

# Reuse of Online Discussions: Presenting All Previous Postings May Cause Lurking

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## **Abstract :**

*This study investigates the influence of reusing previous online discussion postings on the students' participation rate and the quality of students' online discussion postings. Participants were 80 pre-service ICT teachers from a large Turkish university. Of the participants, 44 (55%) were male, 36 (45%) were female. The participants enrolled in an undergraduate course entitled 'ICT Teaching Methods I' and participated in a 14-week blended course which consisted of face-to-face lectures with video-case presentations, and asynchronous online discussions. Participants were assigned to one of the following two groups: (1) online discussion only group (control) and (2) reuse group (reading previous online discussion postings + online discussion). The Moodle is an open-source learning management system (LMS) used in the study to provide an online discussion environment to the students. According to the results, the participants of control group (online discussion only group) were contributed much more than the participants of reuse group (online discussion + reading previous discussion postings). This result can be interpreted as the reuse of all previous online discussion postings may cause lurking behaviors. Online and/or blended learning designers should take into account of this possibility. The quality of students' online discussion postings and implications for future implementations are discussed.*

**Keywords-component;** *Asynchronous online discussions, reuse, reusability, lurking, pre-service teachers.*

## I. Introduction

Case-based teaching and learning provides the opportunity for pre-service teachers to analyze and reflect upon classroom situations [1]. The opportunity to discuss teaching issues with others is essential to teacher education, and can potentially be afforded through online discussions [2]. Online discussion boards are increasingly being used in online learning environments to facilitate interactions to support the shared construction of knowledge among members of a learning community [3]. Indeed, online discussions can take many forms including article discussions, jigsaws, scenarios, critical incidents or problems, case studies, controversial topics, role play, and debate [4]. Although student achievement is found positively correlated with their actual reading amount in online environment [5], some studies showed that teacher candidates often do not actively participate and interact with others in online discussions [6], most students tend to only post the minimum number of messages require, particularly if participation is voluntary [7], and limited student contribution in asynchronous online discussions appears to be a persistent and widespread problem [8]. In a study, student engagement in asynchronous online discussions were examined and the number of discussion posts viewed, the number of content pages viewed, and the seconds on viewing discussion pages were found as good predictors of final grades [9]. In another study, the effect of earlier messages on later messages in an online discussion was examined [10]. The results of this study showed that disagreement, contribution, social cue, and past visits of an e-poster (a person who has posted a message on the online discussion board) in earlier messages can affect the properties of a subsequent message. Reference [11] investigated the factors that influenced online course outcomes. In this study, “hits” were defined as the frequency in which each student viewed the content pages at the online site, “posts” were defined as the frequency in which each student posted messages to the online discussions, and “reads” were defined as the frequency in which each student viewed the discussion postings of other students or the instructor. Results of this study showed that the only significant predictor of success in an online course was total page hits (not discussion posts or reads). One unique feature of an asynchronous online discussion forum is that there is no loss of data as the discussion forum allows records of an individual’s written messages to be kept in the virtual space [12]. Previous studies found that online discussion messages tend to be unconnected (do not reference each other) [13], and students tend to focus only on the most recently posted messages, while older messages tend not to be examined or referenced [8]. In the educational field, any kind of material that can be reused in teaching such as a lesson plan, video, or any digital object used or reused for the technical support of learning is considered to be a learning object [14]. In the literature, many scholars have referred to the online discussions as an example of learning object [15], and reuse of student artifacts as resource for further learning has been considered to be a design principle in designing courses [16]. For example, a study by Reference [17] showed that reusing knowledge in online forums has advantages such as subject improvement, time saving, subject revision, and sharing resources. Therefore, the main idea behind the present study is to reuse previous asynchronous online discussion postings to be a rich content resource for pre-service teachers. Specifically, the main purpose of this study is to examine the influence of reusing previous online discussion postings on the pre-service teachers’ participation rate (the number of postings per week) and the quality of pre-service teachers’ online discussion postings.

