COOPERATIVE LEARNING FACILITATED THROUGH BLACKBOARD: A STUDENT’S PERSPECTIVE

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Abstract

Working in a group setting is a vital part of the learning experience and one has to understand the difference between group work and cooperative learning as this understanding is essential in addressing issues that are present in these learning strategies. This paper sets out to understand the effects that technology such as the Blackboard Learning tool, has on group activity from the students’ perspective.

The researchers found that limited sources of literature are available that investigated the effects which technology has on group activity, especially from a cooperative learning point of view. The research results and data collection were collected from interviews with students who had participated in a Blackboard Learning tool focused assignment.

This paper found that students find the use of cooperative learning technologies valuable. Understanding the roles, the students and lecturers becomes easier when using such tools and thus it becomes easier to use these tools. The Blackboard Learning tool plays an enabling role in the learning environment but there are other factors that need to be taken into consideration prior applying such tools in a learning environment. Students are able to identify contributing factors which would be useful when they enter the working environment.

Keywords: Cooperative learning, learning environment, group work, education, workplace, Blackboard.

1 INTRODUCTION

It has long been considered that the lecturer has to take the lead in a student’s learning experience. However, the lecturer’s role in the learning environment is evolving and this needs to be taken into account when considering students’ learning abilities [3]. The traditionalist approach has had lecturers as instructors whereas currently, lecturers have adopted the role of a facilitator. In turn, students are encouraged to play more of an active role in their education through peer discussions and constructive questioning of the presented material [1]. The active student role requires that students’ different ability to retain information and learn should be taken into consideration. The change in learning strategies from high school to tertiary education vastly differs, and this has an impact on how students acquire knowledge [26]. Student placements in groups, whether forced or voluntary, now becomes a crucial focus point of group activities. This paper will first introduce the background and research question which this paper addresses, after which the literature section will follow. The approach and data analysis will then be discussed followed by contribution which this paper makes.

2 BACKGROUND

When referring to students working in small groups to achieve a particular goal or objective, this is a form of group activity. The formal term for this type of teaching strategy is known as cooperative learning [11]. According to Johnson & Johnson [11], cooperative learning is defined as “an instructional use of small groups so that student’s work together to maximize their own and each other's learning

Cooperative learning is more than just working in groups [14]. According to Joliffe [14] this teaching strategy is more than just the placement of students in small groups where the intention is for them to support each other in reaching a conclusion on a given concept. Two main elements that differentiate cooperative learning from group work is positive interdependence and individual accountability. These are supported by three other elements that make cooperative learning what it is. Those elements are face-to-face promotive interaction, social skills and group processing [11].
Thus exploring how technology can positively contribute to any one of the five essential elements of cooperative learning and thus provide lecturers insight into its feasibility. According to Gulek & Demirtas [8], “There is substantial evidence that using technology as an instructional tool enhances student learning and educational outcomes”. This statement provides the underlying principle in which this research paper is based. Technology has proven itself as an enabler in the learning environment and uncovering how it can be applied to cooperative learning has the potential to provide lecturers and students with a tool where to achieve various benefits.

According to the research done by McLoughlin & Lee [17], institutions of higher education are realising that various methods of teaching and learning are needed to meet the evolving requirements of the students of the twenty-first century. Puttnam [24] rightfully states that “if we want to win back the trust of young people, we need to engage far more effectively with their world – learn to view technology, and the way in which they relate to it – through their eyes.” These students pursue a greater level of independence, connectivity and socio-experiential learning.

The concept of cooperative learning has been popularly applied in institutions of higher education as supported by the ideologies of James Surowiecki [30]. His research recognised the increase in productiveness within a community where the principles of working in a cooperative manner and sharing of ideas were more prevalent compared to working alone. However, such a learning strategy has its own concerns which need to be explored, in the twenty-first century where the primary method of sharing concepts, ideas and philosophies has been conducted through the use of various technology tools.

