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The Perceived Efficacy of Cooperative Group Learning in a Graduate Program

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The Perceived Efficacy of Cooperative Group Learning in a Graduate Program

Abstract
This paper addresses a gap in the literature about the study of the implementation of cooperative/collaborative group learning, and the assessment of its efficacy in facilitating transformative learning in the context of graduate studies. These topics have been widely discussed in the scholarly literature at the K-12 and post-secondary (college and undergraduate) level for many years, and cooperative group learning has generally been found to facilitate student learning. What has not been addressed is the use of this form of group learning in graduate studies. This paper reports on an intentional model of cooperative group-learning used in a Master of Education in Higher Education program at the Ontario Institute for Studies in Higher Education (OISE) at the University of Toronto. A brief review of the literature that grounds this praxis, the elements of the model used, and a post-hoc analysis of the perceptions of 77 graduate students (90% response rate) surveyed in a case study regarding its efficacy in facilitating their learning are presented. The findings suggest that this model of group-based learning has the potential to enhance the process for transformative learning at the graduate level of education.

Cet article traite de l'écart qui existe dans la recherche publiée entre la mise en oeuvre de l'apprentissage coopératif/collaboratif en groupe et l'évaluation de son efficacité pour faciliter l'apprentissage transformatif au niveau des études supérieures. Ces sujets ont été largement discutés pendant des années dans les travaux de recherche publiés sur l'apprentissage au niveau de la maternelle à la douzième année ainsi qu'au niveau post-secondaire (collège et premier cycle universitaire) et les recherche ont montré que l'apprentissage coopératif en groupe facilitait l'apprentissage des apprenants. Toutefois, la question qui n'a pas été traitée est celle qui se rapporte à cette forme d'apprentissage en groupe au niveau des cycles supérieurs. Cet article présente un rapport sur un modèle intentionnel d'apprentissage coopératif en groupe employé dans un programme de maîtrise en éducation de l'enseignement supérieur à l'Institut for Studies in Higher Education (OISE) de l'Université de Toronto. Une brève revue des publications qui fondent cette praxis, les éléments du modèle employé, ainsi que l'analyse après coup des perceptions des 77 étudiants à la maîtrise (taux de réponses de 90 %) ayant participé à ce sondage dans le cadre d'une étude de cas concernant son efficacité pour faciliter leur apprentissage, sont présentées dans l'article. Les résultats suggèrent que ce modèle d'apprentissage en groupe a le potentiel d'améliorer le processus d'apprentissage transformatif au niveau des études de cycles supérieurs.

Keywords
group-based learning, cooperative learning, transformative learning, graduate education; apprentissage en groupe, apprentissage coopératif, apprentissage transformatif, enseignement supérieur

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In this paper I report on the post-hoc analysis of one element of the qualitative and quantitative findings of an extensive case study. The focus of the case study was on the perceptions of students in Master of Education (M.Ed.) courses at an Ontario university, regarding the efficacy of a model of cooperative group learning. This model is intentional in its design to maximize the potential for facilitating transformative student learning. It remedies the weaknesses commonly associated with casual group-based learning.

The massification of education at all levels (Trow, 2000), means that it is not unusual to see traditional small seminar groups in graduate courses replaced with classes of 25-30 students. Furthermore, Branch et al. (2017) stress the need for higher education to "shift from a transmission-based philosophy to a student-centred, learning-based approach" (p. 4). Consistent with this, graduate education has historically valued student participation in informal group discussion to augment traditional, lecture-based instruction. However, the mere mention of group-work often elicits less than enthusiastic responses from students (especially high achievers) and faculty.

This paper addresses a gap in the literature, which is the study of the implementation of cooperative/collaborative group learning, and the assessment of its efficacy in the context of graduate studies. These topics have been widely discussed in the scholarly literature for many years. However, most of the studies focused on the use of cooperative learning in the K-12 and postsecondary/college contexts. Smith et al. (2005) state that "hundreds of research studies" conducted on the impact of cooperative learning "demonstrate that cooperative efforts result in higher individual achievement than do competitive or individualistic efforts. This combination of theory, research, and practice makes cooperative learning one of the most distinguished of all instructional practices" (p. 12). However, almost all the studies referred to by Smith et al. were conducted on the use of cooperative group learning in classrooms and contexts other than at the graduate level.