## II. Methodology

### *Participants and Implementation*

Participants were 80 pre-service ICT teachers from a large Turkish public university. Of the participants, 44 (55%) were male, 36 (45%) were female. The mean age was 21. The participants enrolled in an undergraduate course entitled ‘ICT Teaching Methods I’ and participated in a 14-week blended course which consisted of face-to-face lectures with video-case presentations, and asynchronous online discussions. However, it should be noted that although the online discussions were carried out during the period of 14-week, only the 4-week period were included in analyzing processes. All video-cases (12 distinct videos) were taken from the real ICT lessons either from an elementary school or a high school. Participants were assigned to one of the following two groups: (1) online discussion and reading previous online discussion postings (reuse of previous online discussions related to the same 12 video-cases which were produced by another student group one year before the present study), and (2) online discussion only group. We made the online discussions mandatory and gave incentives (extra grades) for student contributions. In addition, in the reuse group, students were required to read previous online discussion postings. The Moodle (Modular Object-Oriented Dynamic Learning Environment) is an open-source learning management system (LMS) used for producing online discussion platform as well as delivering previous online discussion forum postings. In this blended class, in which both face-to-face and online discussions were used, the instructor (first author) used online discussion board as an after-class discussion activity and after-class communication channel among students. As for after-class activity, the instructor posted questions regarding the video-cases for students to think about and share their ideas, feelings, and views on these questions. Discussion forum postings were analyzed for evidence of quantitative and qualitative impacts of reuse of the previous online discussion postings. Figure 1 shows a screenshot from the Moodle LMS including the previous online discussion postings which are embedded into the online discussion environment as an MS Word document file.

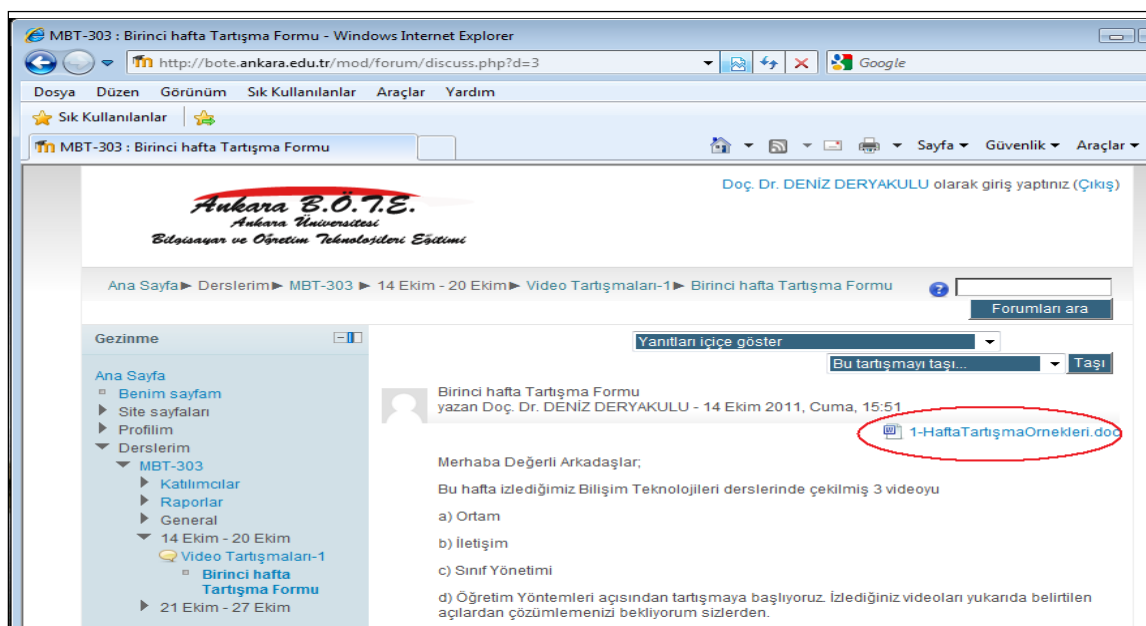


Figure 1. Screenshot from the Moodle LMS discussion forum environment.

We used Zhu’s [18] analytical framework for analysing qualitative nature of discussion postings. Table 1 shows this analytical framework for cognitive engagement in discussions (see Reference [18]) .