The focus of this research is to determine the effects that a learning management system such as Blackboard Learn would have on a cooperative learning based assignment which students had to complete as part of their degree. Thus the main research question which this paper addresses is: What effect does Blackboard Learn have on group activity from a student’s perspective?

3 LITERATURE REVIEW

Many publications have been written relating to cooperative learning as an educational strategy [25]. This research paper focuses on understanding the benefits and drawbacks of cooperative learning, as well as the relationship between education and technology.

There is a need to understand how South African students learn and are taught within the Socio-cultural context. This socio-cultural aspect needs to be balanced with higher education imperatives [10]. It is important to recognize that not all aspects of technology bring an advantage to the educational sector.

3.1 Cooperative learning

According to Robert E. Slavin [27] cooperative learning allows for greater academic achievement amongst students in comparison to traditional learning practices.

Cooperative learning refers to placing students into small groups to work together whereby certain criteria needs to be satisfied to maximize their own and each other’s learning experience [11]; [7]. The forms of group work that students are usually exposed to do not always follow the definition of cooperative learning. The act of assigning students to a group and requesting them to work together does not automatically become cooperative learning [12]. This form of learning requires five elements to be present to conform to the parameters of cooperative learning. According to the widely used model by David and Roger Johnson of the University of Minnesota, USA, the elements are as follows [11]:

- Positive interdependence;
- Individual accountability;
- Face-to-face interaction;
- Interpersonal and small group skills;
- Group processing [11]

These elements are the cornerstones of what makes cooperative learning different from the other learning strategies and will be discussed soon.
The different group work approaches include competitive learning where students compete with each other or individualistic learning where students work alone to achieve learning objectives unrelated to those of other students [13]. These group work approaches have their merit and learning situations in which they are valuable to the students and the lecturer’s learning objective. The evaluation basis of competitive learning focuses on evaluating students through norm-referenced testing. Whereby students’ results are compared using the bell-shaped curve model indicating the normal distribution amongst students [13].

Cooperative and individualistic learning evaluates students on criterion-reference testing which involves the use of a pre-defined criteria against which students are measured. Unlike cooperative learning, competitive and individualistic learning approaches have limitations as to when and where they can be appropriately applied [32]. The comparison between these three learning strategies is not suggesting that the use of cooperative learning is the only way in which students should be taught. It is the aim of this paper to show that incorporating cooperative learning to the lecturers’ teaching techniques is a good direction for the learning environment [29].

3.2 Key elements of cooperative learning

To understand cooperative learning, it is considered necessary to grasp the five foundational elements which it encompasses. These elements were developed to ensure that the learning environment would be most beneficial to students in a group setting.

Positive interdependence relies on students’ dependence on each other to reaching the goal. Each member of the group has an individual contribution to make to the collective work. Therefore, if any member fails to complete their part, the whole team is affected by the outcome [6]. Various tools can be used to enhance the group interdependency in a positive way such as mutual rewards in the case where the whole team succeed beyond expectations; the approach of dividing the material amongst the team to complete the work and lastly assigning different yet aligned roles to increase overall success [27]. These tools can significantly shape the vested interest of each member.

The second element requires each member to acknowledge their stake in the proverbial pie, individual accountability. This element focuses on the responsibility placed on each member to complete their portion of the given work and mastering the needed material to ensure the success of the group efforts [28]. The need for accountability requires each member to be willing to support one another, and that is the focus of the third element, face-to-face promotive interaction. Even though each member of the group has their section of the work to complete they all have to present a unified thought. Thus group members need to provide each other with constructive criticism, question rationale and conclusions, but mostly encourage and teach one another [16]. It is therefore crucial that the size of the groups is small to make promotive interaction conducive [11].

