Descriptive Qualitative Method of Evaluation from the Viewpoint of Math Teachers and Its Comparison with the Quantitative Evaluation (Giving scores) Method

(A Case Study on the Primary Schools for Girls in Zone 1 of Tehran City)

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Abstract

In recent years, one of the most important developments which have been taking place in the primary school education system is the development of the qualitative-descriptive method of evaluating the students' achievements. The main goals of the qualitative-descriptive evaluation are improving the quality of learning and promoting the level of mental health in teaching-learning environments. Therefore, based on the the raised hypothesis, the purpose of this study is to investigate the teachers' perspectives regarding the descriptive and quantitative methods of evaluation. Using survey sampling method and multi-stage cluster sampling method, 30 teachers, teaching through the qualitative (descriptive) method in zone 1 of Tehran were selected. A questionnaire, developed by the researcher of this study, was used to compare the qualitative (descriptive) method of evaluation with quantitative evaluation method in order to explore the viewpoints of teachers. Using 1-sample sign test, the results revealed the positive view of teachers towards descriptive evaluation. From the perspective of teachers, quantitative evaluation has had negative impacts on the mental health of families and students for years. Hence descriptive method of evaluation must match the content of textbooks and whatever the teacher has taught.

Keywords: Mathematics, learning, quantitative evaluation, descriptive evaluation, teacher.

1 Introduction

Dynamism and survival in the field of science and practice on a global scale requires meaningful, in-depth and continuous learning, and evaluation of its implementation is the responsibility of the evaluation system. Evaluation discovers the needs, develops the objectives and provides learning and teaching opportunities and fixes the deficiencies in all educational courses. However, although the use of both quantitative and qualitative evaluations together, is the most effective method for all activities of the students, still a large part of the evaluation is carried out only using quantitative method. According to the two principles of accountability and educational improvement, implementation of traditional evaluation methods which are mostly carried out in compressed way and in the form of written and oral tests, seem necessary. However they are insufficient and immature in guiding and shaping the education and learning. In contrast, the process-based methods of evaluation try to answer the question "Where is the student standing and what can I do to improve his status?" According to the new theories, the teacher

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should evaluate the learners' extent of learning during the whole course period. This helps the teacher to be aware of all the strengths and weaknesses of his educational activities. Therefore, evaluation is considered as a part of teaching and determines and orients the teaching. In other words, evaluation is used for better teaching takes place, instead of teaching for the sake of the evaluation after that. If the evaluation does not take place in a true, correct and proper way, it will pose a lot of damage. Some of the consequences of improper evaluation include: loss of interest in learning, increase in test anxiety, negative behavior, increase in rejection rate and grade repetition, impaired emotional growth of students, loss of creativity, increase in unhealthy competition, creation of shame and frustration, and neglect of the individual differences. In descriptive evaluation, unlike the quantitative evaluation, students' status receives special attention. This evaluation is defined as a qualitative model that attempts to pay attention to the comprehensive learning of students and present a description of their learning status to modify, improve and develop students' knowledge, skills and attitudes. In recent years, many attempts have been made to change and strengthen the educational system. Among these efforts, we can refer to the effort for the development of the educational system, including the developments in the assessment of students' learning, since teaching methods leave deep impacts. Accordingly, to overcome the shortcomings of the current evaluation system (traditional system of evaluation) and as a transformational step, descriptive evaluation project tentatively carried out in the first-grade of elementary school and in 200 classes based on the specified quotas in the province level, during the academic year 2003-2004 [1]. Henceforth in this study we are seeking to meet and review the issue of what teachers' view about the qualitative evaluation is. The results can to some extent show the performance results of this type of evaluation.

