The Predictors of Elementary School Teacher's Attitudes towards Rubric*

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Abstract

This study was determining the factors predicting the elementary school teachers' attitudes towards scoring rubrics. The study was a correlation research model. It included 292 teachers at 17 elementary schools in several districts of Ankara. The data of the study was collected from a teacher survey and "Teacher's Attitude Scale toward Rubric" which was developed by the researchers. Stepwise Multiple Regression Analysis was used in the data analysis of the study to examine the variables which predicted the teachers' attitudes toward rubrics significantly. The results indicated that the most important predictors of attitude were to use rubrics in class to observe students' knowledge and skills whether they use them in their daily life situations and the class size.

Keywords: Rubric, teacher attitude, performance based assessment

Introduction

In the teaching-learning process the applied assignments (homework, performance tasks, projects), given to the students in accordance with the scope of the lessons, are continuously under question in terms of their contribution to the students' achievement. , The purposes of giving such assignments for the students are to improve students' research and investigating skills and to be able to transfer their learned knowledge and concepts to real life situations, rather than observing how much the students know about the basic knowledge and key concepts in the courses. In this way students would be prepared for real life. By means of those applied assignments, the teachers will find a unique opportunity not only to observe how much their students possess the necessary knowledge and skills acquired within the framework of the courses as well as the ability to apply them to real life situations, but also to provide their students with effective feedback on their learning outcomes. All of these emphasize the significance of "assessment" in instructional processes.

The purpose of the alternative assessment approaches is to determine students' competence in using higher order thinking processes rather than lower order thinking processes (Gallavan & Kottler, 2009). In this context, performance based assessment draws attention. Performance based assessment helps the learners transfer and apply the basic knowledge that they have learned in the lessons to real life situations (Kutlu, Karakaya, & Doğan, 2008). There are two critical parts of performance based assessment. The first one is the "performance task" and the second is the "scoring rubric" (Perlman, 2003; Popham, 2000). In performance based assessment, the assessment of student's product (or learning outcome) requires the use of a scoring rubric correctly. Rubrics are tools that are commonly used in assessing the expected achievement of the student in a performance task and they help the teachers not only declare their expectation to the students clearly, but also grade their students by

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focusing on significant criteria (Meier, Rich, & Cady, 2006). Scoring rubric determines the achievement in a task according to descriptively defined criteria and achievement levels and are used in assessing a variety of performance-based learning outcomes from pre-school to university (Hafner & Hafner, 2003).

In literature, several advantages of a scoring rubric in instructional processes are claimed. The most common of those is the fact that a scoring rubric ensures scoring consistency between students and other raters in evaluation of the tasks (Goodrich, 2005; Jonsson & Svingby, 2007). Most of the time, teachers do not possess clear and lucid ideas on how to assess students' learning outcomes regarding complex cognitive skills (Arter, 2000). However, while considering such issues, teachers have in mind the assessment criteria that they have been using for many years. In this framework, when used for the right purposes, scoring rubrics make teachers' scoring systems more consistent and clearer, and give profound information about the effort that students put in while trying to achieve their goals (Bissell & Lemons, 2006; Mc Collister, 2000; Morrell & Ackley, 1999; Schamber & Mahoney, 2006; Shaw, 2004). The other commonly mentioned advantage of scoring rubrics is providing an opportunity for getting valid results for performance assessment, which traditional tests cannot provide. In assessment of higher order thinking skills, scoring rubrics grant the desired validity without discarding the reliability (Morrison & Ross, 1998; Wiggins, 1998).

Scoring rubrics' clear and comprehensible performance criteria provide qualified feedback about students' learning processes (Arter & McTighe, 2001; Wiggins, 1998). Additionally, use of scoring rubrics in instructional processes not only clarifies student expectations, but also contributes to the self-evaluation (Gallavan & Kottler, 2009; Schamber & Mahoney, 2006; Smith & Hanna, 1998). However, it is crucial to use these tools in accordance with their right purposes (preparation, scoring, providing feedback) to be able to take advantage of it effectively.