Small groups require a particular set of skills to function optimally; this is the central purpose of the fourth element of cooperative learning namely, interpersonal and small group skills. Arranging socially ill-equipped students in a group and requiring them to cooperate, does not lead to them being able to do so adequately [11]. It is thus beneficial for the success of cooperative learning that lecturers are willing to provide students with the necessary reference points to handle the social obligation required to function effectively in a group setting.

The last element is group processing. This allows for periodical sanity checks based on the group goals. Group processing identifies actions that are favourable to success and areas of inefficiency. These elements are the cornerstone of cooperative learning as they assist in identifying development areas [11].

Even though these cooperative learning principles do not change, there are various adaptations and deviations of the model. Some researchers such as Johnson and Johnson [11] place emphasis on utilising a defined framework that focuses on incorporating social skills into the group activity that applies to a wide range of curriculums. Other schools of thought are more focused on using various learning structures in the facilitation of team building while incorporating group skills with active learning [12].

3.3 Benefits of cooperative learning

Students can reap many benefits from cooperative learning when involved in group activities. Laal and Ghodsi [15] view the main benefits that can be realised from cooperative learning into the following four categories: social; psychological; academic and assessment benefits [15].
Social psychology is defined by Merriam-Webster [18] as “the study of the manner in which the personality, attitudes, motivations, and behaviour of the individual influence and are influenced by social groups” [18]. In the context of cooperative learning, students are given the opportunity to develop their social skills amongst fellow students who may not have the same reference point as themselves. Similarly, lecturers benefit from the cooperative learning as it permits the creation of a positive learning environment. In this environment, students are more inclined to have a positive attitude to their facilitators as a result [15]. Cooperative learning is capable of reducing students' anxiety as the focus is shifted from the individual to the group.

The academic benefits of cooperative learning allow for the promotion of students’ critical thinking skills. These skills are fostered through discussions whereby the reasoning placed behind the conclusion reached is questioned [15]. This process places students in a more active role in their learning development and requires the lecturer to identify their facilitator role. These discussions allow for students to gain a better understanding of how they are assessed.

According to Panitz & Panitz [23], Cooperative learning provides alternative forms of a student assessment. The use of standardized tests does not cater for understanding students' affective learning skills as these methods of teaching deal more with factual information and the ability to memorise. The use of cooperative learning provides insight into the reasoning techniques, level of basic knowledge, and concept attainment of students [23].

### 3.4 Barriers of cooperative learning

The benefits of cooperative learning outweigh the drawbacks, but this does not mean that these drawbacks should not be highlighted and taken note of when using this group work approach. The misapplication of any of the group work approaches discussed need to be carefully monitored to ensure that students are not at an unnecessary disadvantage [29].

The pitfalls of cooperative learning should not be confused with general group work issues. However, these issues are still important to note as they have an influencing factor on cooperative learning. Previous experiences of group work can negatively affect students’ attitudes towards any future work done in groups, this has a negative effect on any form of group work including cooperative learning, that a student is required to take part in. As advocated by Näykki, Järvelä, Kirschner, & Järvenoja [20], unresolved issues and conflicts can be unfavourable to the purpose of cooperative learning. When conflicting emotions are unmanaged, students become distracted from the task at hand, and this pulls away from the group focus. It is thus necessary to the success of cooperative learning to have defined structures of communication in place for students to address conflict situations that may arise [20].

The need to use a variety of learning methods is crucial to keeping students engaged and adaptable. According to Panitz & Panitz [23], cooperative learning has the ability to add to the traditional assessment techniques of standardized tests. Therefore, the overuse of cooperative learning as a method of teaching could result in unbalanced students.

### 3.5 Cooperative learning and the workplace

The need for students to be better equipped for the workplace has increased exponentially. More employers require potential candidates to be sociable and function cohesively in a group setting [5]. It is, therefore, relevant and necessary to bridge the gap that exists between theoretical knowledge and practice. It is acknowledged that not all skills required by students to equip them to manage their first year in the working environment can be taught from a textbook. Therefore, the need to structure group assignments in such a manner that lecturers truly play a facilitating role is critical.

