

**A FRAMEWORK FOR ASSESSING ONLINE DISCUSSION
USING QUANTITATIVE LOG FILE AND RUBRIC**

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A FRAMEWORK FOR ASSESSING ONLINE DISCUSSION USING
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Alhamdulillah. . .

“Segala Puji Bagi Allah SWT

Yang Menganugerahkan Segala Ilmu Pengetahuannya”



Special for my beloved family

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ABSTRACT

Online discussions have been found to be a powerful platform for collaborative learning. Students interact online and this has contributed towards individual student's learning process. However, the issues that need to be addressed in online discussions are assessment of students' participation and the level of activity with reference to numerous discussion threads. Currently, the assessment of online discussion is based on content or interaction and each does not have standardized detailed descriptions or rubrics to determine the level of participation among the online interactants. To address the problem of assessment, this research investigated and verified the use of content combined with interaction as significant assessment criteria. The proposed framework to address the problem used the Quantitative log file (QLF) and rubrics to gauge the level of students' online participation. The QLF for content included novelty and key knowledge whereas interaction included pair response, final response, and interaction rate. The framework was applied in a prototype based on MOODLE environment called Rubric Assessment Participation System (RAPS). Questionnaires were distributed to fifty respondents in order to justify the assessment criteria of online participation. Six users were selected to test the prototype which combined content and interaction as assessment criteria in the rubrics and the result showed that RAPS can be used as an assessment tool for online discussions.

ABSTRAK

Perbincangan atas talian telah menjadi satu platform yang berkesan untuk pembelajaran kolaboratif. Pelajar boleh berinteraksi atas talian dan ini telah meningkatkan proses pembelajaran pelajar. Walau bagaimanapun, isu penilaian tentang penyertaan pelajar dalam perbincangan atas talian dengan merujuk kepada aktiviti di dalam perbincangan perlu diberi perhatian. Pada masa ini, penilaian perbincangan atas talian adalah berdasarkan kepada kandungan atau interaksi, dan masing-masing tidak mempunyai penerangan secara terperinci atau rubrik untuk menentukan tahap penyertaan pelajar dalam perbincangan atas talian. Untuk menangani masalah ini, penyelidikan ini telah dilakukan dengan menggabungkan kandungan dan interaksi sebagai kriteria penilaian. Rangka kerja yang dicadangkan untuk menangani masalah ini adalah dengan menggunakan fail log kuantitatif (QLF), dan rubrik digunakan untuk mengukur tahap penyertaan pelajar dalam perbincangan atas talian. QLF digunakan untuk menganalisa kandungan yang merangkumi kebaruan kandungan dan katakunci dari kandungan. QLF digunakan untuk menganalisa interaksi yang merangkumi tindak balas kepada pasangan, tindak balasan akhir, dan kadar interaksi. Berdasarkan kepada rangka kerja yang telah dicadangkan, prototaip yang dinamakan Sistem Penilaian Penyertaan Berasaskan Rubrik (RAPS) telah dibangunkan di persekitaran MOODLE. Soal selidik telah diedarkan kepada lima puluh orang responden untuk mengesahkan kriteria penilaian penyertaan yang telah dipilih. Enam pengguna telah dipilih untuk menguji prototaip yang dibangunkan yang menggabungkan kandungan dan interaksi sebagai kriteria penilaian di dalam rubrik dan hasilnya menunjukkan bahawa RAPS boleh digunakan untuk penilaian penyertaan perbincangan atas talian.

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LIST OF ABBREVIATION

CSCL	-	Computer Supported Collaborative learning
CA	-	Content analysis
DA	-	Discourse analysis
ICT	-	Information and Communication Technology
OCL	-	Online collaborative learning
PHP	-	Personal Home Page
QLF	-	Quantitative Log File
RAPS	-	Rubric Assessment Participation System
SNA	-	Social Network Analysis
SD	-	Standard Deviation
TAT	-	Transcript Analysis Tool
UML	-	Unified Modeling Language
UAT	-	User Acceptance Test
VINCA	-	Visual Intelligent Content Analysis

CHAPTER 1

INTRODUCTION

1.1 Introduction

The development of technology in educational field offers various ways to improve teaching and learning process. With regard to the advancement of Information and Communication Technology (ICT) in educational process, many academic fields are trying to use the technology to involve the students actively collaborate in learning, especially in online collaborative learning. Online collaborative learning (OCL) has rapidly become an accepted form of learning by teachers and students in enhancing the quality of education and collaboration over the online learning.

In communication, especially in collaborating and participating in collaborative learning process, the internet has given a solution for distance learning to learn anywhere and anytime. Computer Supported Collaborative Learning (CSCL) provides a transparent communication between different computing platforms and simplify the process of learning in provide opportunities to remotely located learners (Erlin *et al.*, 2008). The collaborative learning process has been improved from face to face session in classroom into online learning that does not have to be place- or time-based (Cohen, 2003). One of the technological tools for support collaborative in distance learning is through online discussion.

Online discussion can enhance teaching and learning process, such as improving social interactivity between students, thinking about the activity being performed, and support collaborative group (Nandi *et al.*, 2009). In order to measure the quality of online discussion, an assessment is needed to get the result of students' participation in learning. Current assessment in online discussion is measured from the content or interaction category without using a grade for assessing the level of participation for each student.

1.2 Background of the problem

Assessment in learning process is important as an ongoing process aimed at understanding and improving student learning (Angelo, 1995). Nevertheless, indifferent for collaborative learning process, it needs an assessment of the way student collaborate, participate and interact with others in learning process. Assessing participation of OCL in online discussion is very essential in order to enhancing and measuring active student learning. According to Salmon (2000), there are several types of student participating in online discussion in which just by reading the messages and do not participate, they may learn by reading the posts and incorporating the ideas into their assignments; the students read the messages and treat them as a notice board posting and their own position having limited interactivity; and lastly the students are full of participation with more interactive activity. With the different types of participation, it is difficult for the teacher to do assessment of students' participation.

