

Peer Assessment Based Assignment to Enhance Interactions in Online Learning Groups

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Abstract — In this paper, we report on the findings from our PhD work on how peer assessment based assignment method can enhance interaction in online learning groups. The method is explored and tried out on the research methods course on the Bachelor of Commerce Programme which is run in distance learning mode at Makerere University. Based on the idea that learning groups can enhance effective learning in online learning environments, we used the affordance eLearning framework to design the peer assessment based assignment task and then qualitative methods collect and report on data. The results reveal that there was increased interaction through peer feedback. Students were motivated because of the marks that the assignment carried. The quality of the final submission improved. The quality of peer feedback improved through the interactions. We conclude that peer assessment based assignment can increase interaction and easily help in monitoring individual students participation in the online learning groups. Since each group receives at least five peer feedbacks then the interaction is quality assured.

Keywords—Learning groups; Peer assessment; Facebook.

I. INTRODUCTION

The high rate of population growth in Uganda has increased demand for higher education. The demand is not commensurate with the number of higher education institutions and corresponding infrastructure in Uganda. Distance learning can cater for the increased demand for higher education. Distance learning is a mode of study where students have minimal face-to-face contact with their facilitators; the learners learn on their own, away from the institutions, most of the time. Distance learning in Uganda is dominated by the first generation model which is characterized by blending print study materials with occasional face-to-face sessions. Learners are given hard copy self-instructional study materials and regularly attend two-weeks face-to-face sessions at the university twice each semester. At most times, the students

study independently from their workplaces or homes, using the print materials. Despite using this learning model, distance learning practitioners use learning group activities such as group assignments to enhance collaborative and cooperative learning. In distance learning, learning group activities can be achieved if learners are compelled to come together physically or some form of ICTs are used to virtually connect group members to learn collaboratively.

Collaborative learning hinges on the belief that knowledge is socially constructed although each learner has control over his/her own learning. The proliferation of ICT in teaching and learning has created new possibilities for supporting collaborative and cooperative learning in distance learning [1]. Learning groups have been preferred for propelling interaction and learning. Vygotsky [2] argues that a person's learning may be enhanced through engagement with others. Because many distance learners are working adults who are not co-located, computer supported collaborative learning can offer possibilities for effective online learning groups. However, motivating and sustaining effective student interactions is not easy to achieve. That requires planning, coordination and implementation of curriculum, pedagogy and technology [3].

Learning groups have been widely used in distance learning to enhance learning. They do this by giving group assignments to help in the initiation of learning groups. However, there are challenges of co-locating students and participation of each group member in the group assignment. This brings about some students not participating on the group assignment but their names are attached. This brings about high failure rates at the end during summative assessment, since many students did not engage with the course materials to do the group assignment [4]. Given the rich experience and knowledge from the individual learners, those who do not participate, fail to harness the benefits of the rich learning experiences from group members. Therefore, effective ways of engaging learners online can offer possibilities of enhanced interactions among students in learning groups. This study was carried out among students on the business research methods course offered through distance education at Makerere University on the Bachelor of Commerce external programme. Our educational goal was to increase interaction in learning groups of distance learning students studying business research methods. The research question we answered was how to increase interaction of students during online learning group process? Interaction is usually encouraged so as to increase learners' engagement when completing group assignments.

The rest of this paper is organized in four more sections. Section 2 of this paper reviews the literature defining and analyzing collaborative learning. In section 3,

we present the approaches and our research methods. Section 4 presents the results of our work. Finally, the paper is concluded in section 5.

II. LITERATURE

A. Collaborative Learning

Collaborative learning refers to instructional methods that encourage students to work together to find a common solution for a given task [5]. Collaborative learning involves effort by groups of students who are mutually searching for meanings, understanding or solutions through negotiation [3,6]. Collaborative learning occurs where there are interactions. Anderson in his online learning framework argues that for meaningful learning to happen, there must be student-teacher; student-student and student-content interactions [7]. Stahl, Koschmann [3] also asserts that learning takes place through student-student interactions. Ludvigsen and Mrch [8] found out that students effectively develop deep learning when supported by computer supported collaborative learning. Therefore, use of peer assessment based assignment in computer supported distance learning can enable student-student interactions.

Collaborative learning is based on consensus building through interaction by group members, in contrast to competition. Collaborative activities are essential to encourage information sharing, knowledge acquisition, and skill development [9]. This set up of peer assessment based assignment can enhance interactions in online learning groups hence meaningful learning.