This learning strategy is indispensable for students to attain success in the working environment that relies upon the advancements of technology [21].

Fearon, McLaughlin and Yonk Eng [5] strongly argue that cooperative learning assignments that have a structured workplace simulation can support stronger social learning within the various industries that students may enter.

### 3.6 Technology in the educational Sector

The manner in which technology has had an influence in education over the last few decades has opened the doorway for it to be utilized in various ways. Students of the twenty-first century are known to be highly reliant on their smart devices. In fact, Turpie [33] noted that technology is part of their lives.
as it was there from the day they were born. It is argued that with such technology at the fingertips of students it makes sense for institutions of higher education to join on to the movement in a more constructive way.

According to Heirdsfield et al. [9], technological learning tools such as Blackboard are at the forefront of recent technological advances in Higher Education. The growth in these learning tools create a need to understand how they can be used and the impact they pose on their users [9]. Christie and Jurado [4], argue that such learning tools are not used to their fullest as lecturers do not have the time to become experts at using these tools. It’s important to have the right support and buy-in from the heads of departments and their staff for the value of these tools to be realised [4].

Blackboard is a web-based application that allows students to access course material online. It hosts a variety of tools for learning and teaching [35]. Blackboard can function as a teaching aid for face-to-face learning. Blackboard includes the course syllabus, learning module, discussions, communication features and assessment feedback [2].

According to Moeller and Reitzes [19], there are two main approaches to assessments that are supported by technology. The first is linked to having solid accountability, whereby lecturers benchmark students to a standardised based curriculum which specific outcomes. The other approach assesses understanding of the manner in which the students think. Both approaches help establish a clear baseline from which lecturers can then serve as a counsellor rather instructors.

### 4 RESEARCH APPROACH

This paper was based on an interactive textbook assignment which second year students had to complete as part of their studies at a Higher Education institution in an urban area. Students were given a specific topic to discuss and use Blackboard intensively to complete the assignment. The aspects of Blackboard which they had to use was group discussions, wikis, blogs and uploading of YouTube videos. This assignment was to be done in groups of four to five students.

### 5 DATA GATHERING

Semi-structured interviews were conducted over the course of two days at the convenience of the participants. The interviewees were all posed with the same set of questions in a semi-structured manner. Each of the 9 interviews lasted between 20 -25 minutes and took place individually. It was noted that this exception did not influence the research as individuals provided their answers.

### 6 ANALYSIS OF FINDINGS

**How your group formed and how many members was in the group?**

4 participants noted that they had known all the members prior to the interactive textbook assignment and had actually worked in other assignments together previously. 1 participant noted that they had known all the members in their group prior to the assignment but had not worked with all of them in other assignments. 4 participants noted that they knew one member in the group prior to the assignment and that they either had the remaining group members assigned to them or were already part of the group prior to them joining the group.

**What is your understanding of the term group work?**

12 participants had an understanding of the term “group work”. The answers provided all described several variations of the definition by Web Finance - businessdictionary.com [34], “A collection of individuals that come together to achieve a stated objective” [34]. Participants commonly used phrases such as “working together on the same project”, “all need to participate to reach the group” and “people coming together to achieve one goal” to describe group work.

The term cooperative learning however received mixed answers. 6 participants had not heard the term before, whilst 2 participants had heard of the term but were unaware of the elements of cooperative learning. The remaining 4 participants were aware of the concept of cooperative learning but could not define it.
The results from this question indicated that participants are not actively made aware of the methods of learning strategies applied to them and even when they are moderately aware, their knowledge on the matter is limited. The researchers showed the participants the definition of group work as well as cooperative learning to ensure that the participants had a unified point of reference for the rest of the interviews.

