The Relationship between the Teachers' Attitude and Skill in Descriptive Evaluation and the Students' Progress in Mathematics and Sciences

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Abstract: The main objective of this research is to study the relationship between the skills of the teachers in descriptive evaluation and the progress of 3rd grade elementary students in the fields of mathematics and sciences. The statistical population of the research includes all 3rd grade elementary students of region 16 of Tehran in 2010-2011 educational year and their relevant teachers. The participants of this research include 300 students of third grade who was selected in simple random sampling method. Due to the nature of this research, to study the data of the research we have relied on the canonical correlation method using SPSS version 19, and we have used descriptive statistics to analyze the data of the research. The findings of the research show that there is a significant relationship between the teachers' skill in descriptive evaluation and the students score of educational progress in mathematics and sciences at the significance level of 0.5. Moreover, there is no significant relationship between the attitudes of the teachers toward the descriptive evaluation and the educational progress of the students in mathematics and sciences. Thus, in order to increase the educational progress of the students in mathematics and sciences we can focus on increasing the skills of the teachers in the descriptive evaluation.
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1. Introduction

The world facing the students is a changing world. The developments of the information technology and the ideas of the globalization of education have fundamentally changed the indexes of the successes of life. The adoptability to the crises and requirements of the new era requires the teaching and learning some skills like the critical thinking, analyzing and manipulating the information, and using such information in making decisions for the students. In reaction to these changes, some reforms have been started in the education at an international level. In this wave of reforms, the role of the methods of assessing educational progress has been paid a special attention. Many theorists of pedagogy and many policy makers believe that the correction of assessment framework will have a considerable effect on the framework of education. Correcting the methods of assessment and evaluation will play a vital role in replacing more suitable educational goals for the students, adopting more desirable methods of training the teachers, and correcting the educational program and the improvement of the education. The revision of the evaluation system at different levels of the goals, tools and methods necessitates some new approaches toward the evaluation, whether for the end-of-semester evaluation or the continual evaluation (Farajollahi and Haqiqi, 2007, p. 1). Thus in order to resolve the current problems at national level, the Iranian Supreme Council of Education decided to change the quantitative measure (0-20) to a qualitative and ranking measure and to use some tools for assessing the processes of the learning in schools (such as the working folder, behavior observance, etc.). In the proposed plan, the evaluation by the descriptive method (descriptive evaluation) is being studied (Farajollahi and Haqiqi, 2007, p. 10). In this research we are going to find the effects of the attitude and the skills of the teachers and the levels of descriptive evaluation in two courses of mathematics and sciences of the 3rd grade of elementary students, and how much such an effect is influential and important compared with the teachers who lack these two skills and attitude.

2. Literature review

2.1 Descriptive evaluation

Descriptive evaluation is a new approachthat attempts to prepare the grounds to increase the learning of the students in the class. So instead of the extremist attention to the scores and tests of the end of the semester, this approach considers the procedure of teaching and learning during the whole educational year. Moreover, this approach pays attention to the emotional, social, and even physical growth of the students as well (Hosseini, 2003). The traditional evaluation system was completely test- based and just the examinations and tests of the end of each semester determined the performance of the students. Since the

evaluation based on just one performance of the students seems incomplete, so it was necessary to rely on different tools including the performance appraisal, using working folder, intentional observation, considering the homework, considering general skills (physical, emotional, and social dimensions), all of which are the complements for the pen- and- paper examinations (Moqaddam, 2008). Descriptive evaluation is one of the common evaluation methods worldwide. The main developments of this evaluation method are as follow:

1. Changing the interval measurement system (0-20) to an ordinal measurement (e.g. as *expected*, *close to expectation*, *need more attempts*);
2. Structurally changing the work- log and changing it to a descriptive work- log (educational progress report)
3. Changing the tools and methods of collecting the data about the educational situations of the students, some of which include the working folder, checklists, observations log, and performance tests;
4. Changing the authorities who decide on the
5. promotion of the students instead of the examinations of the end of semester, i.e. the teacher, school's council, and other qualified authorities decide on the students' performance instead of the end- of - semester examinations (Qorbani, et al, 2002).