III. APPROACHES AND METHODS

A. Introduction

We used the affordance eLearning framework [10] to determine the task/activity and match the affordances requirement of the task to the available affordances of the tool. This helped us to design an appropriate eLearning task/activity. The study was among students of business research methods course. The class size was 46 students. The class was divided into five groups. Each group was asked to search and identify a journal paper on research methods of 8 to 12 pages and then submit it to the facilitator for approval. Once the paper was approved, it was uploaded in the Facebook research methods course group area. Each group was required to critically discuss the methodology used, identify gaps and suggest possibilities with references. Each group was required to collaboratively work together and post one page of their findings on their group area. The group submission was submitted as a comment on the uploaded journal paper for the group. Thereafter each student provided comments for at least five other group submissions. Once comments were

made, the group members reconvened and used the comments provided to improve their submission and resubmit the final version. The final submission was sent by e-mail to the facilitator. Each student earned marks for commenting on the five group submissions from other groups. Each group also earned a group mark for the final and preliminary submissions made by the group. However, students were encouraged to give more comments or react to the comments from their peers. This activity was done for two weeks. Qualitative methods (structured interviews and observation) were used to evaluate the learning approach used. Data was analyzed through transcriptions and categorization to understand the effectiveness of learning group processes. The learning group interactions were analyzed using interaction analyses [7] and affordance eLearning framework methodology [10]. In the next section we undertake an affordance analysis of the task (providing solutions to a group assignment) and its requirements. However an understanding of the affordance analysis methodology is vital.

B. Affordance analysis e-Learning design methodology

The affordances analysis e-Learning design methodology framework illustrates how learning tasks can be matched to learning technologies. Figure 1 below shows this framework. From Figure 1 above, we describe the steps below in coming up with

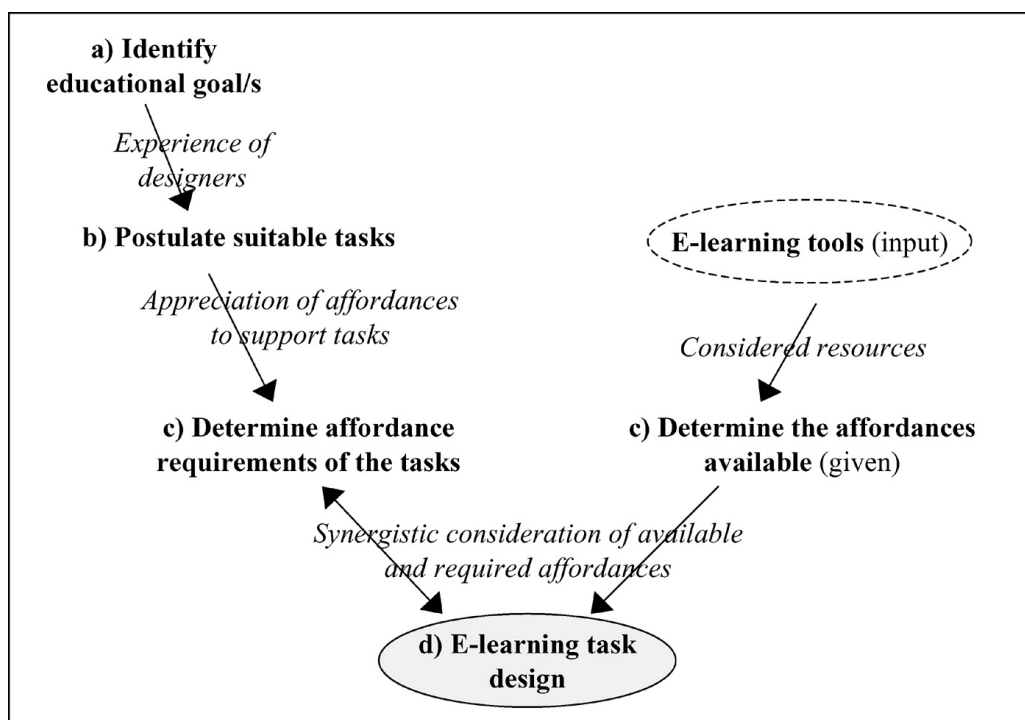


Figure C.1: The affordance analysis e-Learning design methodology matching tasks with technologies to construct e-Learning designs.

the e-learning task design.