**In past experience, what thoughts or feelings come up when thinking of group work or cooperative learning?**

6 participants found that working in a group setting brought about positive emotions. Whilst 3 participants stated that neutral emotions came about when thinking about working in a group setting. Lastly, 3 participants found that only negative emotions were associated with working in a group setting. The words chosen by the participants varied to express their thoughts and feelings towards group assignments. However, three themes of expression were extrapolated by the researchers and noted as either positive, neutral or negative. The participants who were found to express positive emotions used the word and/or phrases “support each other” and “encouragement”. Whilst participants who exhibited neutral emotions were found be aware of the benefits and drawbacks associated with working in a group setting. The participants who found that working in groups arose negative emotions attributed that to the issues surrounding finding group members, accountability surrounding members completing their portion of the work and difficulties in syncing each other’s schedules to have meetings.

**In a cooperative learning situation, what do you believe the role of the lecturer is and why?**

The participants used various words to describe the role they believe the lecturer plays in a cooperative learning situation. Thus the researchers noted the common words and phrases used to describe the term facilitator as 12 participants were leaning towards this term. The words and phrases used by the participants are: Allow learning to occur; Support; Guidance; Help; Encourage; Introduce topics; Clarify; Individual accountability; Solve problems; Feedback.

**In a cooperative learning situation, what do you believe the role of the student is and why?**

The participants used various words to describe the role they believe the student plays in a cooperative learning situation. Thus the researchers noted the common words and phrases used to describe the students’ role and noted which came up the most. These words or phrases are:

- Doing the work (4 participants);
- Learning and growing (3 participants);
- Sharing what you know and helping each other (2 Participants);
- Thinking as an individual and thinking outside the box (2 participants).

**What is your attitude towards using technology in the learning environment?**

Five participants believed that technology should be used more present in the learning environment. While 3 participants had a positive attitude towards technology however they found it to be a communication barrier in a group setting. This was noted as a positive and a negative as on the positive side, communication over technology removed the awkwardness presented when serious topics required discussing. However, on the other hand, technology took away the facial expression and body language that face-to-face interaction provides. The remaining 4 participants found that technology is an integral part of learning. They stated that it is invaluable, critical and that it is essential to getting their work done as a group.

Overall, the results showed that the attitude to technology in the learning environment is largely positive and that there are areas to keep in mind when introducing more technology into the learning environment.

**On a scale of 1 – 5 (1 being least/low and 5 most/high), what contribution did technology make in reaching the objective of the assignment?**

Eight participants selected 5, thus as each deliverable required technology to be used and heavily relied on technology to communicate and share information between team members. Three participants selected 4 and stated that technology was a communication barrier as the group hardly met in person. One participant found that even though technology was needed to complete task, it was necessary to incorporate one’s own initiative as a group to get the work done.
Which elements of cooperative learning do you believe were present in the assignment recently completed on interactive textbook?

This question was posed to the participants to see if they had applied the elements of cooperative learning. These elements were shown to them using the table below.

Table 1. Elements of Cooperative Learning [11]

<table>
<thead>
<tr>
<th>Elements of Cooperative Learning</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive interdependence.</td>
<td>Relying on each other in reaching the goal set by the assigned task objective</td>
</tr>
<tr>
<td>Individual and group accountability.</td>
<td>Acknowledge your responsibility as an individual as well as in the group.</td>
</tr>
<tr>
<td>Interpersonal and small group skills.</td>
<td>Handle the social obligation required to function effectively in a group setting</td>
</tr>
<tr>
<td>Face-to-face promotive interaction.</td>
<td>Facilitating learning and contributions by each other</td>
</tr>
<tr>
<td>Group processing</td>
<td>Self-evaluation within the group</td>
</tr>
</tbody>
</table>

5 participants believed that all elements were present in their groups. These participants were in groups that functioned more efficient and were better equipped to handling issues that arose in completing their assignment. Two participants noted that face-to-face promotive interaction and group processing were lacking in their respective groups. The reason for this was due to the participants merely dividing the work amongst the group members and compiling the sections for submission. It was furthermore, noted that this approach had an effect on time management thus self-evaluation within the group couldn’t occur due to time limitations.