More recently, studies on cooperative learning in undergraduate programs have also shown a positive impact (e.g., Dyson & Casey, 2012; Hmelo-Silver et al., 2013; Kopparla & Goldby, 2019). Peters et al. (2020) reported that in their study of students working collaboratively in small groups (Team-based Learning) in large-enrolment undergraduate calculus classes, they found "…many positive benefits for students…including ...larger gains on the Calculous Concept Inventory than non-TBL sections" (p. 211). In another study comparing the learning experiences of two sections of a problem solving course in mathematics, Kopparla and Goldsby (2019) found

> Though the course objectives were the same, the students' experiences were vastly different, a clear distinction between the experiences of students involved in cooperative learning and informal group work was identified. Students engaged in cooperative group learning experienced a strong sense of community within the classroom, were exposed to diversity in mathematical perspectives, and were more confident in the subject. (p. 54)

And, based on a study of cooperative group work with 97 pre-service teachers, Abercrombie et al. (2019) state that their "results confirmed the benefits of cooperative over individual work" (p. 881).

While the reports of the efficacy of cooperative group learning at the K-12 level and in college and undergraduate programs is reported to be generally very positive, little research (or discussion for that matter) exists related to the use of cooperative group learning in graduate education. In one case study of the perceptions of the use of collaborative group learning in

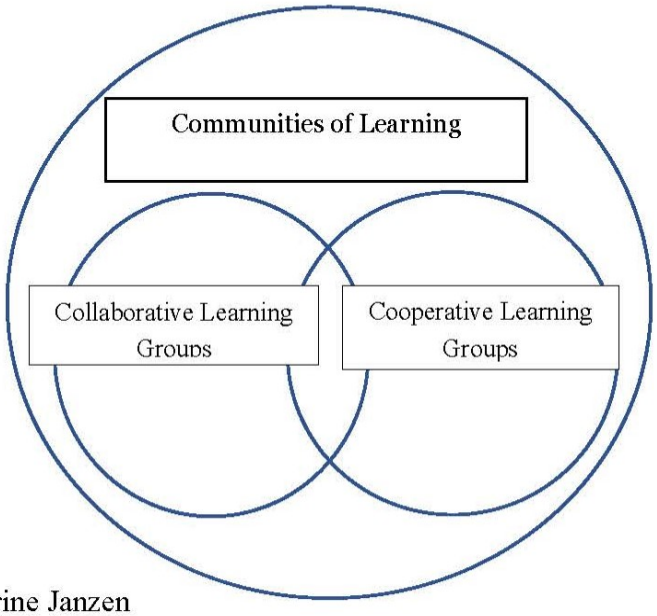
graduate studies conducted at the technical and engineering Vietnamese Transnational University, participating "graduate students indicate(d) that collaborative learning, specifically through group work, (was an) effective way to maximize student learning" (Yao & Collins, 2018, n. p.).

Based on my own experience of working with this model in teaching graduate courses in three universities for more than 20 years, I have come to the conclusion that the potential for positive impact is even greater in graduate studies—largely because these students bring to the discussion a diversity of real-world experiences, a willingness to share their empirical knowledge, and minds that are generally open to transformative learning, which is the goal of all education.

Cooperative Group Learning by Any Other Name

Bay and Pacharn (2017) point out that there are many definitions of cooperative learning in the literature. They state broadly, "Cooperative learning generally refers to learning approaches in which peer interaction plays a significant role" (p. 318). I also found that the terms collaborative learning groups, cooperative learning groups, team-based learning, and learning communities were used almost interchangeably in the literature, with few differentiating characteristics. This is probably because all are grounded in the theory of the social construction of knowledge, through "significant peer interaction" in the model that is the focus of this discussion. Dictionary definitions of the two terms, collaborative and cooperative, are subtle but nonetheless distinguishing. The Merriam-Webster Dictionary (2020) defines collaborative as "work(ing) jointly with others (as in writing a book)" (p.140), and cooperative as "willing to work with other" (p.160). Both notions of cooperative and collaborative groups are aligned with what Tinto (1998), Price (2006), and Rausch and Crawford (2012) refer to as "learning communities" and "communities of inquiry." However, Kopparla and Goldby (2019) quite righty point out "…not every group is a cooperative learning community" (p. 51). And, Johnson et al. (as cited in Raush & Crawford, 2012) warned that "simply asking students to work in groups does not necessarily constitute cooperative learning" (p. 318). As depicted in Figure 1, while collaborative and cooperative learning groups are learning communities, not all learning communities are cooperative or collaborative learning groups. It is the unique characteristics of intentionally formed cooperative groups that distinguishes them from more informal learning communities and even from collaborative learning groups. I would depict the relationships as shown in Figure 1.

Figure 1
Relationship of Collaborative and Cooperative Groups as Learning Communities



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My own understanding of these terms is that, cooperation emphasizes slightly more the *process* of learning, while collaboration implies working together to achieve a desired *outcome,* which for graduate programs in Ontario are the Graduate Degree Level Expectations articulated in the Ontario Universities' Quality Assurance Framework (2016, pp. 34-35). Since the findings discussed in this paper focus on the students' perceptions of their experience with the process of learning, or cooperation (not the outcomes of that experience) and, partly because the term cooperative learning is used most frequently in the literature, I have used that term in this paper.

