Int J Edu Sci, 18(1-3): 158-163 (2017)
DOI: 10.31901/24566322.2017/18.1-3.16

Benefits of Group Learning As a Collaborative Strategy in a Diverse Higher Education Context

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KEYWORDS Education. Language. Culture. Diversity Teaching. Tertiary

ABSTRACT This paper explored students' perceptions of group work in advancing their communication, participation, understanding and overall learning following a compulsory collaborative exercise. An exploratory, descriptive quantitative study was conducted with second year students on an Epidemiology course. They used a self-administered questionnaire to rate their agreement regarding group work in the multi-racial, tertiary setting. Respondents reported greater control of learning (78%) and increased personal benefit (69%). They found the intervention useful (73%); perceived improved participation and communication (63%) amongst peers and reportedly read wider (56%) for this exercise. Some students (35%) reported ineffective work and some English first language users described the strategy as "a waste of time" (rho = 0.307; p = 0.027). Even the limited use of group work strategies can develop a positive learning climate, aid classroom cohesion and improve self-directedness of students during cross-cultural engagement on health science courses.

INTRODUCTION

South African students enter higher education (HE) institutions with varying degrees of readiness for tertiary studies (Mabelebele 2015). Concerns about their readiness include their ability to engage in self-directed learning and research; the acquisition of skills such as critical thinking and writing and the ability to solve problems in relation to issues that they face. The lack of skills has resulted in lower success rates and throughput which adds to the major financial burden both to the institution and the individual students. This may result in a lack of motivation at a personal level to the student and their families. While the poor throughput has raised concerns about the appropriate use of selection policies and admission criteria, it has been coupled with calls to increase student enrolment at tertiary institutions in an effort to uplift local communities and the quest to improve the quality of life of all SA citizens through appropriate use of science and technology (Letseka and Maile 2008). Group work and active learning strategies have not only emerged as a viable option to manage the larger intake of students at tertiary institutions, but its applicability to teach lifelong learning skills, motivation and teamwork in science has been well documented (Soliman and Al-Shaikh 2015).

The terms collaboration and cooperation as active learning strategies are often used interchangeably as both result in increased student activity. While both strategies involve the use of the small group where people try to learn together and from one another (Dillenbourg 1999), collaboration is a learning method that uses social interaction for knowledge building emphasising students' achievement of a common goal for which the group receives a common mark (Dennen 2000). Cooperative learning on the other hand is the instructional use of small groups to ensure that students maximize their own and each other's learning while working together (Johnson and Johnson 2009).

Adult learners generally perform better when they become actively engaged in their learning in settings that allow them to construct new knowledge in a social manner (Palincsar 1998). Research further supports the use of active learning strategies, that is instructional methods that engage students in the learning process (Bonwell and Eison 1991), as a solution to improve the quality of learning in the context of

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the increased intake of students to HEIs. Furthermore, the use of interactive strategies greatly increases students' motivation as they take more responsibility for their own learning and their understanding of topics covered on the academic course (Mickelson et al. 2009).

Some of the noticeable benefits of learning in groups include the improvement in the students' interpersonal skills, increased disciplinary knowledge and their increased ability in relation to higher cognitive thinking (Johnson and Johnson 2009). Students also develop mutual respect for their peers as they learn to trust and rely on each other (Mickelson et al. 2009) and the process may help scientists, whose professional work may predominantly be steeped in collaboration, gain experience in sharing responsibility with others (American Association for the Advancement of Science 1989). The main aspect about cooperative learning that causes some anxiety relates to concern that the allocation of individual assessment scores of group members may foster competition rather than cooperation among members, which may impact on students' willingness to collaborate. This behaviour is contradictory to the philosophical underpinnings of collaborative learning as a teaching strategy that aims to develop students' understanding of the value of group success to encourage teamwork rather than competition (Springer et al. 1999). Further benefits to the use of collaborative learning include higher achievement, greater retention, improved interpersonal skills, and an increased positive interdependence between students of differing cultural and ethnic orientations (Robinson and Schaible 1995; McLean et al. 2006).

Group work, as a collaborative strategy, additionally motivates students to apply knowledge and skills in practical situations which can aid their comprehension of the subject matter (Kubo et al. 2011). Thus, collaborative learning where all group members receive a common mark for the groups' efforts, rather than cooperation, where the marks of peers would differ, has been used with relative success in HEIs (Kaufman et al. 2000).

It should, however, be noted that other factors such as students' learning strategies, preference in learning and listening styles may impact on their successful learning. It is also useful to note that students' expectations of their lecturers and their roles as expert, motivator, facilitator or delegator may reflect the students' stage of development on their journey to becoming self-directed learners (Grow 1991). These factors may be compounded where students enter the learning environment from different cultural, economic and linguistic backgrounds as is the case in institutions of higher learning in South Africa (Stephen et al. 2004). Innovative ways are therefore required to foster cross-cultural and interracial communication to facilitate a conducive learning environment where students share their resources, insights and prior experiences to gain a better understanding of health contexts and personal learning needs.