In Turkey, elementary school curriculum which was put into practice in 2005 brought up some new perspectives in terms of program development processes, teaching methods and techniques, and measurement and assessment approaches. However, teachers' inadequate knowledge about performance tasks and scoring rubrics brought about some negative effects on their attitudes towards measurement and assessment applications. Since attitude determines the individuals' behavior as a directive element (Allport, 1935), the attitude toward a subject is influential about what the individuals have learned and acquired about that subject, as well as how they will perceive and interpret the future events related with that subject (Katz & Stotland, 1959 cited in Köklü, 1995).That is, the clearest way of having an attitude towards a subject or an object is having experienced something about that subject or object. When attitudes are perceived as traits that shape the individuals' behavior as well as the psychological reasons behind them, the relationship between attitudes and behavior becomes apparent.

It may not be easy to change traditional assessment and assessment approaches of teachers' that have been used in education system for a long period of time (Lock & Munby, 2000). In this process, it is important to determine the factors that affect teachers' attitudes towards scoring rubrics because review of using scoring rubrics by teachers in class related to the findings obtained from this kind of studies. At this point, data on the attitudes towards scoring rubrics as well as the factors that affect these attitudes will provide teachers and students with significant information as to success of the approaches aimed at determining high order skills such as performance tasks and projects. Therefore there is a need to understand which factors contribute to attitudes of teachers toward using rubrics. In light of the literature, the study aims at determining the factors that predict the elementary school teachers' attitudes towards scoring rubrics significantly.

Method

Sample and Data

Data for this study was collected by means of a survey administered to 292 teachers (79% Female, 21% Male) from different schools in the province of Ankara in Turkey. All participants were teacher at various districts of the urban area. Establishing the study group, quota sampling of non-random sampling methods was used so that, participation of schools from different socio-economic regions of Ankara was ensured in the survey.

Measures

Data of the study was collected by means of a survey called "Attitude Scale for Scoring Rubric", developed by the researchers, to determine the factors related to teachers attitude toward scoring rubrics. The instrument consisted of two sections. The first section was a Likert-type scale with items that were used to measure teachers' attitudes toward rubrics. In the process of developing an attitude scale relating to rubric, first, literature was reviewed and 12 primary school teachers were asked to write essays about their opinions related with rubrics. The literature review, views of five measurement and assessment experts and three Turkish language experts were taken into consideration for writing attitudes items. After that, the attitude scale was composed of 43 items and it was ready for pilot test application. All items had a five point rating scale from strongly agree to strongly disagree. Positive and negative statements were shuffled in the scale. For testing the reliability and validity of the attitude scale, a pilot study was conducted on 342 teachers.

Principal component analysis was implemented to ensure the construct validity of the scale. As to the reliability, total item test correlation was used and Cronbach Alfa Reliability Coefficient was calculated, which provided information with regards to the internal consistency of the scale. Varimax rotation was used and the items with factor loading of 0.32 and above were interpreted (Tabachnick, & Fidell, 2001) for main application in principal component analysis. After varimax rotation, four items with factor loading under 0.32 were removed from scale and reminder items on the scale gathered under a single factor. The factor loadings values of items changed between 0.334 and 0.764. All items together were accounted for 35.32% of the variance. Item test correlation values of the scale ranged between 0.32 and 0.74. These values indicated that the items represented similar behaviors. Cronbach Alfa Coefficient was found 0.95 which indicates internal consistency. After the reliability and validity analyses were completed, the final form of the scale ended up with a total of 39 items consisting of 25 positive items and 14 negative items. The highest possible score in the scale was 195, while the lowest possible score was 39.

The second section of the survey was developed specifically to determine factors related with teachers' attitude towards rubrics. The survey included multiple choice items regarding demographic information of the teachers and the use of performance tasks and scoring rubric by teachers in classroom. In this study, 6 items and 24 sub-items under those were used as part of the aim of the research. Reviewing literature, written essays about rubrics by teachers, views of measurement and assessment experts and the article written by Kutlu, Büyüköztürk, and Doğan (2007) were taken into account during preparing the questionnaire items.