Initially we start by identifying the educational goal. In this paper, our educational goal was to enhance interactions among students in the learning groups. The educational challenge was non participation by individual group members in group assignments. Usually, a few do the group assignment and just include other members names. This deters meaningful learning since many students do not participate in the group assignments.

Secondly, we postulate suitable learning tasks from the experiences of the designer you come up with the task which is in line with the educational goal of enhanced interaction.

Thirdly, we determine the affordance requirements of the tasks. Here we basically come up with requirements which will support the task.

Forth, we determine the affordances available depending on the technologies available establish affordances of the technologies. This helps in contextualizing the available technology to be used for the task.

Finally, we come up with e-learning task design by matching the affordances of the task and tool and come up with an elearning task design. Each media type has its strengths and weaknesses. Using the media whose affordances mismatch the intended learning task can be frustrating to the learners [11].

C. Task

Students were required to form groups of 8 using their earlier groups or based on the regions were they came from the groups were self-created. In groups of 8 students, each group was required to identify a business related research methodology journal paper and submit to the facilitator for approval. Once the facilitator approved the paper, it was uploaded on the Facebook group page which was created by the facilitator of the course. A group was required to critically discuss the methodology used, identifying gaps and suggesting possibilities with references. It was a requirement that each group writes one post of one page on the Facebook group page after 5 days of the commencement of the task and each student was required to critically comment on any other 5 groups post. Finally, the group leader was required to submit the final two paged essay by email to the course facilitator based on the inputs and from the comments. The group assignment contributed 15% of the final course mark. Each student earned marks for commenting on the five group submissions from other groups. The group also earned a group mark for the final and preliminary submissions made by the group. However, students were encouraged to give more comments or react to the comments from their peers. Individual students earned marks for peer feedback contributed 5%, students earned group mark of preliminary submission 5% and final submission 5%. For this course unit, this group

assignment contributed 15% of the final mark. They also completed a test which contributed 15%. The test score (15%) plus the group assignment score (15%) contributed 30% as a continuous assessment mark. The final examination assessment carried 70% which was then added to the 30% from the continuous assessment to give 100%.

D. Affordance requirements of the task and tool

Using Bower's [10] affordances analysis framework discussed in this paper, Table 1 below illustrates the different affordances of the requirement of task considering the educational goal. In order for students to be able to do this task, text read-ability and write-ability was essential. Viewability and draw-ability affordances were required when students needed to represent information in picture form. Listen-ability, speak-ability, watch-ability, video-produceability were not very important for this task. Also resize-ability and move-ability were not required since resizing and moving of objects was not a requirement for the task. Accessibility was important since the learners were distributed across the country and there was need to access content from anywhere and anytime. Playback-ability, record-ability, combine-ability and integrate-ability were not required to do the task. Synchronous-ability was required since synchronous and asynchronous learning was required for the task. Browse-ability, searchability, data-manipulation-ability, link-ability, highlight-ability, focus-ability, permission-ability, share-ability were required for the task. The summary of the affordances that applied to the task are illustrated in the Table 1 below where the shaded area shows the applicable affordances of the requirements of the task which were in line with the educational goal of interaction. We also have the shaded part on the column of technology affordances for Facebook. The rest of the affordances of the requirements of task are afforded by the tool apart from drawability, data-manipulation-ability and highlight-ability. Since many of the required affordances of the task were also afforded by the tool, then Facebook was the right tool matching with the educational goal.

The affordance requirement of the above task was to enhance interactions among learners in the learning groups. The affordance of the requirements of the tool was that it enabled students to interact in the context of low bandwidth tools. Given that Facebook could be accessed using mobile phones and over 98% of students had mobile phones [12–14], it was singled out as the number one tool to use in the experiment. This gave the students the possibility of accessing learning resources from anywhere and anytime allowing the students to access Facebook even if they were distributed across the country in places where Internet connectivity was not forthcoming. Also, Facebook was not bandwidth hungry. Further, learners that were

Table C.1: Showing the affordances of the task requirements and affordances of the tool

		Task Affordances	Technology Affordances
Affordances of the requirements of the task		Enhancing Interaction	Facebook
read-ability	Text		
view-ability	Images		
listen-ability	Audio		
watch-ability	video		
write-ability	Text		
draw-ability	Images		
speak-ability	Audio		
video-produce-ability	video		
resize-ability	Increase and reduce size of elements		
move-ability	Moving elements from one place to another		
playback-ability	Played back		
accessibility	Any time any where		
record-ability	Recording		
synchronous-ability	Synchronous versus asynchronous		
browse-ability	Move back and forward		
search-ability	Searching		
data-manipulation-ability	Sort and sequence		
link-ability	Connecting to other pages		
highlight-ability	Highlight aspects of a resources		
focus-ability	Direct attention of text		
combine-ability	Combining tools together		
integrate-ability	Integrating		
permission-ability	Capacity to allow or deny		
share-ability	Collaboration-one-one, one-many, many-many		



employed could access Face book through their organizations Internet facilities.