At the Durban Institute of Technology, the parasitology course is typically offered to students from all racial groups and varying language and academic abilities. Some of these students have limited access to resources such as personal computers, off-campus internet facilities and some cannot afford to buy their textbooks. Additionally, many are not English First Language (EFL) users and maybe from rural backgrounds where the secondary schooling did not provide sufficient grounding for effective communication in English. English is however, the medium of instruction at this institution and the ability to communicate effectively in the language can greatly polarise the class. Some of the English second language (ESL) users find it particularly difficult to learn the scientific names of parasites and to acquire the required scientific/medical terminology of the course. Given the great diversity in the demographic profile of the students and the varying levels of skills and aptitudes which relates to their prior schooling experiences, the group technique was implemented as a teaching strategy to foster respect and interdependence among the second year cohort.

Objective

This study was conducted to explore the perceptions of a diverse cohort of students about their learning on a collaborative project that required them to engage with their peers in an active, collaborative learning process. This paper reports on the benefits of group learning as a collaborative strategy for culturally, economically and linguistically diverse second year students at an institution of higher learning to improve their understanding and performance on a science course.

METHODOLOGY

An exploratory, descriptive quantitative study was conducted with second year students at an institution of higher learning in the metropolitan city of Durban, KwaZulu-Natal, South Africa. All students (N=58) enrolled in the Epidemiology course in 2014 were invited to participate.

These students were given an assignment on parasites which involved working in self-selected groups of 6 - 8 members. A random method (drawing topics from a hat) was used to allocate topics to the student groups. The topics were selected based on the curriculum for the module. The students received the learning objectives for the course and instructions for their presentation session both in writing and verbally. Each group had to select a group leader who was responsible for scheduling collaborative planning meetings and who ensured that dates were communicated to all members of the group.

Each group had to conduct research on aspects related to their topic which included the lifecycle of the parasite; diseases caused; signs and symptoms of a disease which are relevant to the South African context and ways to prevent the disease and control the parasite. The assignment had to be presented in the form of a play to their peers who participated in a mock peer marking exercise which helped to emphasise the assessment criteria. Students were informed of the assessment criteria prior to the start of their projects. They were asked to assess their peers, in order to teach them about applying assessment criteria, but the peer assessment did not contribute towards their final mark. An external examiner and the lecturer assessed the projects independently and an average mark was calculated. The students in the cohort were required to share the information pertaining to their project with their peers and a written report was submitted by the group. All electronic interaction was supported via the online student management system. Students were invited to reflect on their learning on this project upon the completion of the project.

A 5-point self-administered Likert scale questionnaire, where 1 indicated strongly disagree and 5-strongly agree, was used to explore students' perceptions about the value of group work in advancing their learning and understanding of the subject material and the value of the strategy to increase participation amongst peers. The study also sought to understand whether high achievers and/or English first language users valued the collaborative learning activities equally by correlating their perceptions of impact of the strategy on their tests' scores in a subsequent examination. Finally, the researchers explored the impact of the size of the group on their interaction and students' perceptions about the continued use of the collaborative learning strategy beyond the current course.

The questionnaire did not collect any personal identifying details from the participants. It required students to indicate their agreement with a statement or to respond with yes/no answers. An open ended section asked for clarification on the yes and no choices. The questionnaires were administered by an independent research assistant. The quantitative data were captured and analysed using SPSS (version 23). Descriptive statistics are reported as numbers and percentage. The Fisher's exact test was used to compare ordinal data in relation to the stated objectives.

Ethical clearance was obtained from the research ethics committee (IREC 030/14) and gatekeepers' permission was obtained from the Head of Research. Students were informed of the purpose of the study, invited to seek more information and informed of their voluntary participation and the freedom to withdraw at any stage.

RESULTS

The Demographic Profile of the Student Respondents

Fifty-six (97%) of the 58 registered students completed the questionnaires. Female respondents comprised forty-nine percent of the sample; forty-five percent are male and six percent did not indicate their gender. Excluding the five percent who did not indicate their home language, English first language (EFL) was used by the majority of the cohort (60%). The remainder spoke isiZulu (22%); Afrikaans (6%); isiXhosa (5%) and Siswati (2%). Apart from those who did not indicate a preference, the latter 5 categories were grouped as English Second language users (ESL). Five of the nine self-selected student groups (55%) comprised of heterogeneous (multi-racial) students that represented two or more races.

Value of Group Work or Understanding and Learning

Respondents reported that they had taken greater control of their personal learning goals (78%) during the collaborative assignment. The majority also thought that they had learnt better in the group setting (77%) and they found the contributions by group members useful in the completion of the group assignment. Students also reported that they found learning in the group beneficial at an individual level (69%). They indicated that they had read more (56%) and wider than only the topic which had been assigned to their group. Excluding two percent of the students who did not respond to this question, some students indicated that they had felt uneasy about taking charge of their own learning (20%).

Participation among Peers

Seventy-three percent thought it was useful to have worked in a group and reported an increase in participation by members in their groups (65%). They expressed a perception and sense that members generally communicated well. There were however some reports of groups (35%) where members worked less effectively.