TABLE I. ANALYTICAL FRAMEWORK FOR COGNITIVE ENGAGEMENT IN DISCUSSIONS

<i>Category</i>	<i>Type</i>	<i>Characteristic</i>	<i>Example</i>
Question	Type 1	Vertical	Question that has a direct and correct answer
	Type 2	Horizontal	Question that has no direct and correct answer
Statement	Type 1	Responding	Statement that is made in direct response to a previous message(s)
	Type 2	Informative	Statement that provides information related to the topic under discussion
	Type 3	Explanatory	Statement that presents factual information with limited personal opinions to explain related readings or messages
	Type 4	Analytical	Statement that offers analytical opinions about responding messages
	Type 5	Synthesizing	Statement that summarizes or attempts to provide a summary of discussion messages
	Type 6	Evaluative	Statement that offers evaluative or judgmental opinions of key points in the discussion
Reflection	Type 1	Reflective of changes	Statement that reflects on changes in personal opinions and behaviors
	Type 2	Reflective of using cognitive strategies	Statement that explains or reflects on one’s use of cognitive strategies
Mentoring	Type 1	Mentoring	Statement that explains or shows how the understanding of a particular concept is reached



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Scaffolding	Type 1	Scaffolding	Statement that guides students in discussing concepts and in learning content materials by offering suggestions

### III. Findings

First of all, we examined the quantitative student contribution in asynchronous online discussions. We refer student contribution to students posting messages such as making comments, asking questions, answering questions and sharing their thoughts or ideas. According to the results, the participants of control group (online discussion only group) were (f=474) contributed much more than the participants of reuse group (online discussion + reading previous online discussion postings group) (f=262). Table 2 shows the study groups and the number of online discussion postings per week.

TABLE II. THE STUDY GROUPS AND THE NUMBER OF POSTINGS PER WEEK

<b>Groups</b>	<b>Online Discussion Only Group (Control Group) (N=40)</b>	<b>Online Discussion + Reading Previous Online Discussion Postings (Reuse Group) (N=40)</b>
<i>Time</i>	<i>Number of Postings</i>	<i>Number of Postings</i>
Week I	105	62
Week 2	113	69
Week 3	77	22
Week 4	179	103
<b>Total</b>	<b>474</b>	<b>262</b>

Second, we examined the qualitative nature of student contribution in asynchronous online discussions.

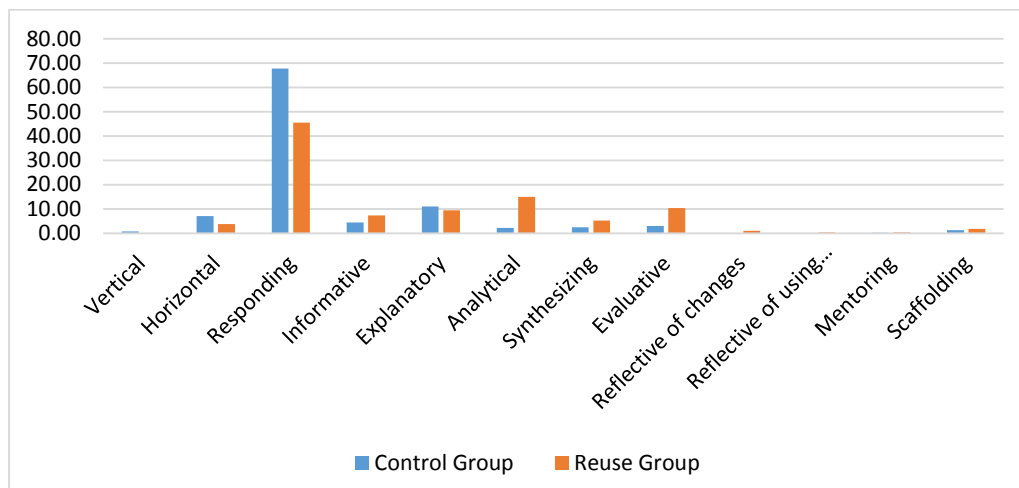


Figure 2. Graphical representation of students' cognitive engagement in the discussions.

Figure 2 shows the graphical representation of students' cognitive engagement in the online discussions. Table 3 shows the descriptive statistics of cognitive engagement in the study groups.