2 Evaluation Types

2.1. Diagnostic Evaluation
When developing the goals of each lesson, the teacher or course planner should know the students and recognize their knowledge status. Also, they should know what the students need to have as background knowledge to start a new lesson or new training course, so that they can be able to learn the content and training concepts. Diagnostic evaluation which is largely close to formative assessment, like all evaluations, includes the determination, description and classification of some aspects of the learners' behavior and judging them. The two main use of diagnostic evaluation which separates it from the other two types of evaluations are:

- Determining the extent of the learner's readiness or his input behavior and his knowledge before teaching and identifying the starting point of teaching.
- Discovering the fundamental reasons for the deficiencies and failures in students' learning.

Diagnostic evaluation tests are implemented before the course is started. In order to use the determination of the causes of the learners' lack of progress, the diagnostic evaluation takes place while teaching. When the diagnostic evaluation is used to detect teaching deficiencies, this evaluation can be used together with the tests used for formative assessments [3].

2.2. Formative Assessment (Continuous, Stage-Based)
The main purpose of the implementation of formative assessment is to identify the extent of the learners' skills in specific parts of the course and to determine those parts in which the learners do not have sufficient skills. In other words, the goal is not giving marks to the learners and being satisfied with that, but to help the students' learning, using their exam results, and also to direct the teaching process in ways that they achieve the necessary skills. Each lesson can be divided into a set of concepts and thought patterns. If the teaching goals have not achieved (the learners have not learned the expected contents), then the repair teaching or any other different method which can maximize the students' learning is recommended. This means that after finding defects and failures in education, solutions such as giving tasks, teaching individually or changing the teaching method and so on, are recommended. In this type of test, mark is not important, but what is important is the nature of the responses and the learners' way of responding which must be considered and be used for evaluating the extent of the learners' educational achievements in each stage, part or educational course. That is to say, if a student answered a question wrong, we don't merely rely on giving him negative mark or low mark, but to analyze his wrong answer [3].
2.3. Summative Assessment (Final Assessment)
This type of evaluation is also called with other names such as final, overview or cumulative assessments. The main purpose of the execution of the summative evaluation is to see whether at the end of a course, the expected results and the ultimate goals of the course have been achieved or not. Summative assessment tests are applied when the teacher wants to evaluate some learned skills or concepts which all in all refer to a specific capability. In final assessments, the evaluations seek the preset correct answers and do not pay attention to the relationship between assessment and learning. These evaluations, rank and compare students with each other, and stress on the weaknesses of the students and hence decrease their self-esteem [3].

2.4. Descriptive Evaluation
The international studies of West and Criighton (1990) in the field of educational assessment shows that many countries have attempted to reform their educational and evaluation systems. In Eastern European countries, new evaluation trends can be observed which based on the definition of the national standards and transitions from knowledge-based assessment to competency-based assessment have been established [2]. The result of the studies conducted by International Institute for Educational Evaluation entitled TIMSS (in 1995) and PIRLS (in 2001) showed that the educational achievement of fourth grade students of elementary school in mathematics, science and reading literacy is very low. In these studies, Iranian students were ranked 25th in mathematics from among 26 countries and 23th in science among 24 countries, and in reading literacy development among 35 participating countries received a ranking of 32th. The weak performance of Iranian students in these studies, show the necessity of the need for paying serious attention to reformation and improving the quality of public education and educational affairs. These results also made the High Council of Education to give the mission of preparing a plan for changing the evaluation system of elementary grades to the Public Education Department. Hence a plan was prepared under the title of descriptive evaluation and implemented [6]. Descriptive evaluation system in primary schools of Iran, has implemented since the academic year 2003-2004 in a number of primary schools, with the aim to make fundamental changes to the existing system of evaluation and with respect to the new approaches in teaching-learning process and effective methods of evaluating students based on the guidelines of the Supreme Council of Education. The emphasis of this system is on changing the quantitative scale (0-20) to qualitative scale (descriptive evaluation) and final assessment to formative assessment [4]. To achieve these objectives, teacher uses different instruments such as portfolio, filing observations (logging), check list (behavioral list), homework, school progress reports, feedback, self and peer assessment and different forms of formative and performance evaluations [5].