The conducted operations show that the above mentioned factors have considerable advantages including the decrease of the parent's sensitivity to their children scores, the decrease of the students' sensitivity to their own scores, and the reduction of the students' stresses and anxieties. Although the dominance of the teacher over the administration of this method has a positive effects on the executive structure of the method, but the effects of this method on the educational progress of the students is a serious subject of study (Rezaei, 2006). Since the educational progress of the students is the most important (and maybe the main) component of any education, thud the programming and planning for the improvement and promotion of the education is vitally important.

Table 1: The historical changes in the educational evaluation in Iran

Name of the era	Time range	Main features
Era of the needlessness	1800 - 1900	Desirability on the basis of personal, unofficial, and organized perceptions
Era of the awareness	1900 – 1930	Assigning the educational affairs to the central government and investigating the educational centers under the approved and authorized rules and regulations
Era of the official attempt	1930 - 1945	The attention of the government to the educational content of the schools and attempting to investigate and supervise the quality of the contents and trying to make an effect on them
Era of the difficulty	1946 -1957	The attempts of the government to intervene in the educational content of the schools and preserving a seemingly logical appearance without any criterion or scale, while paying attention to different educational needs
Era of being interested	1958 - 1972	Beginning of the comments and advices of the experts and official relevant authorities about the educational system and its programs; the increase of the public awareness about the concept of educational evaluations; publishing some articles about the educational evaluation
Era of the action	1973 - 1990	Quantitative increase; quantitative orientations in evaluation; considering research and evaluation as the same categories; concentrating on a target- based model of the evaluation; paying attention to the theoretical needs and conceptualization
Era of the hope	1991 up to now	Attempting to prepare a professional and well- organized body of knowledge; paying attention to the professional trainings; attempting to create some suitable models for the educational evaluation

2.1.1 Tools in the descriptive evaluation

- Working folder
- Logging (recording the observations)
- Checklists
- Performance test
- School works and tasks
- Self- assessment and peer- assessment
- Report of the educational progress (descriptive feedback)
- Descriptive work- log

There are several different tools in the descriptive evaluation. These tools help the teachers be informed of the educational situation of the students. For example, working folder is a tool that collects a set of works and products of the students' different activities in a well- designed assessable form that allows the students to exhibit their own abilities in different dimensions. The working folder makes the students able to correct their faults, so it makes the students participate in their own educational process (Hassani and Ahmadi, 2009, p 132).

2.2 Literature review

In 1985, Funch et al studied the performance of the university students of teaching course of study in two groups (experimental group and control group) to investigate "the effects of the formative assessment on the educational progress of university students". The results of their research showed that the experimental group had a better performance that the control group who had not been formatively assessed.

In another research, Wolf, et al (1991) concluded that the main characteristic of the traditional evaluations is that they only rely on assessing the students and they do not allow the students to evaluate themselves and to receive the effective feedback of their teachers (Rastegar, 2003). Moreover, Bourk and Smith (1995) showed that the students who are studying in the schools with the old and tradional methods of the learning and evaluation will obtain the scores lower than the average in the sub-scales of the general satisfaction, relation with the teachers, and class correlations.

In yet another study, Merkuffer (1995) conducted a research titled "the role of the continual evaluation in the educational progress of the students". He stated that if the formative tests or other tests can offer the needed feedbacks to the students, them the performance of the students and the educational progress will be better (quoted by Shahzamani, 2001).

Besides, Wiles (2000) has reported that in many educational zone of American's economy, some reporting cards are prepared in which some signs are usual (for example, in such reporting cards, O stands for outstanding, S stands for satisfactory, N *stands for need to improve*, and V stands for *very bad*). These reporting cards report the educational progress of the students in different courses separately and for instance explain that the students *listens*, *is responsible*, etc. (Sobhanifard, 2003, p. 150).