TABLE III. DESCRIPTIVE STATISTICS OF COGNITIVE ENGAGEMENT IN THE STUDY GROUPS

Category	Type	Characteristic	Online Discussion Only Group (Control Group)		Online Discussion + Reading Previous Online Discussion Postings (Reuse Group)	
			f	%	f	%
Question	Type 1	Vertical	4	0,80	0	0
	Type 2	Horizontal	35	7,01	11	3,82
Statement	Type 1	Responding	338	67,74	131	45,49
	Type 2	Informative	22	4,41	21	7,29
	Type 3	Explanatory	55	11,02	27	9,38
	Type 4	Analytical	11	2,20	43	14,93
	Type 5	Synthesizing	12	2,40	15	5,21
	Type 6	Evaluative	15	3,01	30	10,42
Reflection	Type 1	Reflective of changes	0	0	3	1,04
	Type 2	Reflective of using cognitive strategies	0	0	1	0,35
Mentoring	Type 1	Mentoring	1	0,20	1	0,35
Scaffolding	Type 1	Scaffolding	6	1,20	5	1,74
<b>Total</b>			<b>499</b>	<b>100</b>	<b>288</b>	<b>100</b>

As can be seen from Figure 2 and Table 3, the participants of control group (online discussion only) sent much more messages than the participants of reuse group (online discussion + reading previous discussion postings) in the category of Question and in certain types of the category of Statement (e.g., Responding and Explanatory). However, the participants of reuse group sent much more messages than the participants of control group in the last three types of the category of Statement (e.g., Analytical, Synthesizing and Evaluative). Based on these findings, we can speculate that presenting all pervious discussion postings may cause lurking behaviors, however can enhance participants’ higher level cognitive engagement in the online discussion environments.

#### IV. Discussion

The present study explores the feasibility of reusing previous online discussion postings as an instructional resource to engage pre-service teachers in deep discussions necessary for developing teaching skills. Results showed that the participants of control group (discussion only group) were contributed much more than the participants of reuse group. Contribution was regarded as the number of posted messages. Posting a message, however, is seen as a limited indicator of student engagement/participation [19]. In other words, productive participation in online learning conversations requires more than just making posts, namely for productive interactivity and knowledge construction

participants should engage with the posts contributed by others [20]. Results also showed that the quality of messages of reuse group was seen to increase especially in the higher order level outcomes (e.g., Analytical, Synthesizing and Evaluative). In a similar study, the participants of reuse group reported that to read previous online discussion postings helped them to understand the others' point of views, they learnt how they can construct a shared point of view from the others' ideas, and how improved their argumentation and writing skills [21]. We argue that presenting all previous messages in the online discussion environment for the participants of reuse group may cause lurking behaviors. A "lurker" is defined as one of the silent majorities in an electronic discussion forum, one who posts occasionally or not at all but is known to read the group's postings regularly [22]. Individuals those who do not post messages may still be legitimate peripheral participants [23], learning through their observations of others' interactions [19]. Moreover, one study suggests that students who engage in non-posting participation (but engage in reading other's posts) more often report that online discussions are more worthwhile [19]. Reference [24] stressed that lurking –reading but not necessarily posting – is a productive practice for some learners. Because, lurkers may learn vicariously by reading the experiences other participants report [25]. On the contrary, one study showed that while active contribution to the online discussion in the form of new posts was a significant factor in the final unit mark, simply reading the posts of other students (i.e., lurking) was not [26]. Thus, situational impacts of lurking behavior in online learning environments need further investigation.

From another point of view, the participants of reuse group may lurk because of content overload in their reuse task. Each week the participants of reuse group were read large numbers of previous online discussion postings (range from 30 to 80 pages). A literature review study revealed that online learner participation and patterns of participation are influenced by the following factors: (a) technology and interface characteristics, (b) content area expertise, (c) student roles and instructional tasks, and (d) information overload [27]. Similarly, Reference [28] suggests that lurking may be a reaction to information overload. Indeed, the participants of reuse group can be busy with the reading previous discussion forum postings task. Although they showed higher level of cognitive engagement, content/information overload may avoid them to post or contribute as many as the participants of control group did. Indeed, in a similar study, the participants of reuse group reported that reading previous online discussions was boring because of information overload, and the reuse of previous online discussions may hinder participants' desire of active participation [21]. The results of present study may have some implications for designing online discussion environments. First, instructional designers should take into consideration that in order to improve students' cognitive engagement in online discussions previous postings can be reused. However, presenting all the previous postings may cause lurking behaviors. Therefore, following stages can be recommended for reusing previous online discussions: content selection, threaded presentation, monitoring, and (if necessary) encouragement for active discussion.

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