3 Literature Review
Maher et al (2007) compared the descriptive evaluation plan and the traditional evaluation system considering the variables such as class atmosphere, emotional characteristics and creative behavior of elementary school students. The results showed that there is a significant difference between the participants of the descriptive evaluation plan and the participants of traditional system according to the variables related to the class atmosphere (collaborative learning, individualistic, competitive, fairness in scoring, sense of alienation from school, class solidarity and social support). Apart from this, this difference was also significant about the variables of the students' emotional characteristics (overall satisfaction, negative affect, the relationship with the teacher, social solidarity, opportunity, success, adventure) [9]. Zamani fard (2010) investigated the teachers' experiences of descriptive evaluation plan in primary schools. Teachers achieved many positive and negative experiences during the process of teaching and implementing the plan. The planners' familiarity with the teachers' experiences, as the administrators of the program and the emphasise on the important issue of how they perceived the objectives of this plan and gave meaning to it, had important role in the elimination of the shortcomings of this plan and enhancing its effectiveness [7]. Bairemi pour et al (2011) sought to identify and prioritize the factors affecting the implementation of the country's descriptive evaluation in primary schools. The results showed that the factors of management, teacher-related factors, physical factors and psychological factors and the factors creating the interactive and collaborative atmosphere have had the greatest impact on the
implementation of the descriptive assessment in primary schools of the country [8]. Cruickshank et al. (2006) asserted that when academic achievement policy making with imprecise factors, such as motivation or attitude combine together, the stability and awareness of the scores decrease. One solution to this problem is to assign two separate scores for each student: One of the scores is the representative of the student's academic achievement or amount of learning and the other score was the representative of the teacher's judgment about the student's motivation and behavior. When one score is given, it must be the reflection of the student's progress. Another way to solve the above problem is to use score for the students' achievement and learning, and for the other factors, a written description be used [10]. Loukas & Murphy (2007) recommended that considering evaluation, the existence of calm atmosphere, with high integrity among students, supportive, less competitive and with high satisfaction plays an important role in creating high psychological balance between students [11]. Santrock (2008) defended score and scoring and based on the ideas of experts in assessment and evaluation of academic achievement evaluation, expressed that:

In our society, scores are important indicators which are taken serious by students, teachers and the public. Never use the scores to reward or punish the students. Always give the students' grades based on how well they have learned the subject and to this end, use objective evidence related to the students' learning[12].

4 Research Method

Due to the design of the hypothesis, the researcher had to use the survey research method. Survey is one of the social research methods in which members of the population respond to the questions about the subject of the study. They do this either by filling in the questionnaire, or verbally through interviews. In other words, surveys are the systematic method of data collection through face to face interviews, telephone or self-administered questionnaire which runs for the members of the population. Therefore, considering the subject of the present study, the population consisted of the primary schools for girls in Tehran city. Therefore, all teachers who attended elementary schools in the zone one of Tehran during the academic year 2013-2014 were considered as the members of the population. With the help of a multi-stage cluster sampling method, two primary schools were selected from the primary schools for girls in education zone 1 of Tehran. One of these primary schools had done the evaluation using quantitative method, and the other primary school had done the evaluation through the qualitative (descriptive) method. 30 teachers who taught through qualitative (descriptive) method were selected. Since no questionnaire were available in both local and international data bases to be used for the comparison of the qualitative evaluation and quantitative evaluation from the viewpoint of the teachers, the researcher developed a questionnaire to compare qualitative (descriptive) evaluation and quantitative evaluation methods from the viewpoint of the teachers, by the help of investigating and studying the thesis with similar subjects. This questionnaire was related to the investigation on the comparison of qualitative and quantitative evaluation methods. The questionnaire included 22 questions with five Likert scales. This questionnaire which was designed and made for teachers was approved with the reliability of 0.92.