Data Analyses

Teachers' attitudes toward rubrics were entered as a predicted variable in regression analyses and six items and 24 sub-items from teacher survey were used as predictors of these attitudes. These predictor variables were described briefly below:

Teacher's occupational experience. Variable included three categories in ordinal scale and was coded as a dummy variable.

Class size. First, variable was collected as a countable variable, and then during analysis it was turned into uncountable variable to determine the effect of specific range of years on attitude. Variable included three categories and was coded as dummy variable.

The purpose of teachers for using rubrics in class. Variable was composed of six sub- items (observing the development of the students' high order thinking skills, giving feedback to students about their performance tasks etc.). Teachers may respond more than one item as "yes (1) or no (0)". All variables were coded as dummy.

Used sources by teachers for obtaining information on rubrics. Variable was composed of six sub- items (from colleagues, from attending training programs, from books, magazines and publications etc.) Teachers may respond more than one item as "yes (1) or no (0)". All variables were coded as dummy.

Used methods by teachers for preparing rubrics. Variable was composed of five sub-items (getting help from colleagues, arranging existing rubrics etc.) Teachers may respond more than one item as "yes (1) or no (0)". All variables were coded as dummy.

Encountered problems in performance based assessment. Variable was composed of five sub-items (determining performing task subject, application performance task etc.). Teachers may respond more than one item as "yes (1) or no (0)". All variables were coded as dummy.

In this study, stepwise regression analysis has been done to examine the factors affecting teachers' attitudes. Before analysis was run, all assumptions were tested. First, basic assumptions of multiple regressions (normality, linearity, homoscedasticity, multicollinearity) were checked by using each data set. Normality was checked from the histograms of the standardized residuals. The residual plots and scatter plots were used for checking linear or nonlinear relationship. Scatter plots showed linear relationships with standardized residuals. Homoscedasticity was checked by visual examination of a plot of the standardized residuals. To detect multicollinearity, correlations between all pairs of predictors and measures of the eigen values of the data matrix including variance inflation factors (VIF) were computed. If VIF_j is greater or equal 10 ($VIF_j \geq 10$) and CI is smaller or equal 30 (CI $\leq$30), then there is a problem with multicollinearity (Keith, 2006). VIF values changed between 0.543 and 0.876 and the highest value for CI was found 21.112, so it can be concluded that there is no multicollinearity problem.

After each data set met basic assumptions of regression analyses, the main analysis was carried out by using SPSS 13.0.

Results

According to the determined predicting variables, the results of regression analysis concerning the prediction of teachers' attitudes towards rubrics are given in Table 1. The multiple regression model was statistically significant *($F_{(10,\ 281)}$= 9.26, p<0.01).* According to the Stepwise Multiple Regression Analysis results, multiple regression coefficient that showed the relationship between teachers' attitudes towards scoring rubric and interpreting variables was R= 0.498. These variables explained the 30% of the variance in teachers' attitudes towards scoring rubrics.

Table 1
Stepwise Multiple Regression Analysis Results

Step	Variables	B	SH_B	β	t	p	R	R^2 Variation
1	*Class size (11-19)*	20.392	3.899	0.294	5.230	0.000	0.294	0.086
2	Class size (11-19)	19.308	3.813	0.278	5.063	0.000	0.365	0.047
	Daily life situations	10.180	2.567	0.218	3.965	0.000		
3	Class size (11-19)	18.817	3.783	0.271	4.974	0.000		
	Daily life situations	10.581	2.548	0.226	4.152	0.000	0.390	0.019
	Giving feedback	6.535	2.570	0.138	2.543	0.012		
4	Class size (11-19)	17.166	3.817	0.247	4.497	0.000		
	Daily life situations	9.348	2.581	0.200	3.622	0.000	0.411	0.017
	Giving feedback	6.713	2.551	0.142	2.632	0.009		
	Higher order thinking skills	6.442	2.718	0.133	2.373	0.018		