Furthermore, the numerous data of participation in the online discussion makes teacher difficult to analyze and measure them and also very time consuming (Hans 2008, Juan *et al.* (2008), Swigger *et al.* (2009)). When the data of participation involves the interaction between students, it should be found out and identified of the activeness of students in discussion. By assessing students' participation in to the online discussion, it can help teachers to comprehend the interactions and capabilities of students in solving problems, thus organizing the

collaborative learning process to be more effective, and the learning outcomes can be achieved. According to Al-Mahmood and McLoughlin (2004) in learning process is not only to convey the information but more than engaging the students actively construct their knowledge.

There are several ways for enhancing the quality of students' participation in online discussion with different ways in assessment. The current literature on assessing student's participation in online discussion concentrates more on the content or interaction assessment criteria. In this case only assess participation based on content or based on interaction only. Many researchers have suggested assessment criteria for the content and also for the interaction based. In 2000, Salmon *et al.* developed five criteria by using content analysis and focus on groups from online discussion group. In 2002, Hara *et al.* and Peterson-Lewinson expanded two frameworks to examine student interaction and four criteria content analysis framework to analyze the discussion of student in three forums. In 2003, Fahy documented the process of collaborative interaction based on divergence of ideas, collaborative knowledge building and construction; Putambekar and Luckin proposed three criteria for assess online discussion. In 2008, Juan *et al.*, Caballe *et al.* (2008) and Li and Huang (2008) proposed several criteria for assessing discussion participation in OCL. Therefore, assessment of participation with the combination of content and interaction is worth to explore.

Currently, there is lack of researches in measuring student's participation by using data of quantitative log files method (QLF) and rubric through the content and interaction. This file log data can be used to identify activity patterns and participation structures in networked learning groups, which can also be graphically displayed (Nurmela *et al.*, 2003) and the rubric as scoring that provides a more finely-detailed characterization of students' behaviors than simple grading (Ho, 2002). Assessment in online discussion using rubric is designed to simulate participation and level of participation where students are engaged in online discussion. A rubric is a working guide for teachers and students, usually handed out to get the criteria on which participation of student in online discussion will be measured.

1.3 Statement of the problem

Consider an assessment in online discussion with types of participation; numerous data of discussion; and lack of assessment criteria in content and interaction as assessment criteria, this research proposes a framework to assess participation in online discussion. The QLF method is used to combine assessment criteria into content and interaction; and measured by using rubric.

1.4 Research Questions

Based on the problem background, the main research question in this study is “How to assess online discussion using QLF and rubric?”

The sub-questions of the main research are as follow:

1. What is the method can be used to assess participation in online discussion?
2. What are the assessment criteria for content and interaction for assessing participation in online discussion?
3. How to apply rubric to assessment criteria based on proposed method?

1.5 Objectives of the study

The objectives of this research are as follow:

1. To investigate assessment methods for assessing participation in online discussion.
2. To analyze the assessment criteria for participation which consists of content and interaction in assessing online discussion.

3. To propose a framework for assessing participation based on content and interaction in online discussion.
4. To design and test the prototype based on the proposed framework.

1.6 Scope of the study

This research focuses on assessing student's participation for content and interaction in online discussion to support the learning process, criteria for assessment, QLF method for analyzing the criteria and rubric for measuring the level of student's participation in discussion online. The data collections are from UTM eLearning and practitioners. Analysis from UTM eLearning are focused on online discussion forum in English subject (MyLine) to investigate the numerous data in online discussion; to verify the case of the study and to reach assessment criteria in discussion, the data is collected from survey to practitioners in schools at Indonesia which they applied discussion as teaching and learning process in classroom.

1.7 Significant of the study

This research has big impact in developing teaching and learning processes. This research expects that the outcome from this study could be the basis for the researches in the future. The result of this research could be useful for teachers in order to provide and manage the students in collaboration with each other to enhance teaching and learning process. For the students, this research can help them to reflect their learning process in order to get the better achievement in learning.

1.8 Structure of the thesis

The explanation of each chapter in this thesis, which are:

i. Chapter 1

This chapter provides an overview to the thesis. It describes the background of the problems, statement of the problem, objectives of the study, scope of the study, its significance, as well as the structure of the thesis.

ii. Chapter 2

This chapter contains the literature review about collaborative learning, techniques in discussion, online discussion, assessment for online discussion, assessment criteria for participation in online discussion, quantitative log files (QLF) method, and rubric for measuring participation in online discussion.

iii. Chapter 3

This chapter explains the methodology used for this research, research design and procedure, including conduct of the literature review, proposed framework, development of the prototype, and practical testing of the prototype.

iv. Chapter 4

This chapter presents an analysis of the data for the research, such as investigation of UTM eLearning and questionnaire generation design with respondents from school teachers in Indonesia, and proposed assessment criteria based on survey.

v. Chapter 5

This chapter proposes the framework for assessing participation based on content and interaction in online discussion by using QLF and rubric. The

rubric includes assessment criteria, such as novelty, key knowledge, pair response, final response, and interaction rate.

vi. Chapter 6

This chapter explains the design, implementation, and testing of prototype based on the proposed framework.

vii. Chapter 7

This chapter discusses and concludes the overall research process, and reports the research achievement, constraints and challenges, aspirations, and future research plans.

1.9 Summary

This chapter provides a brief description of assessment in online discussion using rubric. First, the researcher made much effort to understand the main problem. Then problem statement was produced which it can become guideline to identify the research questions and research objectives. Scope of the research was also stated. Finally the important of the study was briefly discussed.

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