different aspects of thinking like critical thinking, analytical and logical thinking and creativity, some properties of descriptive evaluation which are based on the structuralism and cause this evaluation take step toward improvement of learning process includes:

1. Feedback
2. Functional evaluation
3. Using different materials to evaluate the students (observing the students while making something, using the checklists, doing research and cooperate with others....)
4. Fading the role of exam (by considering the process of learning and using the continuous evaluations)
5. Using the ordinal scale
6. Reducing the stress and improving the behavior
7. Portfolio (in order to recognize the learning process of children)

Conclusion:

The results showed that there is significant difference between the achievement of students with descriptive evaluation and that of quantitative evaluation in the course of experimental sciences. The hypothesis of the research regarding the significant difference between the achievements of students with descriptive and quantitative evaluation is accepted and it can be concluded that the achievement of students with descriptive evaluation is more than that of the students with quantitative evaluation.

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