Two participants noted that interpersonal and small group skills as well as group processing were not present in their groups due to using the divide, compiled and submit method of getting the assignment completed. One participant noted that interpersonal and small group skills were missing in their group due to conflicting personalities and that there was no willingness in the group to provide each other with feedback.

One participant found that positive interdependence, interpersonal and small group skills as well as face-to-face promotive interaction were lacking in their group. The reasoning behind the participant’s response was that even though they relied on each other, not everyone met their set goal. Furthermore, they never met in person and made use of the divide, compile and submit approach. One participant noted that group processing was lacking in their group as they were more focused on just getting the task over and done with and relied on individual accountability for self-evaluation.

What elements of Blackboard Learn did you use?

According to the assignment instructions, the tools required to be used were the wiki, video and blog functions of Blackboard Learn.

Eight participants made use of all three tools required in completing the interactive textbook assignment. The remaining four participants only made used of the wiki and video function. It was found that groups that made use of the blog function, did not use it to the fullest as using the WhatsApp application was simpler. Other participants found it easier to brainstorm in person and place the ideas on the blog afterwards. The participants that did not make use of the blog at all, found that the use of face-to-face brainstorming and WhatsApp more efficient. Although this makes for interesting results, this is not the focus of this paper. It is recommended that a future study focus on using various technologies, not just Blackboard to see what effect these technologies could have on cooperative learning.

What lessons were learnt in the process of completing the assignment?

Six participants found time management and prioritisation to be the biggest lessons that they have learnt during the course of the interactive textbook assignment. Five participants felt that communication and working with people effectively were their main two lessons learnt. Lastly, one participant noted time management and communication was something they had to focus on more.
What do you believe contributes to being prepared for the working environment in the assignment you have completed?

All twelve participants were able to identify possible contributing factors that could assist in preparing students for the working environment. The following factors were identified when analysing the answers provided:

− Real life experience in terms of objective of the assignment
− Group dynamics and how to work with different people
− Meeting deadlines
− Identifying and solving problems
− Assisted to understand IT concept (use case diagram)
− Individual accountability in a group setting
− Exposure to new tools and the challenges that come with that

7 SUMMARY OF FINDINGS

Answering the main research question: What effect does Blackboard Learn have on group activity?

The responses of the participants showed that the learning management systems Blackboard Learn has an important role to play in cooperative learning. Even though the results demonstrated that the use of such systems has more of a positive effect on group activity, it should be noted that group dynamics play a significant role in the manner in which Blackboard Learn was perceived by groups. Thus emphasis should be placed on equipping students with the right tools to handle human interaction as a whole to ensure that such systems have the capability to thrive.

This study provides students feedback on the understanding and experience of cooperative learning. The following factors can assist in preparing students for the working environment:

− Real world experience in terms of assignment objectives.
− Group dynamics and how to work with different people
− Meeting deadlines and managing timelines
− Identifying and solving problems
− Understanding the IT concept (use case diagram)
− Accountability in a group setting
− Exposure to new tools and the associated challenges.

These factors should be kept in mind in the process of designing a curriculum for students in higher education institutions and thus preparing them for the workplace. These should also be the focus when designing technology focused interventions with students in the future.

8 CONCLUSION

The research done aimed at assisting in bridging the gap of the lack of literature between cooperative learning and the effects that technology has on this learning strategy. This was done by interviewing students that participated in the interactive textbook assignment involving the use of Blackboard Learn. The findings assisted in identifying any additional aspects that could not be covered by the literature. It provided insight into the effects that technology has on group activity and possible methods to leverage off this combination.

In conclusion, the research study shed some positive light on the effects that learning management systems such as Blackboard Learn may have on cooperative learning. There are still some factors that need to be constantly considered when dealing with group activity. Thus, technology can be seen as an enabling factor in the progress of the use of cooperative learning.
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