5	Class size (11-19)	14.980	3.900	0.216	3.841	0.000		
	Daily life situations	9.667	2.564	0.207	3.770	0.000		
	Giving feedback	7.297	2.543	0.154	2.869	0.004	0.429	0.015
	Higher order thinking skills	7.018	2.707	0.145	2.592	0.010		
	Textbooks	-6.069	2.586	-0.130	-2.347	0.020		
6	Class size (11-19)	12.291	4.045	0.177	3.039	0.003		
	Daily life situations	9.671	2.545	0.207	3.799	0.000		
	Giving feedback	6.448	2.551	0.137	2.527	0.012	0.446	0.015
	Higher order thinking skills	7.051	2.688	0.145	2.624	0.009		
	Textbooks	-6.509	2.574	-0.139	-2.529	0.012		
	Class size (30-39)	-6.278	2.737	-0.129	-2.294	0.023		
7	Class size (11-19)	10.334	4.111	0.149	2.514	0.012		
	Daily life situations	10.054	2.533	0.215	3.969	0.000		
	Giving feedback	6.552	2.534	0.139	2.585	0.010		
	Higher order thinking skills	6.873	2.670	0.142	2.574	0.011	0.462	0.014
	Textbooks	-6.285	2.558	-0.134	-2.457	0.015		
	Class size (30-39)	-6.692	2.724	-0.137	-2.457	0.015		
	Occupational experience (11-20)	-5.046	2.257	-0.121	-2.236	0.026		
8	Class size (11-19)	10.543	4.083	0.152	2.582	0.010		
	Daily life situations	9.778	2.519	0.209	3.882	0.000		
	Giving feedback	6.985	2.524	0.148	2.768	0.006		
	Higher order thinking skills	7.237	2.656	0.149	2.724	0.007		
	Textbooks	-5.955	2.545	-0.127	-2.340	0.020	0.476	0.014
	Class size (30-39)	-6.661	2.705	-0.137	-2.462	0.014		
	Occupational experience (11-20)	-5.104	2.241	-0.123	-2.277	0.024		
	Scoring of rubrics	-5.586	2.496	-0.118	-2.238	0.026		
9	Class size (11-19)	11.199	4.076	0.161	2.747	0.006		
	Daily life situations	9.467	2.511	0.202	3.770	0.000		
	Giving feedback	6.600	2.519	0.140	2.621	0.009		
	Higher order thinking skills	6.767	2.654	0.140	2.550	0.011		
	Textbooks	-6.332	2.539	-0.135	-2.494	0.013	0.487	0.010
	Class size (30-39)	-6.757	2.692	-0.139	-2.510	0.013		
	Occupational experience (11-20)	-5.581	2.232	-0.127	-2.366	0.019		
	Scoring of rubrics	-5.561	2.483	-0.117	-2.239	0.026		
	Preparing rubric by own	5.023	2.550	0.105	1.970	0.049		
10	Class size (11-19)	11.116	4.055	0.160	2.741	0.007		
	Daily life situations	9.724	2.501	0.208	3.888	0.000		
	Giving feedback	6.700	2.506	0.142	2.674	0.008		
	Higher order thinking skills	6.692	2.526	0.138	2.535	0.012		
	Textbooks	-6.320	2.683	-0.135	-2.502	0.013		
	Class size (30-39)	-7.089	2.221	-0.146	-2.642	0.009	0.498	0.010
	Occupational experience (11-20)	-5.416	2.221	-0.130	-2.438	0.015		
	Scoring of rubrics	-5.712	2.471	-0.121	-2.311	0.022		
	Preparing rubric by own	5.908	2.575	0.123	-2.295	0.022		
	Getting help from colleagues	-4.627	2.308	-0.106	-2.005	0.046		
	Constant	123.061	3.319		37.080	0.000		

$F_{(10, 281)} = 9.265$ p= 0.000

At step 1 of the analysis, "class size (11-19)" was entered into the regression equation and approximately 8.6% of the variance was explained by class size. Attitudes scores of teachers in whose

classroom the average number of students is 19 and below are higher than the attitudes scores of teachers in whose classroom the average number of students is 40 and above.

