

Assessment of Participation Using Rubric for Online Discussion

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Abstract

An online discussion is a platform been used to facilitate interaction between students in sharing knowledge. Many researchers have documented that online discussion more equitable because it gives equal voice to all students to participate. However, in participating students are expected active to construct their idea. Educators need to convey the information and assess the student's participation. Assessing student's participation consists of content and interaction where content refer to type of knowledge shown by student, and interaction is look at the way of student interact with others. In order to assess student's participation can be measured by rubric which it help educator justify the grades quickly and efficiently. In this paper will present an analysis of rubric for assessing participation by combine the content and interaction using quantitative log file method through online discussion.

Keywords: Assessment, content, interaction, online discussion, participation, rubric;

1. Introduction

Assessment in online learning is important for learning process, it can facilitate teacher for measure student's activities in online environment. The purpose of assessment in online discussion is measuring students demonstrate their participation, to enhance student's reflection in practice their learning, and also to promote the collaborative learning by interaction with other student through online environment.

The use of criterion referenced assessment in online discussion is needed because it can be a guideline by which student response and participate are measured. Vonderwell, Liang, and Alderman (2007) suggest that detailed assessment criteria are essential in guiding student participation to the discussion and enabling fair assessment of student participations.

Further, the criteria should be specific to topics rather than general across all discussion topics. It is suggested that the criteria for assessment of an online discussion in the workplace learning context should be the quality of reflections, the extent of collaboration with other students, evidence of links to professional practice and written expression. These criteria are consistent with the stated purposes of the discussion. A set of criteria can be used by rubric to measure the quality of student performance in participate to online discussion.

Rubric is a scoring guide or measurable scale with several categories of narrative statements clearly communicating desired participation (Arter & McTighe, 2001). Assessment can be done by counting things like the number, regularity, and length of contribution. While grading is the most common form of assessing student's learning, rubrics scoring provides for a more finely-detailed characterization of student's behaviours than simple grading (Ho, 2004). Using rubric is one way that teachers can evaluate or assess student participation in any given task as it relates to a learning outcome. Thus, rubric can provide valuable information about the degree to which a students has achieved a defined learning outcome based on certain criteria.

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Assessment criteria for student's participation in online discussion are separated by content and interaction. By combining content and interaction criteria, this paper present an analysis of rubric for measuring student's participation based on the quantitative log file data which it is stored in the learning environment and analyzed using content analysis and social interaction analysis.

2. Assessment of Participation in Online Discussion

Currently, many researcher developed method for assessing online discussion with diverse of assessment criteria. Assessment criteria are divided in to content and interaction, which analyze from content is representing the activity of student's skill in typing/posting message. Researchers used this analysis such as Salmon (2000), Hara et al. (2000), Peterson-Lewinson.(2002), Fahy (2003), Puntambekar and Luckin (2003), Juan et al. (2008), and Li and Huang (2008). Analysis based on interaction refer to the way of students interact with other. Researcher applied this analysis such as Peter et al.(2002), Juan et al. (2008), Caballe et al. (2008), Li and Huang (2008). Some criteria for assessment in online discussion are suggested from several researchers above.

2.1. Assessment Criteria for student's Participation

Assessment criteria for student's participation is proposed in this research by investigate existing criteria and also combine it base on content and interaction analysis. The assessment criteria are novelty, key knowledge, pair response, final response, and participant rate. Detail for assessment criteria on Table 1

Table 1. Assessment criteria for student's participation

Category	Criteria	How to assess	Researchers
Content	Novelty	The number of keywords mentioned for the first time by the students.	Juan et al, 2008 Li and Huang, 2008
	Key knowledge	Making decision by count the total numbers of student's keywords match in participate to the discussion.	Salmon, 2000 Hara et al, 2002 Peterson-Lewinson, 2002 Putambekar and Luckin, 2004 Juan et al, 2008
Interaction	Pair response	Student's response to their peer posting	Callabele et al, 2008 Juan et al, 2008
	Final Response	Total number of response to other student in discussion	Callabele et al, 2008 Juan et al, 2008
	Interaction rate	The total number and frequency of postings by the students and response others posting	Callabele et al, 2008 Juan et al, 2008 Li and Huang, 2008

The reliability analysis of the research for assessment criteria is important to make sure that the parameter used in the research reliable. Reliability analysis is determined by obtaining the proportion of systematic variation in a scale, which can be done by determining the association. By using Cronbach's alpha, where a values range of .60 to .80 is reliable and values range of .80 to 1.00 is very good scale. In this research, Cronbach's alpa for survey for assessment criteria is .68, it means that these assessment criteria for participation are reliable.

Analyze the data for research for assess the participation in online discussion can be investigated by conventional assessment in discussion. Based on survey to practitioners, the reliability for assessment criteria, and review the literature about assessment participation, criteria for assessment in online discussion are summarized. By using quantitative log file (QLF) the assessment criteria are generated from learning environment.