Perceptions of English First Language Speakers

Further analysis indicates a significant relationship between those who believed that the activity was a "waste of time" and "first language users" (Fisher's p value < 0.001). An examination of the frequency cross-tabulation revealed that most respondents who indicated group work as "a waste of time" were also English first language speakers (13 out of 15 = 87%). In this cohort, the EFL group comprised of only 13 (39.3%) of the total number of 33 English speakers and this perception was not shared by all the EFL users.

Perceptions Regarding the Group Size and Efficiency of the Collaboration

The majority (73%) of the respondents were happy with the size of the groups and thought that the size was adequate and facilitated their interactions and learning. A quarter (25%) of the respondents, however, thought that the group size of 6-8 members was too large and that some students did not contribute equally towards the project. Forty-nine percent of the respondents indicated that they would have preferred to do an individual rather than a group assignment. Twenty-nine percent indicated that they experienced working in the group as a waste of time. The researchers further explored to establish whether high achievers might have been frustrated by the collaborative exercise. A further analysis, however, revealed no correlation between the marks of the students obtained on the test and their experience of the exercise "as a waste of time" Fisher's p value = 0.46.

Should Group Work be Continued?

Students' opinions were sought about their support for the continued use of collaborative group work strategies beyond the present course. Eighty-one percent of the respondents indicated support for the continuation of the group work strategy. Reasons volunteered in an open-ended section of the questionnaire indicated that they had experienced the collaboration as a valuable way of learning. The students mentioned that the strategy had helped them to develop new insights into the discipline. They also felt that their contributions were valued by their peers and that the course had prepared them with life skills.

DISCUSSION

Findings from this study suggest that a clear majority of the diverse second year class of mixed-ability students valued the opportunity to work collaboratively on an assignment relating to parasitology. A rewarding result was the report of improved responsibility for own learning and general satisfaction of its outcome. These findings are in line with findings by Smith et al. (2009) whose research reported improved student performances due to peer discussions in groups where the discussions resulted in an improved understanding of concepts even when the concepts had initially been unfamiliar to all in the group. Studies also found that lower-ability students performed better when engaged in groups with peers of varying ability (Lou et al. 1996; Lou et al. 2000) while high ability students performed equally well irrespective of the type

of grouping (Slavin 1990). Since the current exploratory study only confirmed some benefit of group work for mixed ability students at tertiary institutions in a developing context, the impact of learning on high and low achievers cannot be confirmed.

The majority of the students reported having read wider and engaging deeper with the content as compared to their normal effort. As found by Kubo et al. (2011) the students in the current study also gained a better understanding of the subject matter and could see the relevance of the course and how it aided in preparing them with life skills. Of concern was the finding that a sizeable number of students had only researched the specific topic that had been allocated to their group, possibly indicating the presence of an assessment driven learning practice among strategic learners. In this cohort it was also noticed that some students reported having experienced the collaborative activities as time-consuming and referred to it as a "waste of time". With reference to Grow's (1991) framework on students' development towards self-direction, it is possible that these students were not yet ready to take full responsibility for their learning, in which case the group activity would have helped to create awareness of how other students had taken responsibility for their learning. It is also possible that these identified students participated purely with the final assessment in mind and that they were thus were not interested in researching topics which they perceived to be beyond the scope of their assessment. While the researchers are aware of the need to inculcate an improved learning culture, we are encouraged by evidence that supports the benefits of cooperative strategies (Kolawole 2008); even when used on only a section of a course (Springer et al. 1999); as had been done in the current study. In this cohort, it could be that those who were not as proficient in English, learnt from and practiced their use of language, terminology and their presentation skills during interactions with more proficient English first language users.

Some students were also less confident about learning from their peers and preferred direct instruction from a teacher. These concerns may stem from students who have had very little opportunity with self-directed learning and who see the role of the teacher as their main source of information (Crosby and Harden 2000). It is acknowledged that the use of unconventional pedagogies may create frustrations to those students who are unfamiliar with innovations. It is thus advocated that lecturers should ease students into the activities by providing a rationale for the use of the collaborative techniques. Prince et al. (2010) advised that students will become more accustomed if lecturers structure their courses to promote collaborative and cooperative learning environments. The authors also advise educators to introduce brief activities to help students remember the content. In this case the students groups presented their projects to a local school which aided students' retention. The researchers believe that the use of brief sessions of collaboration will help to get students accustomed to innovative educational practices and they also caution novice lecturers to be responsive and to adapt their teaching styles to ensure that students become aware of the overarching educational benefits of the collaborative experience.

CONCLUSION

This study indicated the potential of group learning as an innovative method to teach and engage learners from diverse prior educational and ethnic orientation at institutions of higher learning in low and middle income countries. The collaborative process was beneficial to students enrolled on the Allied Health Sciences course with the students gaining an improved understanding of the subject matter, reading and researching wider than expected and being able to recall the material better. Most students reported having a positive learning experience and they expressed a desire for increased collaboration in subsequent modules.

RECOMMENDATIONS

Group learning can serve as an innovative method to foster positive learning experiences and cross-cultural engagements across cultural barriers. Even limited use of group work was beneficial for classroom cohesion and improved self-directedness.

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Paper received for publication on August 2016
Paper accepted for publication on December 2016