At step 2, "comparing with daily life situations" variable was entered into the regression equation and this predictor explained about 4.7% of the variance. Attitudes of teachers who used the information obtained from scoring to observe which students use their knowledge and skills in real life situations are more positive than those of teachers who do not.

At step 3 of the analysis, "giving feedback" was entered into the regression equation and 1.9% of the variance was explained by this predictor. Teachers' using the information obtained from scoring rubrics to give feedback to students about their performance tasks develops their attitudes towards scoring rubrics when compared to teachers who do not use the scoring rubrics for the same purpose.

At step 4 of the analysis, "observing higher order thinking skills" was entered into the regression equation and about 1.7% of the variance of teachers' attitudes towards rubric was explained by this predictor. It means that the use of the information obtained from scoring rubrics by the teachers to observe the development of the students' high order thinking skills improves teachers' attitudes towards scoring rubrics when compared to teachers who do not use the scoring rubrics for this aim.

At step 5, "textbooks" was entered into the regression equation and approximately 1.5% of the variance was explained by this predictor. It means that the factor that teachers obtain their information about scoring rubrics from the course books they use in the classroom has a more negative effect on their attitudes towards scoring rubrics.

At step 6 of the analysis, "class size (30-39)" was entered into equation and about 1.5% of the variance of teachers' attitudes was explained by this predictor. It means that attitudes scores of teachers with 40 students and above in their classes are higher than the attitudes scores of teachers, in whose classroom the average number of students is between 30 and 39.

At step7 of the analysis, "occupational experience" (11-20 years) was entered into the regression equation and this predictor explained about 1.4% of the variance of teachers' attitudes. Attitudes of teachers with occupational experience of 31 years and above are more positive than the attitudes of teachers who have 11-20 years of experience.

At step 8 of the analysis "scoring of rubrics" was entered into the regression equation and approximately 1.4% of the variance of teachers' attitudes towards rubric was explained by this predictor. The attitudes of teachers not having problems while scoring students' performance tasks are more positive than the attitudes of teachers having such problems.

At step 9, "preparing rubric by own" was entered into the equation and about 1% of the variance was explained by this predictor. Preparation of scoring rubrics by teachers to be used in their courses increase their attitude scores towards scoring rubrics.

At the last step of analysis, "getting help from colleagues" was entered into the regression equation and approximately 1% of the variance of teachers' attitudes towards scoring rubric was explained by this predictor. Teachers' attitude scores decrease when they obtain their understanding and information on scoring rubrics from their colleagues.

When the standardized regression coefficients (ß) were taken into consideration, the variables predicting teachers' attitudes towards rubrics are as follows in the order of significance:

- Teachers' using the information obtained from the scoring rubric to observe which students used their knowledge and skills in real life situations,
- The average number of students being between 11 and 19 in the classrooms,
- Teachers' using the information obtained from scoring rubrics to give feedback to students about their performance tasks,
- The average number of students being between 30 and 39 in the classrooms,

- Teachers' using the information obtained from scoring rubrics to observe the development of the students' high order thinking skills,
- Teachers' obtaining their information on scoring rubrics from the course books they use in the classroom,
- Teachers' having an occupational experience between 11 and 20 years,
- Teachers' preferences to prepare scoring rubrics by themselves,
- Teachers' having problems in scoring the performance tasks,
- Teachers' obtaining their information on scoring rubrics from their colleagues.

Discussion

As indicated in the results of this study the most significant predicting factor of the teachers' attitudes towards scoring rubrics is the use of the information obtained from scoring rubrics by the teachers to observe the extent to which students used their knowledge and skills in real life situations. The corresponding variable increases the teachers' attitude scores. Review of literature revealed that performance based tasks facilitate students' ability to apply what they learn in the classroom into real life situations (Kutlu, Karakaya, & Dogan, 2007). Therefore, this variable may have strengthened the attitudes of teachers who accurately and purposefully used scoring rubrics, which are a significant part of performance based assessment.