2.2. Quantitative Log File (QLF)

Evaluate the quality of online discussion posts can be measured from the content and interaction analysis. The quantitative analysis from log files can be made by content analysis to discover the distributions and changing trends. It can reflect the diversity of theoretical base, the amount of information about validity and reliability (Weaver, 2006). Based on interaction, the quantitative analysis is measuring the amount of online interaction.

Quantitative log file analysis can be either manual (with a human translating log entries into specified metrics), or automated (with a computer program performing that translation). It very difficult when analyze manually by the teachers, when the numerous of data to the discussion threaded.

Collecting log files data is possible for the computer to record each of activities typed by the users such as posting a message. When users interact to the online discussion, the data will be collected from comprehensive record of interaction. The use of QLF analysis is to try to understand number of relationship every activities in online discussion. The QLF analysis simply measures amounts of activity over time (Amy, 2006).

2.3. Rubric Assessment Participation Criteria

Rubric use specific criteria as a basis for assessing student participation as indicated in narrative descriptions that are separated into levels of possible participation related to a given task. Starting with the highest level and progressing to the lowest, these levels of participation are used to assess the defined set of criteria. Rating scales are used; numerical, qualitative, or combination of numerical and qualitative.

Scoring rubric include one or more dimensions on which participation is rated, definitions and examples that illustrate the attributes being measure and rating scale for each dimension. Dimensions are generally referred to as criteria, the rating scale as levels and definition as descriptors.

Rubric for assessment participation criteria are measured by the highest number and the lowest number for each criteria of assessment in every activity to the online discussion. Based on Lynn (2003) there are three features that should be accomplished for making rubric, such as; (1) measuring stated objectives, (2) using a range, and (3) indicating the degree. The range for this rubric is the number of maximum and number of minimum for each assessment criteria. The level of degree for assessing participation online discussion is explained below. For detail of rubric assessment participation in online discussion is shown on Table 2.

Table 2. Rubric for assessment participation in online discussion

Rubric Criteria	Low (L)	Middle (M)	High (H)
1. Novelty	No or minimal number of keyword first posting match to the teacher's question/topic	Number of keyword first posting match to the teacher's topic is middle to the teacher's question/topic	Number of keyword first posting match to the teacher's topic is maximum of the keywords
2. Key Knowledge	No or minimal total keyword match to the	Total keyword match to the teacher's keyword is middle	Total keyword match to the teacher's keyword is

	teacher's keyword	teacher's keyword	maximum of the keywords
3. Pair Response	No response or minimum to the pair posting	Responding to pair posting is middle	Responding to pair posting is maximum to the pair posting.
4. Final Response	Responding to none or minimum to other posting	Respond to the other posting is middle	Responding to all other posting
5. Interaction Rate	No participation or minimal participate to the discussion	Participation to the discussion is middle	Participation to the discussion is maximum

When the rubric for measuring level of student's participation is low, it means that number of minimum of students in participation to the online discussion, middle represent that number of student participation to the discussion is in the middle range, and high be a sign of the maximum number of student made a fine participation and also made response to comment in discussion. As shown by Figure 1.



Figure 1. Ranges and Degree for Rubric Assessment Participation

3. Rubric Analysis

The function of this rubric is to measure level of student in participating for each assessment criteria to the online discussion. There are three categories for rubric assessment criteria such as; High, Low, and Middle measurement. Based on Table 2 rubric for assessment criteria in online discussion, several formulas are presented.

- Rubric measurement for high level

$$R_{\text{high}} = x \longrightarrow x \mid x = n_{\text{max}}$$

- Rubric measurement for low level

$$R_{\text{low}} = x \longrightarrow x \mid n_{\text{min}} \leq x < n_{\text{max}}/2$$

- Rubric measurement for middle level

$$R_{\text{mid}} = x \longrightarrow x \mid n_{\text{max}}/2 \leq x < n_{\text{max}}$$

Where: R_{high} denotes high level of rubric
 R_{low} denotes low level of rubric
 R_{mid} denotes middle level of rubric
 x denotes level measurement

After all, in order to determine student's participation in content and interaction the operator or/disjunction (\vee) is used. Boolean logic in and/conjunction operator is developed by George Boole (1815-1864), it is often used to refine the determination of system status or to set or clear specific criteria. Boolean logic is simply a way of

comparing individual criteria. It uses what are called operators to determine how the criteria are compared. The output will be low if any criteria are low. It represented by using truth table as illustrated below:

Table 3. Truth table for operation “AND”

AND (All high = high, else low)		
Criteria 1 (C1)	Criteria 2 (C2)	C1 ^ C2
0	0	0
0	1	0
1	0	0
1	1	1

Note: 1 represent high, and 0 represent low

Rubric for whole student’s participation is determined by high or low level of all criteria, where if and only if all criteria are high, the output will be high.

4. Conclusion

The aim of this paper was provide a conceptual analysis of the rubric for assessing student’s participation base on content and interaction. The paper acknowledged the important of rubric to measure student’s participation in online discussion. The use of rubric for measuring student’s participation in online discussion has explained highly effiecient in gaining and assessing the valuable actions of student in participating via online discussion. Enhanced the quality of student’s participation can make online discussion activities really productive.

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