5 Findings

In this section, we first describe the results of the descriptive statistics. As it can be seen, in examining the hypothesis, using the questionnaire, the highest means belong to the questions 1, 22, and 15 respectively, which show that the majority of the teachers chose "high" option. Also, according to the amount of the mod, it is clear that the highest mod belongs to the question 11 that show that the majority of the teachers in this question chose the "very high" option. In most of the questions in the questionnaire, the teachers mostly responded the "high" option. Moreover, the values of the standard deviation of the 22 questions in the questionnaire show that the lowest standard deviation belongs to the 10th question and also shows that it has the least dispersion among the responses, in other words, it shows that most of the teachers, have answered to one specific option.
Table 1: Results of the descriptive statistics related to the teachers’ views towards the descriptive evaluation

| Questions | Number | Mean  | Mode | Standard deviation |
|-----------|--------|-------|------|--------------------|
| Q 1       | 30     | 4.26  | 4    | 0.72               |
| Q 2       | 30     | 3.9   | 4    | 1.13               |
| Q 3       | 30     | 3.68  | 4    | 0.9                |
| Q 4       | 30     | 3.52  | 3    | 1.18               |
| Q 5       | 30     | 3.06  | 3    | 1.15               |
| Q 6       | 30     | 2.74  | 2    | 1.29               |
| Q 7       | 30     | 3.48  | 4    | 1.06               |
| Q 8       | 30     | 3.71  | 4    | 1.16               |
| Q 9       | 30     | 3.94  | 4    | 1.09               |
| Q 10      | 30     | 3.81  | 4    | 0.54               |
| Q 11      | 30     | 3.77  | 5    | 1.05               |
| Q 12      | 30     | 3.55  | 3    | 1.17               |
| Q 13      | 30     | 3.71  | 4    | 1.13               |
| Q 14      | 30     | 3.9   | 4    | 0.97               |
| Q 15      | 30     | 4.16  | 4    | 0.73               |
| Q 16      | 30     | 4.13  | 4    | 0.95               |
| Q 17      | 30     | 3.97  | 5    | 1.22               |
| Q 18      | 30     | 3.1   | 3    | 1.37               |
| Q 19      | 30     | 3.94  | 4    | 0.77               |
| Q 20      | 30     | 3.74  | 4    | 1.12               |
| Q 21      | 30     | 3.77  | 4    | 0.88               |
| Q 22      | 30     | 4     | 4    | 0.85               |

Table 2: Results of the 1-sample sign test related to the teachers’ views towards the descriptive evaluation

| Questions | Median | High | Equal | Low | P-value |
|-----------|--------|------|-------|-----|---------|
| Q 1       | 4      | 13   | 13    | 5   | 0.98    |
| Q 2       | 4      | 11   | 12    | 8   | 0.82    |
| Q 3       | 4      | 5    | 15    | 11  | 0.1     |
| Q 4       | 3      | 9    | 5     | 17  | 0.08    |
| Q 5       | 3      | 3    | 9     | 19  | 0.00    |
| Q 6       | 2      | 6    | 1     | 24  | 0.00    |
| Q 7       | 4      | 5    | 13    | 13  | 0.04    |
| Q 8       | 4      | 9    | 11    | 11  | 0.4     |
| Q 9       | 4      | 10   | 15    | 6   | 0.89    |
| Q 10      | 4      | 2    | 21    | 8   | 0.05    |
| Q 11      | 4      | 10   | 8     | 13  | 0.33    |
| Q 12      | 3      | 9    | 6     | 16  | 0.11    |
| Q 13      | 4      | 7    | 15    | 9   | 0.4     |
| Q 14      | 4      | 9    | 14    | 8   | 0.68    |
| Q 15      | 4      | 10   | 17    | 4   | 0.97    |
| Q 16      | 4      | 12   | 14    | 5   | 0.97    |
| Q 17      | 4      | 14   | 9     | 8   | 0.93    |
| Q 18      | 3      | 6    | 7     | 18  | 0.01    |
| Q 19      | 4      | 7    | 16    | 8   | 0.5     |
| Q 20      | 4      | 8    | 14    | 9   | 0.5     |
| Q 21      | 4      | 6    | 15    | 10  | 0.22    |
| Q 22      | 4      | 9    | 15    | 7   | 0.77    |

