

Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students



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ABSTRACT: Assessment is one of the components of the teaching process. In education, the quality of assessing student learning outcomes is a criterion for the quality of education. With that role, assessment is expected to bring a lot of value to learners, but in reality, there are still many difficulties. The purpose of the study is to understand the factors affecting the quality of assessment of learning outcomes from the perspective of students in primary education. The exploratory factor analysis (EFA) method was used to extract the factors and was performed through SPSS software. The results from 893 students of 6 universities show that there are 8 main factors affecting the quality of assessment of learning outcomes including assessment principles, feedback methods, information-handling instructions, satisfaction levels, facilitating conditions, relationship with teaching elements, self-assessment and assessment process. The findings of this study enrich the theoretical framework and serve as a reference for educators and policymakers.

KEYWORDS: Assessment, learning outcomes, student, primary education, exploratory factor analysis

I. INTRODUCTION

The continuous development of science and technology has significantly changed the way people communicate and behave, especially in the current digital transformation context. The education sector is no exception to that influence. The presence of the covid pandemic has made this transition happen faster, from traditional teaching and learning methods to new ways of teaching and learning that we have not experienced as much as before [1-3]. Not only do we need to change our teaching methods, and communication with students, but even assessment methods need to be refined and reconsidered. Yet, assessment is a component of the educational process that helps students develop cognitive capacities, critical thinking skills, professional competence, and adaptability [4]. Furthermore, academic results are one of the measures that reflect students' learning and research capacity, as well as the teaching capacity of lecturers in universities [5]. As such, evaluating student learning outcomes is regarded as one of the fundamental activities that must be carried out correctly in order to assure quality in any university training facility [6]. Aside from influencing the quality of teaching and learning in schools, evaluation is also crucial in deciding prospects for scholarships, higher education, and future employment [7]. This requirement has a dual role in the process of training pedagogical students, serving both to evaluate the quality of training and serve as a prism for students to study so that after graduation, they can apply the important points, methods, and forms of organization flexibly in diverse pedagogical environments [8].

The reality demonstrates that there are several elements influencing the quality of students' learning results in terms of both teachers and students [1, 7]. It is vital to do study and learn about the elements influencing the quality of assessment in order for the information about learners obtained during the learning process to be substantial, adding to the measurement of their achievements [7]. Taking students' perspectives is another approach for determining what aspects are essential to the quality of learning. Recognizing the aforementioned issue, we conducted this study to determine the elements influencing the quality of evaluation of learning outcomes of students in Primary Education from their perspective. Much earlier research has been undertaken to answer this topic, however, those studies were conducted in different nations, where the factors discovered are likely only applicable to their areas. Thus, the current research is unique due to the nature of social changes. The rest of this paper is organized as follows: Section 2 provided a brief description of similar studies. Materials and methods for conducting the analysis

Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students

were presented in Section 3. Section 4 reported findings with discussion. We concluded the paper with research direction in Section 5.

II. LITERATURE REVIEW

There have been several studies on student accomplishment, each with its own criteria and methods for measuring learning outcomes. Alos et al. [9] investigated factors influencing the academic performance of the nursing students at BSU. Their results reported that teacher-related aspects, study habits, school-related aspects, personal conditions, and home-related aspects are the main four factors contributing to the success of fourth-year nursing students. Of these factors, the teacher-related aspect played the most important role in explaining the learning outcome, followed by student habits. Briones et al. [10] reported several factors that might affect the scholarly performance of students at SKSU – Laboratory High School including parenting style, characteristics of the students, level of internet effectiveness, teachers' effectiveness, lack of motivation, and students' career choice. Among these factors, lack of motivation was considered one of the most influential variables affecting learning outcomes, followed by family status and teacher effectiveness. In another line of research, Mushtaq and Shabana [11] focused on communication, learning facilities, proper guidance, and family stress. Their experimental results reported that the first three factors positively affect students' performance while the last one can not be explained through evidence from data. In line with previous research, Daniyal et al. [12] investigated eight factors influencing Pakistan students (i.e., family income, father education, mother education, size of family, motivation of parent, involvement in curricular activities, regularity of teacher, interest in the subject developed by concern teacher).

