Testing the Quality of Rubric to Authentically Assess Students' Digital Communication Skills

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Abstract. Equipping students with 21st-century learning and work skills is a necessity for universities as frontline agents of change in society. One of the skills is digital communication. In addition to short-term training, this skill can also be integrated into relevant courses. This has an impact on the use of assessment types in the courses, considering that digital communication skills are skills that can be measured authentically. The aim of this research is to determine the validity and reliability of the rubric developed as an authentic assessment instrument to assess students' digital communication skills in the English for Educational Technologist course. The research method used is the development research method, which refers to the Dick and Carey model. The assessment instrument trials stage of the rubric developed included expert judgements (2 experts) and a trial involving 30 students and 3 raters. The collected data was analyzed by using descriptive analysis techniques and interclass correlation coefficient (ICC) analysis techniques with the help of the SPSS application. The research results showed that the rubric developed according to the assessment of the two experts was valid (95%), and the trial results showed that the rubric developed was reliable (α= 0,925; ICC value is 0,924). The implications and recommendations for future research are detailed in this paper.

Keywords: digital communication skills, rubric, authentic assessment

1 Introduction

Preparing human resources who have 21st century learning and work skills is a response to the increasing rapid and dynamic external challenges. Therefore, equipping students with 21st-century learning and work skills is a necessity for universities as frontline agents of change in society (1). There are various 21st century skills, including technical, information, communication, collaboration, critical thinking, creativity, and problem-solving skills (2).

Communication skill, especially digital communication, is one of the skills that create interaction between one person or party and another person or party using various digital equipment and formats (3). Communication skill as an essential skill in the digital era is characterized by the use of various digital technologies to communicate, such as the use of email, audio, video/vlogs, presentation slides (1,4,5). Although many students arrive at university with at least some basic understanding or experience with

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digital tools such as email, it is unclear whether they have gained experience dealing with issues related to the challenges of digital society and online connectivity in an efficient, responsible, and resilient manner (6). In addition to short-term training, digital communication skill can also be integrated into relevant courses (7). Mastery of digital communication necessitates access to digital learning resources and relevant assessments. This has an impact on the use of assessment type and instrument in the courses, considering that digital communication skill is a skill that can be measured authentically (8,9).

The assessment instrument to measure the learning goals and objectives must be valid and reliable (10). Valid means it measures what it was designed to measure. Reliable means it consistently measures what it is supposed to. The authentic assessment instrument, such as a rubric, that will be used to assess students' digital communication skills must be valid and reliable, especially if the instrument is newly developed (11).

Research on the rubric to assess students' learning results was conducted continuously to strengthen the concepts and enrich its practices. The previous study used a rubric to assess students' performance individually and in groups during project accomplishment. It provided a better learning experience for the students (12). Other studies used rubrics to assess and improve interviewing techniques for requirements elicitation, to assess project management competences, and to evaluate technological advancements in the classroom (13–15).

The aim of the present research was to determine the validity and reliability of the newly developed rubric to assess students' digital communication skills in the English for Educational Technologist course. The English for Educational Technologist course is a new course that equips students with the ability to communicate the development of educational technology digitally. This course is offered by the Educational Technology Study Program at Universitas Pendidikan Ganesha, Bali.

2. Method

The rubric that was tested for its validity and reliability was developed by following procedure referring to the Dick and Carey development model, namely develop assessment instrument stage, which includes the following steps: identify the element to be evaluated, select the format of assessment instrument, develop assessment instrument, test the instrument validity and reliability, and revise the instrument (16).

2.1 Identify the element to be evaluated.

The elements to be assessed are come from the behavior encompassed in the performance objectives. The elements categories aspects include the physical form of performance, the effectiveness of the performance, and aesthetic qualities of the performance. Selected elements can be observed during the performance (16). The element to be evaluated in the current research is student's skill in communicating the development of educational technology digitally.

2.2 Select the format of assessment instrument.

The next step after identifying the element to be accessed is selecting the format of the assessment instrument. The format to measure the students' digital communication skills is a rubric. As one of authentic assessment formats, a rubric is selected based on its own strength to measure students' performances in more specific criterion matches to each quality level (17).

2.3 Develop assessment instrument

Prior the development of rubric items, based on identified element to be assessed, the rubric grids were first formulated. The rubric grids can be seen in Table 1.

Table 1. Rubric grids to assess students' digital communication skills

Aspect	Indicator	Item number
Message content	• Structure and organization of the message.	1,2
	• Content relevance with the topic.	3
Message delivery	• Greetings	4
	• Visual and multimedia elements	5,6
	• Clarity and conciseness	7,8
	• Engagement and interactivity	9,10
	• Technical proficiency	11
Message acceptance	• Responsiveness to respond to messages received	12
	• Response accuracy	13
	• Ethics of receiving and responding to messages	14,15
Total items		15

The rubric grids become references to develop the rubric items. There were 15 items resulted and each item were scored by using three categories of rating along with its description. The overall rating classified into three categories, they are: novice, intermediate, and proficient.