As can be seen, since the amount of the p-value in question 22 is greater than 0.05 (0.77 > 0.05), the first hypothesis of the study regarding the positiveness of the descriptive evaluation from the perspective of the teachers is supported. Despite this result, based on the obtained P-values in questions 5, 6, 7 and 18, all of which are smaller than 0.05, the null hypothesis about the teachers’ positive attitudes towards the descriptive evaluation of these questions are rejected. However in other questions also due to the greater
amount of P-value from 0.05, the null hypothesis about the teachers' positive attitudes towards descriptive evaluation of these questions are supported.

6 Discussion and Conclusion

According to the findings of the questionnaire, it has been observed that the amount of p-value in question 22 of the questionnaire is greater than 0.05 (0.77 >0.05), hence the first hypothesis about the teachers' perspectives regarding the descriptive evaluation is supported. In addition, based on the obtained P-values in questions 5, 6, 7 and 18, all of which are smaller than 0.05, the null hypothesis about the teachers' positive attitudes towards the descriptive evaluation was rejected in these questions. In general, the hypothesis about the positiveness of the teachers' perspectives towards the descriptive evaluation is supported in these questions. This result can be due to a number of reasons. Primary school teachers are the foundation and basis for other educational levels. The traditional long-term and score-oriented evaluation has created competition sense, and many physical and psychological problems among primary school students that are beyond their tolerance. The correct implementation of this plan can cause deep learning, create interest in students towards learning and be effective on the teachers' good judgment regarding the students' actual performance. On one hand, teachers believe that the correct implementation of the descriptive evaluation, due to paying attention to the different aspects of emotional, educational, psychological and also for its being consistent with the physical and mental ability of elementary students fits to the nature of educational evaluation in the initial period of the elementary schools. On the other hand, the descriptive evaluation plan has faced with various problems. Teachers believe that implementing the quantitative evaluation and using exam as a tool to create fear among the students and their parents, lead to psychological pressures and too much stress on students and their parents at the time of math exam. From the perspective of teachers, it has been for years that quantitative evaluation has had negative impacts on the mental health of families and students. On the other hand, the results of this questionnaire revealed that the teachers in the four questions 5, 6, 7 and 18 of the questionnaire believed that:

- Considering the descriptive assessment of math, they have not received adequate training and they don't have sufficient information;
- Descriptive evaluation of math, has not been effective enough in improving the students' attitude toward learning mathematics;
- The content of mathematics book does not meet the required time in descriptive evaluation.

According to the above-mentioned issues, it is clear that because descriptive evaluation in primary schools is new, the teachers have not passed sufficient training courses, particularly in the field of mathematics, and moreover there is no complete and compiled regulation in this field. Also, the content of mathematics book does not have the necessary coordination with descriptive evaluation method, since the teaching methods in math at this level has been designed and written in the same traditional way (quantitative method). Furthermore, this type of assessment has not changed the students' attitudes towards mathematics reasonably enough. Therefore, it seems that the methods of teaching mathematics must at first be adjusted and modified in accordance with descriptive evaluation, and then the value and attitude of the descriptive evaluation be reviewed. Following are the applied suggestions for further research:

- It is better that the descriptive evaluation be investigated in the other parts of Tehran and even other parts of the country based on the cultural, economic and geographical factors;
- It is better that the descriptive evaluation in mathematics be taught to the teachers in the form of workshops by the authors of the primary level's math books; and
- It is better that the descriptive evaluation be accompanied with educational technology by the experts in the field, since the feedback of the descriptive evaluation may be shown more realistic and better this way.
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