The aforementioned studies revealed that many factors were investigated at different levels spreading throughout the nations. It may be explained through cultural and economic conditions. Thus, each study has its unique contribution to the field. As such, interested readers can have a wide range of references applied to a specific context. Our study contributed to the body of knowledge by exploring factors attributed to primary students in Vietnam.

III. MATERIALS AND METHODS

A. Participants

The survey was designed and sent to 3rd and 4th-year students in Primary Education at 6 universities: Thai Nguyen University of Education, Hue University of Education, Da Nang National University of Education, Quang Nam University, Hung Vuong University, and Phu Yen University. The estimated number of users participating in the survey is 1100 people, the response rate is 84% (924 responses), the research team removed 7 responses that did not complete the survey, 24 invalid responses that did not valid due to selecting only one option. The final total data for inclusion in the analysis was 893 (81.18%). According to the results of data collection from the survey (see Table 1), the proportion of men accounted for 5.72%, while the proportion of women accounted for 94.28%. All survey subjects are 3rd and 4th-year students to ensure that respondents have more than 2 years of experience in the learning process and receive an assessment of learning outcomes, in which, 3rd-year students are 515 (57.67%) and 4th-year students 378 (43.33%). The percentage of students belonging to the surveyed schools includes Thai Nguyen University of Education (52.23%), Hue University of Education (28.57%), Da Nang University of Education (19.20%), Quang Nam University, Hung Vuong University, and Phu Yen University. The results of this survey are also consistent with the ratio of local universities and key universities of pedagogy.

Table 1. General information of the participants (N = 893)

Variable	Number	Percentage
<i>Gender</i>		
Male	51	5.72
Female	842	94.28
<i>Academic year</i>		
3 rd	515	57.67
4 th	378	43.33
<i>University</i>		
Thai Nguyen University of Education	251	28.11
Hue University of Education	64	7.17
Da Nang National University of Education	68	7.61

Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students

Quang Nam University	342	38.3
Hung Vuong University	85	9.52
Phu Yen University	83	9.29

B. Instrument and measurements

Scales and questionnaires are created and sent to students via Google Form (see Table 2). A five-point Likert scale (1 = Disagree, 2 = Tend to disagree, 3 = Neutral, 4 = Tend to agree, 5 = Totally Agree) was used to measure the degree of agreement for each question.

Table 2. Questionnaires used for survey participants (N=893)

Item No	Question
Q1	Assessment of learning outcomes has a strong relationship with goals
Q2	Assessment of learning outcomes has a close relationship with the teaching content
Q3	Assessment of learning outcomes has a close relationship with teaching methods and organizational forms
Q4	Assessment of learning outcomes has a close relationship with the means and conditions of teaching organization
Q5	Teachers need to conduct assessment of learning outcomes according to the principle of fairness
Q6	Teachers need to evaluate learning outcomes according to the principle of ensuring comprehensiveness
Q7	Teachers need to evaluate learning outcomes according to the principle of ensuring systematic
Q8	Teachers need to conduct assessment of learning results according to the principle of ensuring publicity
Q9	Teachers need to evaluate learning outcomes according to the principle of ensuring educationalness
Q10	Teachers should evaluate learning outcomes from the very beginning of the teaching process
Q11	Teachers should evaluate learning outcomes in the teaching process
Q12	Teachers should evaluate learning outcomes at the time of summarizing the teaching process
Q13	Teachers should provide feedback on learning outcomes by commenting on students' answers in class
Q14	Teachers should provide feedback on learning by commenting on assignments, student or group performance
Q15	The teacher should talk privately after class with some students/groups
Q16	Teachers should write comments on students' assignments
Q17	Teachers should write comments on assessment sheets designed by teachers themselves
Q18	Teachers should comment in online class/group
Q19	Students want to be guided by teachers to process information about learning results by guiding students to summarize the knowledge and skills gained.
Q20	Guide students to identify strengths in learning: motivation, effort, results, etc.
Q21	Students want to be guided by teachers to process information about learning outcomes by guiding students to identify deficiencies in learning/exercises.
Q22	Students want to be guided by teachers to process information about learning results by guiding students to identify ways to overcome deficiencies in learning/exercises.
Q23	Students want to be guided by teachers to process information about learning results by guiding students to identify ways to overcome deficiencies in learning/exercises.
Q24	Students want to be guided by teachers to process information about learning results by guiding students to comment on the results/exercises of friends/other groups.
Q25	Students expect to be guided by teachers to process information about learning outcomes by guiding students to respond to comments and assessments of teachers and classmates.
Q26	Students want to be guided by teachers to process information about learning results by guiding students to write summaries and draw necessary pedagogical conclusions.
Q27	Learning goals and interests affect students' learning outcomes

Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students

Q28	Teachers' expertise affects learning outcomes
Q29	Tools teachers use in testing and assessment affect students' learning outcomes
Q30	Conditions of facilities serving teaching and learning affect learning outcomes
Q31	Information technology environment for teaching and learning affects learning results
Q32	The degree of concordance between the forms of tests/exams to assess the learning outcomes compared to the specifics of the subject
Q33	The degree of compatibility between the content of the test/exam with the course objectives
Q34	Reasonableness of test/exam time
Q35	Teacher marks and returns the test in a timely manner

C. Data Analysis

For data analysis, the current study used Exploratory Factor Analysis (EFA). EFA is a quantitative analysis approach that reduces a large collection of interdependent measurements into a smaller number of variables (called factors) while retaining the majority of the original set of variables' information content [13]. It attempts to determine the underlying structure of a set of related variables. Each index in a collection of indices is assumed to be a linear function of one or more common factors and a single factor in EFA. Common factors are unobservable, hidden variables that affect more than one indicator in a set of indicators. Unique factors are latent variables that are thought to affect only one indicator from a collection of indicators and do not take indicator correlations into consideration [14]. Before completing EFA, descriptive statistics were used to assess the measurement's applicability for the 35 survey questions. The study team determined the mean of all replies and the standard deviation (SD) on each item in the descriptive statistics table. If the mean of a statement was near 1 or 5, the team eliminated that response from the table since it may lower the quality of correlation among the remaining items [15]. Following this, the distribution's normality was verified by testing for skewness and kurtosis. After confirming the distribution's normality, exploratory factor analysis was performed using SPSS 26 (Statistical Package for the Social Sciences) software.

IV. RESULT AND DISCUSSION

The technique for exploratory factor analysis begins with the collection of eigenvalues for each factor. The Kaiser-Meyer-Olkin (KMO) scale was then used to determine if the data was suitable for factor analysis [16]. KMO values vary from 0 to 1, with levels greater than 0.5 being sufficient for EFA [29]. To assess if the correlation between the questions is high enough for the factor analysis to be statistically significant, the Bartlett technique is utilized [13]. Only if Bartlett's test is statistically significant will further analyses be performed (sig. 0.05).

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.927	
Bartlett's Test of Sphericity	Approx. Chi-Square	13590000
	df	595
	Sig.	.000

EFA was performed on 35 questions with Varimax rotation. The analysis results from SPSS software allow the research team to extract the characteristic value for each factor. The Kaiser-Meyer-Olkin measurement verified the adequacy of sampling for analysis with a value of 0.927 (see Table 3), which is 0.6 higher than suggested by Kaiser [17] and 0.5 by Kim [18].

Bartlett's test of sphericity gives the result $\chi^2(595) = 13590000$, $p < 0.000$, indicating that the correlation between question items is large enough to conduct exploratory factor analysis.

A. Exploratory Factor Analysis

The data from

Table 4 show that there are eight main factors formed from 35 questions with an eigenvalue value greater than 1. In other words, these 35 questions contribute 61.951% of the importance of factors affecting to the quality of assessment of learning outcomes from the perspective of students in primary education, the rest is due to other factors. The percentages explained by each factor

Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students

are: factor 1 (28.813%), factor 2 (9.889%), factor 3 (5.360%), factor 4 (4.154%), factor 5 (3.839) %, factor 6 (3.607%), factor 7 (3.367), and factor 8 (2.922).