Shirley Clark (2002) states that if think to our children as the *plants*, the final assessment is something like measuring and assessing these plants. Such assessments can be suitable and valid for comparing, analyzing, and evaluating the current situation of the plant, but they cannot have any effect on the growth of the plant at all; but the continual, "constructive", and growing assessment is a process of collecting the data about the plant in order to cultivate it. It will lead to fertilizing, watering, pruning, removing the weeds, and doing whatever that can lead to the growth of the plant (Rastegar, 2003, p 33).

In another research named "the role of formative assessment in promoting the learning of the students", Black and Viliapher (2005) studied all researches that had been conducted on the issues like the awareness of the students in the goals of their own education, self-assessments and feedbacks during a compacted educational year. They found that the strategy of formative (developmental) assessment promotes the standards of progress, and this is especially true for the students who have lower abilities (Rastegar, 2003, p 32).

3. Methodology of the research

This research is a correlational study. The statistical population of the research includes all 3rd grade elementary students of region 16 of Tehran in 2010-2011 educational year and their relevant teachers. The participants of this research include 300 students of third grade who was selected in simple random sampling method. In this method we used two tests including an attitude test contained 16 questions, and a skill test contained 24 questions. In order to verify the validity of the questionnaires, we used Cronbach's Alpha method. The obtained coefficients of alpha for the skill questionnaire were equal to 0.731, and for the attitude questionnaire it was equal to 0.934, both of which show an acceptable validity. Moreover, due to the nature of this research and the objective of the analysis, we relied on the canonical correlation method to analyze the data.

4. Analysis of the collected data

In order to analyze the relationship between the variables of the skill and attitude of the teachers in descriptive evaluation with the variables of the students' scores in mathematics and sciences, we used canonical correlation analysis method. In this analysis, the first group of the variables contained the attitude and skill of the teachers in descriptive evaluation, and the second group of the variables included the scores of sampled students in mathematics and sciences. Table 2 shows the general results of the significance of the canonical correlation between the first group of scores (scores of teachers' skill and attitude) and the second group of the scores (students' scores of the mathematics and sciences).

Table 2. The significance of the canonical correlation fir the scores of attitude, skill, mathematics, and sciences

Wilks' Lambda	χ^2	Degree of freedom	Significance level
0.952	12.016	4	0.017

Considering the value of Wiks' Lambda and its related significance level, i.e. 0.017, the obtained value is lower than 0.05. In this test, the significance level for the data analysis was selected at 0.05, as it is usually used in the educational researches as the common level of significance. This shows that the significance level of the canonical correlation between the two sets of the variables stands well in the mentioned level. So in this step, we have to extract the functions of the canonical variables and then to determine the main variables out of them. Since the right- hand variables (benchmark or dependent variables) include 2 variables and the left- hand variables (predictor or independent variables) include 2 variables as well, so the maximum number of the extracted functions will be 2 functions. Table 3 shows the ratios of the explained variances of the canonical variables.

Table 3. Ratios of the explained variances of the canonical variables

Function #		Canonical correlation
1	97.24	0.672
2	2.76	0.11

As shown in table 3, the canonical correlation between the variables of the skill score in descriptive evaluation and the attitude score of in the descriptive evaluation with the variables of math score and sciences score is equal to 0.672 and so this correlation is significant at the level of 5%. Moreover, regarding the table 3, variance ratio that is explained by the first function is equal to 45.15 and this variance percentage if equal to 0.01% for the second function. Thus the first function is used for analyses of the canonical correlations. Table 4 shows the standard canonical coefficients relevant to the first function.

Table 4. Standard canonical coefficients relevant to the first function

Variables	Standard canonical coefficients
Teachers' skill score in descriptive evaluation	0.961
Teachers' attitude score in descriptive evaluation	0.148
Students' score in math	0.652
Students' score in sciences	0.236

Regarding the obtained coefficients, we have considered the coefficient of the teachers' skill score and thus the teachers' skill score in the first function remains in comparison to the descriptive evaluation.