Two months into the online learning group activity, the course was evaluated. Findings are presented and discussed in the section that follows.

IV. FINDINGS AND DISCUSSIONS

This section presents and discusses the findings of the set up used during the online group activity. The findings are presented in five sections - i) enhanced engagement with course literature, ii) motivation, iii) improved quality of peer feedback, iv) improved quality of submission and v) enhanced interactions. Findings are presented using interview and interaction excerpts.

A. Learning group setup

This illustrates the group set up used in this study. Figure 2 shows the learning group mechanisms that guided our peer assessment based activity. The initial submission shows what the group does and submits before getting peer feedback. Peer feedback is received from individual students from other groups. The final submission uses the inputs from the initial submissions and peer feedbacks as shown in the blue arrows pointing to the final submission.

B. Enhanced engagement with course literature

This setup helped to engage the learners to participate with the course literature. This was realized because of the connection between the assignments and course materials. This worked appropriately since the facilitator had already given a presentation about the methodology module in the course. Since the step was made around the course literature, the feedback prompted the group members to read the papers and course materials. For the learners to provide peer feedback they had to read both the initial group submission and earlier peer feedback already submitted. This increased engagement around course materials as the interactions were proceeding and helped the learners to understand the course materials better. Learners also revealed the following benefits they got from this peer assessment activity based assignment; provided better reader ability and understanding of papers, increasing reasoning, it gave them opportunity to read again in the notes since some methodologies were not written directly in the paper and a learner said that it helped me understand methodology chapter. During the interaction one of the learners asked about the questionnaires in the paper the group had read, that is, ... how did you know that the researcher used the questionnaires? Show the paragraph. . One of the group members responded by saying check on page 107, 108, and 109, specifically check between lines in 2.2 "sample of research" heading, and in 2.3 "instruments and procedures" the last paragraph which talks about a pilot