2.4 Test the instrument validity and reliability

The developed rubric then tested to ensure it was a valid and reliable assessment instrument. Two expert judgements were involved to assess content validity and the construct validity of the developed rubric. Rubric reliability was tested through a trial involving 30 students who were taking the English for Educational Technologist course in the academic year 2023-2024 and three lecturers as raters in the Educational Technology Study Program at Universitas Pendidikan Ganesha, Bali.

The collected data from two expert judgements was analyzed by using descriptive analysis techniques. The data from the three raters who were rated 30 students' digital communication skills were analyzed by using interclass correlation analysis techniques (ICC) with the help of the SPSS application.

2.5 Revise the instrument

The last step is revise the instrument. Based on the rubric validity and reliability results, the rubric can be revised when needed, or when there is no revision, the rubric can be finalized.

3. Finding and Discussion

3.1 Rubric Validity

The developed rubric was reviewed by two experts to test its content validity and construct validity. The summary of experts' judgements results can be seen in Table 2.

Table 2. Experts Judgement Results

Aspect	Indicator	Expert 1	Expert 2
Content	• Representing the digital communication skill variabel	2	2
	• The suitability of indicators with assessment aspects.	2	2
	• The accuracy of the rubric description with the assessment indicators.	2	1
Construct	• Contain instruction, rubric items, and assessment criteria	2	2
	• The rubric structure	2	2
Percentage		10:10x100%=100%	9:10x100%=90%
Average		95%	

Table 2 shows the average result of rubric validity from both experts is 95%. This result is in the category very valid.

3.2 Rubric Reliability

Three raters assessed students' digital communication skills by using the developed rubric to test its reliability. Based on the ICC analysis techniques with the help of the SPSS application, the reliability of developed rubric was obtained. The ICC analysis output presented the results of the rubric reliability with a Cronbach Alpha coefficient of 0.925. The value of the Cronbach Alpha coefficient ranges from 0.00 to 1.00, with a reference benchmark of a coefficient value ≥ 0.7, a measuring instrument is declared reliable. This means that the rubric developed has a very good level of instrument reliability (0.925 > 0.7). Furthermore, the output of the average measures of the intraclass correlation is 0,924, as can be seen in Table 2.

Table 2. Experts Judgement Results

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.802a	.674	.892	13.305	29	58	.000
Average Measures	.924c	.861	.961	13.305	29	58	.000

Two-way mixed effects model where people effects are random and measures effects are fixed

a The estimator is the same, whether the interaction effect is present or not.

b Type A intraclass correlation coefficients using an absolute agreement definition

c This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

The ICC output as presented in Table 2 shows an ICC value of 0.924 with a significance level of 0.000. The correlation value moves from -1 to +1; the closer it is to +1, the more reliable it is (18). Thus, the rubric developed is reliable.

3.3 Discussion

The developed rubric to assess students' digital communication skills was valid and reliable. The validity result indicates the rubric meets the criteria of content and construct validity. However, there is one indicator in the aspect of content validity that requires revision for better future use. The mentioned indicator is the accuracy of the rubric description with the assessment indicators. Creating a rubric description needs careful words and/or terms to make it more accurate with the assessment indicators. Developing rubrics for environmental technology assignments faces many challenges. One of the pedagogical challenges faced by the developers is the rubric's description (17). The description contains a check to ensure that the quality descriptions for each criterion at each performance level are formulated in a good progression and that the

descriptions are easily distinguishable from one level to the next. The most important inference is that the rubric's wording has to be precise and comprehensive (19).

The ICC analysis result showed the rubric is reliable. The reliable rubric was tested by involving 3 raters. The results of the three raters showed that the rubric used showed consistent results in assessing students' digital communication skills between one rater and another. This result is in line with research findings stating that a well-structured assessment rubric minimizes the impact of assessor differences in scoring (20). A good rubric is a rubric that ensures fair and consistent evaluation, even though there are possible differences between evaluators (21).

Rubrics as authentic assessments that have been tested for validity and reliability can then be used to assess students' digital communication skills in the English for Educational Technologist course. Before being used, it is a good idea for raters to be given training first so that they can minimize differences in assessment results caused by differences in understanding of the meaning contained in the rubric(22). In addition, it is important to reduce the impact of personal preferences on appraisers' assessment decisions through training and monitoring (23).

4. Conclusion

The rubric to assess students' digital communication skills has been tested for validity and reliability. The test results showed the rubric is valid and reliable. As an implication, the rubric can be used to assess students' digital skills in the English for Educational Technologist Course. This study has limitations in terms of the number of experts involved in testing the rubric's validity. It is recommended to have more experts involved in the future study to gain more comprehensive results.

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