

A comparative study of student-teacher cognitive abilities and skills on evaluation of academic achievement practices

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ABSTRACT

During the past few years, there have been some changes on traditional training methodologies in the world, specially, in elementary schools. Many schools have decided to perform their assessments in elementary schools based on qualitative methods compared with traditional quantitative techniques. This paper performs an empirical investigation to find out whether the new evaluation technique has been able to improve student teacher's cognitive abilities and skills on evaluation of academic achievement practices. These student-teacher people taught at elementary schools while they also were studying at university. There are two types of questionnaires: The first one measures cognitive capabilities in four categories including levels of learning and educational objectives, designing paper and pencil test, functional test design and analysis and interpretation of results. The second test is associated with measuring functional skills in the evaluation of academic progress. The information were analyzed based on t-student test as well as two-way analysis of variance. The result of t-statistics was significant only for the last item, analysis and interpretation. In addition, the results of ANOVA test have indicated that there were some differences on cognitive capabilities between two methods of assessments but gender did not make any meaningful difference on functional skills.

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1. Introduction

During the past few years, there have been some changes on traditional training methodologies in the world, specially, in elementary schools (Erickson, 1985; Polivka et al., 1998). Many schools have decided to perform their assessments in elementary schools based on qualitative methods compared with traditional quantitative techniques (Patton, 1987; Rebok et al., 2001). According to Sarason et al. (1960) anxiety is one of the most influential factors among elementary schools children and one

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alternative methods for getting rid of anxiety is to change school assessment from traditional to qualitative methods.

Hill and Sarason (1966) investigated the relation of test anxiety and defensiveness to test and school performance over the elementary-school years. Wigfield and Meece (1988) discussed math anxiety in elementary and secondary school students. They used confirmatory factor analyses for two components of math anxiety, a negative affective reactions component and a cognitive component. According to their survey, the influence component of math anxiety related more strongly and negatively than did the worry component to children's ability perceptions, performance perceptions, and math performance.

Shekarey and Sedaghat Rostami (2012) reported that the quality of technical and art schools in Iranian schools could be improved through proper planning for in-service training and through equipping the schools with modern equipment. Analysis and investigation of the internal effectiveness of technical and art schools could also enable the government to plan properly and to reduce unnecessary expenditures.

Taut et al. (2011) addressed the perceived consequences of the Chilean national teacher evaluation system. They interviewed 57 school leaders in 30 schools across 10 municipalities about impacts and implementation of the assessment in their schools. They reported that in the large majority of schools their interviewees observed positive influences such as increased teamwork and internal reflection processes based on the assessment results. In all schools, their interviewees reported on teachers' negative emotions and work overload due to the assessment process, but also about their internalization of the underlying professional standards.

Salisbury (1993) used qualitative research methods to examine practices at an elementary school providing inclusive schooling for students with and without disabilities. The findings indicated that systems change happened slowly, intentionally, and with a cooperative process of decision making which stressed development of policies, conditions, and supported, which were good for all students.

Remesal (2011) presented a specific framework of teachers' conceptions about assessment in school. They stated that results of a qualitative analysis helped building a model of conceptions of assessment. The model included four dimensions about the impacts of assessment on teaching, learning, accountability of teachers and schools to various audiences and stakeholders, and the certification of achievement.

Zand and Ilanlou (2011) investigated the challenges and barriers that qualitative evaluation encountered in Iranian schools. They reported that the main challenge of this project was due to non-preparation of infrastructures such as proper training, facilities and equipment, and motivation to conduct the project.

Zarrett et al. (2012), in other survey, performed a qualitative study of staff's perspectives on implementing an after school program promoting youth physical activity. Coskun et al. (2011) developed an attitude scale towards multi-grade classrooms (AMC) for elementary school teachers who worked in the Multi-grade Classrooms. Şahin (2008) performed a qualitative assessment of the quality of Turkish elementary schools. Haines et al. (2007) introduced the effects of obesity on learning skills in some elementary schools.

2. The proposed

This paper performs an empirical investigation to find out whether the new evaluation technique has been able to improve student-teacher cognitive abilities and skills on evaluation of academic

achievement practices. These student-teacher employees teach at elementary schools while they also study at university.

There are two types of questionnaires: The first one measures cognitive capabilities in four categories including levels of learning and educational objectives, designing paper and pencil test, functional test design and analysis and interpretation of results. The second test is associated with measuring functional skills in the evaluation of academic progress. The information are analyzed based on t-student test as well as two-way analysis of variance. Table 1 shows details of our survey.