Table 4. Eigenvalue, Total Variance Explained of factors

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.085	28.813	28.813	10.085	28.813	28.813	3.450	9.858	9.858
2	3.461	9.889	38.702	3.461	9.889	38.702	3.333	9.523	19.381
3	1.876	5.360	44.062	1.876	5.360	44.062	2.965	8.471	27.852
4	1.454	4.154	48.216	1.454	4.154	48.216	2.693	7.695	35.547
5	1.344	3.839	52.055	1.344	3.839	52.055	2.499	7.140	42.687
6	1.263	3.607	55.662	1.263	3.607	55.662	2.457	7.019	49.706
7	1.179	3.367	59.030	1.179	3.367	59.030	2.336	6.673	56.379
8	1.023	2.922	61.951	1.023	2.922	61.951	1.950	5.572	61.951
9	.904	2.582	64.533						
10	.841	2.402	66.935						

Table 5 reports the loadings for each variable corresponding to a factor. The factor loadings provide a description of each factor and the structure in the set of variables. For interpretation purposes, factor loadings of .30 and higher will be considered significant with a sample size greater than 350 [13]. Using this factor loadings criteria, it can be seen that that all of the loadings are reliable and significant. Moreover, experimental result from Table 5 indicated that each of the variables has a significant loading on only one factor. The first has 5 variables, the second factor includes 4 variables, factor 3 has 4 variables, factor 4 includes 4 variables, factor 5 has 4 variables, factor 6 contains 4 variables, factor 7 contains 4 variables and factor 8 includes 6 items.

Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students

Table 5. Rotation Matrix

	Component							
	1	2	3	4	5	6	7	8
Q6	.789							
Q5	.772							
Q8	.760							
Q9	.739							
Q7	.722							
Q17		.815						
Q18		.724						
Q16		.719						
Q15		.683						
Q24			.809					
Q25			.771					
Q26			.703					
Q23			.702					
Q34				.748				
Q33				.744				
Q32				.695				
Q35				.692				
Q30					.697			
Q31					.691			
Q29					.673			
Q28					.668			
Q2						.723		
Q1						.702		
Q3						.687		
Q4						.472		
Q22							.689	
Q21							.669	
Q20							.554	
Q19							.518	
Q11								.584
Q14								.549
Q10								.536
Q12								.529
Q13								.511
Q27								.427

B. Naming the factors

As illustrated in Table 6, each factor can be named based on variables with significant loadings.

Table 6. Naming the factors

<i>Assessment principles</i>		
Q6	Teachers need to evaluate learning outcomes according to the principle of ensuring comprehensiveness	.789

Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students

Q5	Teachers need to conduct assessment of learning outcomes according to the principle of fairness	.772
Q8	Teachers need to conduct assessment of learning results according to the principle of ensuring publicity	.760
Q9	Teachers need to evaluate learning outcomes according to the principle of ensuring educationalness	.739
Q7	Teachers need to evaluate learning outcomes according to the principle of ensuring systematic	.722
Feedback methods		
Q17	Teachers should write comments on assessment sheets designed by teachers themselves	.815
Q18	Teachers should comment in online class/group	.724
Q16	Teachers should write comments on students' assignments	.719
Q15	The teacher should talk privately after class with some students/groups	.683
Information-handling instructions		
Q24	Students want to be guided by teachers to process information about learning results by guiding students to comment on the results/exercises of friends/other groups.	.809
Q25	Students expect to be guided by teachers to process information about learning outcomes by guiding students to respond to comments and assessments of teachers and classmates.	.771
Q26	Students want to be guided by teachers to process information about learning results by guiding students to write summaries and draw necessary pedagogical conclusions.	.703
Q23	Students want to be guided by teachers to process information about learning results by guiding students to identify ways to overcome deficiencies in learning/exercises.	.702
Satisfaction level		
Q34	Reasonableness of test/exam time	.748
Q33	The degree of compatibility between the content of the test/exam with the course objectives	.744
Q32	The degree of concordance between the forms of tests/exams to assess the learning outcomes compared to the specifics of the subject	.695
Q35	Teacher marks and returns the test in a timely manner	.692
Facilitating Conditions		
Q30	Conditions of facilities serving teaching and learning affect learning outcomes	.697
Q31	Information technology environment for teaching and learning affects learning results	.691
Q29	Tools teachers use in testing and assessment affect students' learning outcomes	.673
Q28	Teachers' expertise affects learning outcomes	.668
Relationship with teaching elements		
Q2	Assessment of learning outcomes has a close relationship with the teaching content	.723
Q1	Assessment of learning outcomes has a strong relationship with goals	.702
Q3	Assessment of learning outcomes has a close relationship with teaching methods and organizational forms	.687
Q4	Assessment of learning outcomes has a close relationship with the means and conditions of teaching organization	.472
Self-Assessment		
Q22	Students want to be guided by teachers to process information about learning results by guiding students to identify ways to overcome deficiencies in learning/exercises.	.689
Q21	Students want to be guided by teachers to process information about learning outcomes by guiding students to identify deficiencies in learning/exercises.	.669
Q20	Guide students to identify strengths in learning: motivation, effort, results, etc.	.554

Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students

Q19	Students want to be guided by teachers to process information about learning results by guiding students to summarize the knowledge and skills gained.	.518
Assessment Process		
Q11	Teachers should evaluate learning outcomes in the teaching process	.584
Q14	Teachers should provide feedback on learning by commenting on assignments, student or group performance	.549
Q10	Teachers should evaluate learning outcomes from the very beginning of the teaching process	.536
Q12	Teachers should evaluate learning outcomes at the time of summarizing the teaching process	.529
Q13	Teachers should provide feedback on learning outcomes by commenting on students' answers in class	.511
Q27	Learning goals and interests affect students' learning outcomes	.427

D. DISCUSSION AND LIMITATION

Perhaps, the most important contribution of this study is the number of factors extracted from 893 responses. These eight factors explain 61.951% of the degree of influence on the quality of students' learning outcomes in primary school. The rotation factor matrix table provides some useful information both theoretically and practically. From a theoretical point of view, it enriches the body of knowledge by identifying eight factors. Therefore scientists can take it as a reference in studying similar problems in their field. Of course, these factors must also be carefully considered and re-examined, because each region has its own characteristics in terms of economic, cultural and social conditions. Some factors may hold true for many different regions, but others may not. From a practical perspective, educators can rely on the influence of factors to make appropriate policies. The loading factor is an important indicator that helps educators prioritize processing items. Variables with large loading factors should be considered and processed first, especially variables with load factors greater than 0.7.

This study encountered some limitations as follows: The first limitation relates to the analytical method. Exploratory factor analysis is a statistical method used to test the structural validity and psychometric properties of a set of measures. However, EFA is not a powerful enough tool to test the theoretical foundations, so the Confirmatory Factor Analysis method should be used in subsequent studies to check the theoretical background (test the set of measures that our model proposes (seven factors)). The second limitation in this study is the bias in sample selection. The research team only sampled the students in three local colleges and three regional universities of Vietnam, so it greatly affects the generalizability of the research results. Scholars and managers need to consider carefully before applying the results of this research to their working environment. The final limitation is that other factors are not considered for the analysis. There may be many important factors that directly affect teachers that have not been observed and measured, such as cultural and social factors.

V. CONCLUSION

This study aims to find out the factors affecting the quality of assessment of learning outcomes from the perspective of students in primary education. The research team proposed 35 questions distributed to participants through social channels. Based on the evidence from 893 included subject, the results of exploratory factor analysis show that there are 8 main factors affecting the quality of assessment of learning outcomes from the perspective of primary education students including assessment principles, feedback methods, information-handling instructions, satisfaction levels, facilitating conditions, relationship with teaching elements, self-assessment and assessment process. These findings can be used as a reference in other research or in a comparable scenario by interested scholars. Educators can use these findings to advocate strategies that will provide a better education.

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Factors Affecting the Quality of Assessment of Learning Outcomes from the Perspective of Primary Education Students

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