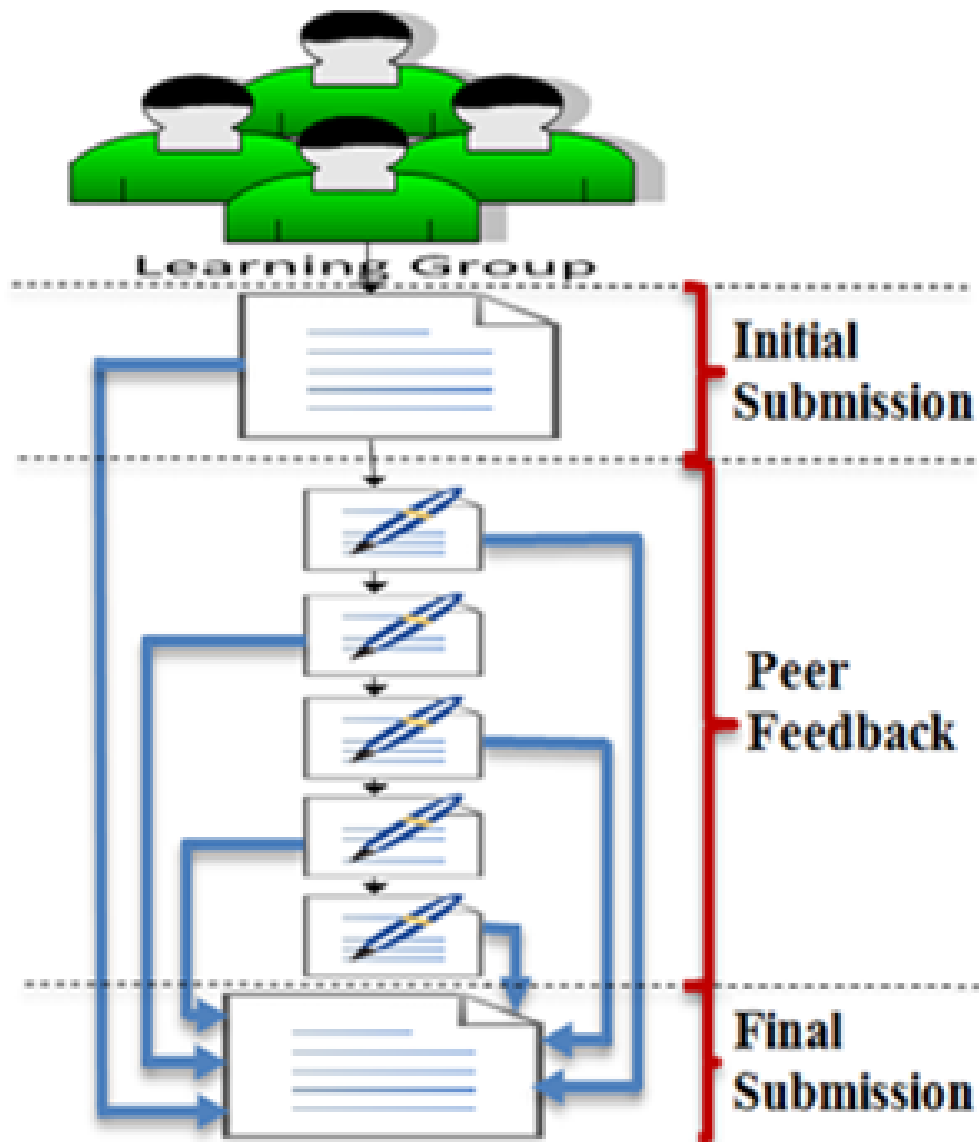


Figure C.2: Learning group setup

study, it goes on to talk about questionnaires.. This gives an indication of content engagement because the question directs the learner to re-read the paper and content before he/she can engage in arguments. Here the student responded by providing the exact place where the information was located in the paper. Similarly, one of the students said, you talked about not using quantitative data yet in the study there are tables and figures which indicate that the researcher used such data. One of the group members responds by prompting the other learner by saying that Tables and figures do not mean that the researcher used the quantitative data. This brings about a conversation of interaction which is based on papers and course literature.

C. Motivation

The course was within the context of formal classroom. Because of their interest in finishing the course, the students were motivated by the marks associated with the assignments. The awarding of marks to individuals peer feedback motivated the students to contribute in the learning groups. Students revealed that marks played a big part to motivate their contributions. Given that the individual learners within the group got individual marks, this motivated the learners to give peer feedback. Learners felt that since their individual participation contributed to the completion of successful and quality submission also motivated them. The learners also felt that they were motivated by the setup of the course since it was related to the research methodology course and easily linked to the materials.

D. Improved Quality of peer feedback

Given that the interactions were around the paper and course literature, the quality of feedback improved. This happened since students were required to give feedback to at least five feedbacks. When students found some feedback on their posts, they read both the paper and feedback so as to give meaningful feedback hence improved quality. Since the students knew that marks were awarded on their feedback they ensured that they read and gave quality input. The quality of peer feedback provided improved through the interactions. Consequently, there was improvement in final submission. This was brought about by learners reading the paper again to give a better quality submission. Learners revealed the peer feedback helped them improve their final submission papers.

E. Enhanced interactions

Within this peer assessment activity, there was increased interaction among learners. This helped to ensure the participation of each learner within the interaction. In addition to the mandatory peer feedback, additional interactions were generated. Eight students were able to comment on each others post. Though it was requirement to just make one post and one comment, the comments generated more comments hence increased interaction among students. The facilitator helped in provoking additional feedback when heshe gave questioning feedback which generated more interactions. The learners revealed that this step increased their interaction with other learners. The learners also said that Facebook did not give them opportunity to express their contributions using audio & diagram but only using text.

V. CONCLUSION

We conclude that peer assessment can help increase student interactions and monitor individual student participation in learning groups. Since marks are awarded to individual students participation, this can increase interaction. With the setup of

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the peer assessment based assignment, there was enhanced engagement with course literature because each group receives a multiplicity of peer feedbacks which makes the interaction quality assured.

ACKNOWLEDGMENT

The work reported in this paper was financed by DELP project which is funded by the NORAD and partial funding from ADILA Project. Acknowledgments also go to the University of Agder and Makerere University who are in research partnership.

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