Table 1

The summary of some basic statistics on cognitive capabilities among teacher-student

Background	Evaluation	Mean	Std. dev.	Mean Std. dev.
Levels of learning and educational objectives	Qualitative	4.78	1.36	0.23
	Traditional	5.00	1.32	0.24
Designing paper and pencil test	Qualitative	5.59	1.64	0.29
	Traditional	4.90	1.86	0.34
Functional test design	Qualitative	2.75	1.36	0.24
	Traditional	2.78	0.99	0.17
Analysis and interpretation of results	Qualitative	3.21	1.43	0.25
	Traditional	2.33	1.47	0.25

3. The results

In this section, we present details of our findings on testing various hypotheses to learn whether there is any statistical difference between qualitative assessment and traditional evaluation.

3.1. Testing cognitive skills

3.1.1 First hypothesis: Levels of learning and educational objectives

The first hypothesis examines whether there is any difference between levels of learning and educational objectives between qualitative and traditional methods of assessments or not. In our survey, t-student has been calculated as ($t=0.62$ P-value=0.514, $df=63$). Therefore, we can conclude that there is no statistical difference between traditional and qualitative methods in term of levels of learning and educational objectives.

3.1.2. Second hypothesis: Designing paper and pencil test

The second hypothesis studies whether there is any difference between designing paper and pencil test between qualitative and traditional methods of assessments or not. In our survey, t-student has been calculated as ($t=0.62$ P-value=0.514, $df=63$). Therefore, we can conclude that there is no statistical difference between traditional and qualitative methods in term of designing paper and pencil test.

3.1.3. Third hypothesis: Functional test design

The third hypothesis investigates whether there is any difference between Functional test design between qualitative and traditional methods of assessments or not. In our survey, t-student has been calculated as ($t=0.497$ P-value=0.139, $df=63$). Therefore, we can conclude that there is no statistical difference between traditional and qualitative methods in term of functional test design.

3.1.4. Fourth hypothesis: Analysis and interpretation of results

The fourth hypothesis investigates whether there is any difference between Analysis and interpretation of results between qualitative and traditional methods of assessments or not. In our survey, t-student has been calculated as ($t=2.45$ P-value=0.017, $df=63$), which means there is statistically meaningful difference between traditional and qualitative methods in term of analysis and interpretation of results.

Overall, the result of t-student test on four items is equal to ($t=2.76$ P-value=0.08, $df=63$), which means there is a difference between traditional and qualitative methods in terms of cognitive skills when the level of significance is ten percent. The other interesting issue is to verify whether there is any statistically difference between two assessment methods in terms of cognitive capabilities between two groups. Table 2 demonstrates the summary of the implementation of ANOVA test on these two groups of assessment, qualitative versus traditional.

Table 2
The summary of ANOVA test on cognitive capabilities

Source of changes	Sum of squares	df	Mean of Squares	F	P-value
Evaluation type	150.843	1	150.843	59.999	0.0000
Gender	0.198	1	0.198	0.079	0.78
Evaluation type \times Gender	0.664	1	0.664	0.264	0.609
Error	153.56	61			
Sum	304	64			

As we can observe from the results of Table 2, there are some differences on cognitive capabilities between two methods of assessment but gender does not make any meaningful difference on functional skills.

3.2. Testing functional skills

We have also examined the effects of qualitative versus traditional assessment techniques on functional skills and the results of t-student has been calculated as ($t=7.84$ P-value=0.00, $df=63$). Therefore, we can conclude that functional skills are statistically different between traditional and qualitative groups. Another interesting issue is to verify whether there is any statistically difference between two assessment methods in terms of functional skills. Table 3 demonstrates the summary of the implementation of ANOVA test on these two groups.

Table 3
The summary of ANOVA test on functional skills

Source of changes	Sum of squares	df	Mean of Squares	F	P-value
Evaluation type	66.155	1	66.155	7.771	0.007
Gender	26.125	1	26.125	6.93	0.23
Evaluation type \times Gender	3.76	1	3.76	0.43	0.51
Error	523.368	61			
Sum	619.938	64			

As we can observe from the results of Table 2, there are some differences on functional skills between two methods of assessment including qualitative and traditional but gender does not make any meaningful difference on functional skills.

4. Conclusion

In this paper, we have presented an empirical investigation to find the effect of new qualitative assessment against traditional one among some Iranian elementary schools. The proposed study has investigated the effects of cognitive and functional skills between two groups. The survey considered the effect of cognitive skills in four sub categories including levels of learning and educational objectives, designing paper and pencil test, functional test design as well as analysis and interpretation of results based on t-student. The result of t-statistics was significant only for the last item, analysis and interpretation. In addition, the results of ANOVA test have indicated that there were some differences on cognitive capabilities between two methods of assessments but gender did not make any meaningful difference on functional skills.

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