The number of students in a classroom is an important factor that predicts the elementary school teachers' attitudes towards scoring rubrics. The teachers having 19 students or below are reported to have more positive attitudes towards scoring rubrics. This may be explained not only by the claim that teachers with fewer students in their classrooms experience less problems in scoring rubrics preparation and implementation, but also by their willingness to use scoring rubrics. Additionally, the teachers with 40 students and above in their classes have higher attitudes score. That is, teachers may realize that they can use scoring rubrics even if the number of students in their classroom increases; and this results in an increase in positive attitude towards scoring rubrics.

The significant score difference between teachers using scoring rubric to give feedback and non-users of scoring rubrics might be due to a teacher's knowledge regarding the use of scoring rubrics. As far as the feedback is concerned, one of the advantages of scoring rubrics is that they provide profound information to students with regards to what they can achieve. Teachers' using scoring rubrics with an awareness of this purpose and advantage may have increased their attitude scores.

Use of the information obtained from scoring rubrics to observe the development of the students' higher order thinking skills is another important factor that predicts the elementary school teachers' attitudes towards scoring rubrics. In the process of performance based assessment, scoring rubrics provide valuable information as to the extent to which higher order thinking skills are acquired, which conventional assessment tools fail to detect (Anderson and Krathwohl, 2001). Teachers who are aware of such a benefit of scoring rubrics may have more positive attitudes towards the use of scoring rubrics in their courses.

Teachers who do not obtain their understanding of and information on scoring rubrics from the course books they use in the classroom have lower attitudes score compared to the cases in which they obtain such information from the course books they use in the classroom. This decrease may be due to inadequate information and limited number of examples on accurate scoring rubrics in the course books, and their insufficiency in answering the teachers' questions about the use of scoring rubrics.

Teachers with more occupational experience have more positive attitudes than the teachers with less occupational experience. Such a difference in attitudes may be explained by the fact that teachers with longer periods of work experience become more qualified in terms of implementation by their know-how as soon as they learn about the latest assessment and evaluation approaches.

Using rubrics prepared by teachers themselves might result in higher attitude score than teachers using another scoring rubric prepared by others. Since various studies have showed that teachers in our country are not competent enough in the use of alternative assessment tools (Çakan, 2004; Özsevgeç, Çepni, & Demircioğlu, 2004), teachers' feeling incompetent in the use of such tools may result in their negative attitudes towards these means of assessment.

Results of the current study indicated that teachers not having problems while scoring students' performance task have more positive attitude towards scoring rubrics than teacher having such problems. A successful performance tasks requires a well-structured accurate scoring rubric at the same time. It can be anticipated that teachers, who do not use scoring rubrics according to their purposes accurately in scoring performance tasks, may have difficulties in the use of these tools; thus, they may unsurprisingly have lower attitude scores.

The teachers who obtain their knowledge on scoring rubric from their colleagues have more negative attitude towards scoring rubrics. Since there is an unsatisfactory amount of scientific resources on scoring rubrics, teachers may receive negative insights from each other as to the implementation of such assessment tools, and this may support the mentioned finding.

Conclusion and Recommendation

In this study, the most important predictor of teachers' attitude toward rubrics was found observing student's knowledge and skills, whether they use this knowledge and skills in their real life situations. Otherwise, using the information obtained from scoring rubrics to observe the development of the students' high order thinking skills and give feedback about their product are the other effective predictors. These above mentioned variables and preparing rubrics by teachers have a positive effect on teachers' attitude toward rubrics. On the other side, the increase in class size, obtaining information on scoring rubrics from their colleagues and used textbooks in class decreased teachers' attitude toward rubrics.

According to the results of the study, when the factors that increase the elementary school teachers' attitude scores towards scoring rubrics are taken into consideration, the following implications can be put forward: teachers should be enlightened about the purposes and structure (criteria, performance levels, and scoring) of accurate scoring rubrics ; the quality of the information and examples of scoring rubrics in the course books should be increased; teachers should be guided as to the scientific resources where they can find profound information on scoring rubrics; teachers should be encouraged to prepare and devise their own scoring rubrics rather than using ready-made scoring rubrics; and teachers should be encouraged to use scoring rubrics to monitor the students' development of advanced cognitive skills.

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