Table 5. Right hand variables and left hand variables as explained in the first function

Variables	Right hand	Left hand
First function	Math score and sciences score	Teachers' score of skill in descriptive evaluation

The obtained results show that there is a significant relationship between the teachers' score of skill in descriptive evaluation and the students' score in math and in sciences. Thus the first hypothesis of the research is confirmed, i.e. there is a significant relationship between the variables of the skill score and attitude score with the set of variables of the math score and sciences score.

Table 6. The scale of the teachers' skill in descriptive evaluation with the math score and sciences score

Variables	Math score	Significance level	Sciences score	Significance level
Score of skill	0.261	0.019	0.247	0.028
Score of attitude	0.096	0.172	0.063	0.254

With regard to table 6, the scale of the teachers' skill in descriptive evaluation with the math score and sciences score is significant at the significance level of 0.05. Thus the significant relationship between the teachers' skill in descriptive evaluation and the math score of the students is

confirmed. Moreover, the significant relationship between the teachers' skill in descriptive evaluation and the sciences score of the students is confirmed as well. The results of the table 6 show that the scale of the teachers' attitude toward the descriptive evaluation with the scores of math and sciences is not significant at the significance level of 0.05, and so it cannot be confirmed.Thus the significant relationship between the teachers' attitude toward the descriptive evaluation and the math score of the students is rejected, and the significant relationship between the teachers' attitude toward the descriptive evaluation and the sciences score of the students is rejected as well.

5. Conclusion

This study aimed to investigate the relationship between the teachers' attitude and skill in the descriptive evaluation on one hand, and the students' educational progress in mathematics and sciences on the other hand. The obtained results are described below on the basis of the questions of the research:

First question of the research: Is there any relationship between the teachers' skill in the descriptive evaluation and the educational progress of the 3rd grade elementary students in mathematics?

The conducted analyses show that the relationship between the teacher's skill in the descriptive evaluation and the students' progress in math is significant at the level 5%. So the correlation between the teachers' skill in the descriptive evaluation and the students' progress in math is significant at the level 0.05%. Thus in order to increase the educational progress of the students in math, we can increase the teachers' skill in the descriptive evaluation. This research is consistent with the researches of other researchers such as Black and Viliapher, Funch, Merkuffer, and Bourk and Smith.

Second question of the research: Is there any relationship between the teachers' skill in the descriptive evaluation and the educational progress of the 3rd grade elementary students' in sciences?

The conducted analyses show that the relationship between the teacher's skill in the descriptive evaluation and the students' progress in sciences is significant. With regard to the canonical correlation between the teachers' skill and students' score in sciences on the basis of the obtained results, in order to increase the educational progress of the students in sciences, we can increase the teachers' skill in the descriptive evaluation.

Third question of the research: Is there any relationship between the teachers' attitude toward the descriptive evaluation and the educational progress of the students in mathematics?

The conducted analyses show that the relationship between the teacher's toward the descriptive evaluation and the students' progress in math is not significant at the level 5%. This is not surprising because the teachers have to follow a stable pattern. That is, whether the teachers' attitude toward the descriptive evaluation is positive or negative, they have to do their best attempt to increase the students' scores in math. Hence, both the teachers with positive attitude and the teachers with negative attitude have similar attempts to progress the educational situation of their students in mathematics. In statistical words, the scale of teachers' attitude was not significant at the level of 5%. Besides, this result is not consistent with the researches of other researchers such as Wolf (1991) and Shirley Clark.

Fourth question of the research: Is there any relationship between the teachers' attitude toward the descriptive evaluation and the educational progress of the students in sciences?

The conducted analyses show that the relationship between the teacher's toward the descriptive evaluation and the students' progress in sciences is not significant at the level 5%. This is not surprising because the teachers have to follow a stable pattern. That is, whether the teachers' attitude toward the descriptive evaluation is positive or negative, they have to do their best attempt to increase the students' scores in sciences. Hence, both the teachers with positive attitude and the teachers with negative attitude have similar attempts to progress the educational situation of their students in sciences. In statistical words, the scale of teachers' attitude was not significant at the level of 5%.

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