Theoretical Grounding (Espoused Theories)

Cooperative group learning is informed by the educational goal of transformative learning and the process of constructivism—both of which are critical elements of cooperative learning as identified in the literature.

Transformative Learning

Transformative learning (Mezirow, 2003; Nemec 2012) is the goal of all education, including graduate education. Illeris (2014) states that "Transformative learning has usually been defined as transformations of meaning perspectives, frames of reference and habits of mind as proposed initially by Jack Mezirow" (n. p.). Furthermore, Finnegan (2019) asserts that "we live in transforming times" (p.1) and that it is "unsurprising that there appears to be growing interest in transformative education and transformative learning theory" (p. 1), and he stresses "the importance of collaborative relationships in transformative learning" (p. 2).

The cooperative group learning model that is the focus of this paper was perceived by the participating graduate students as fostering their transformative learning. For example, participant C1-27 put it this way

> The different perspectives and the experiences of my peers had a big impact on my understanding ….sometimes I would have a view on something and my peers would present an argument that would help me see my vision was sometimes wrong or too narrow.

And, C2-14 commented "…it (the cooperative group learning process) builds a shared understanding both of issues and of the perspectives of other members of the cohort."

The focus of this paper is the assessment of the efficacy of the cooperative learning process on their transformative learning; it did not attempt to assess whether or not the outcome was in fact transformative learning as perceived by the students who experienced the model in their master's program.

Constructivism

The cooperative group learning model is firmly grounded in the espoused theories of constructivism as a means for facilitating transformative learning. The theory of the social construction of knowledge as proposed by Berger and Luckmann (1966/1991) suggests that our understanding of reality comes not from within ourselves or some innate source but rather from our interaction and discussion with others in a social context. Furthermore, Mezirow (1991) acknowledged that his transformative learning theory is "based on constructivist assumptions" and that "… personal meanings that we attribute to our experience are acquired and validated through human interaction and communication (p. xiv)." Nordquist (2019) asserts that "meaningful dialogue is characterized by cooperation" (n. p.). These characteristics are integral to the cooperative group learning model described in this paper.

Furthermore, according to Ageeva (2016), "The theories of social constructivism are based on.…an active construction of the image of knowable objects and events in the subject's consciousness" (p. 1). Adams (2006) points out that constructivism describes "learning as an active process of constructing knowledge to make sense of the world…. where knowledge is seen within the context of problems to be discussed and solved" (p. 245). Teaching and learning praxis grounded in constructivism is essential for learning.

The co-construction of the graduate students' understanding of important perspectives related to course content and readings is foundational to the cooperative group model that is described in this study. This is achieved in the focused discussions among the members of the intentional expert and base groups as they critically analyze, teach and discuss the content of the scholarly critiques they have taken responsibility for. The impact of these discussions is evident in the response of C1-9 who stated "Discussions were priceless. Learned from sharing ideas, varied interpretations/ opinions - debating many of those. Base group and expert group time is where I had the majority of my aha moments." This suggests that the constructivist dialogue among group members facilitated their transformational learning.

Interestingly, Bay and Pacharn (2017) found that "group exams have the potential to be an effective cooperative learning technique in accounting education" (and that) the "average scores on group exams were consistently higher than average scores on exams taken in individual format" (p. 316). They found in their review of scholarly reports on group exams in undergraduate courses that group exams had been shown to be successful. Zipp (as cited in Bay & Pacharn, 2017)

concluded "many benefits are claimed for this type of cooperative learning exercise … including increased retention of knowledge, acquisition of group skills, and reduction of test anxiety and improved student evaluation of teaching" (p. 317). In the humanities, graduate students are generally assessed primarily on the quality of their scholarly written work rather than examinations and for this reason examinations were not included in the model described in this paper, however, that is an interesting finding that may be worthy of consideration for disciplines where examinations are used.

Limitations of Cooperative Learning

There are several limitations to cooperative group learning identified in the literature. Felder and Brent (2001) stress that assessing the impact of cooperative learning is a difficult task, especially with respect to the impact on academic achievement. Another potential limitation identified in the literature (e.g., Branch et al., 2017) is the "potential for social loafing or free-riding as a negative impact of group work" (p. 322). Because graduate students are mature and highly motivated, I have not found this to be a problem with these students.

Noteworthy is that Johnson et al. (2000) concluded, based on their extensive review of cooperative learning groups, that the model had a positive impact on "achievement, long-term retention, higher-level reasoning, intrinsic motivation and on-task behaviour" (p. 25). However, not all forms of cooperative group learning enhance deep learning. While findings related to the perceived impact of cooperative learning are mostly positive in undergraduate courses, Vreven and McFadded (2007), for instance, concluded from their study that cooperative learning had little impact if used in large classes. However, their study was limited to a three-week, compressed format, general psychology course. They compared the findings from one class of 215 students who used the "think-pair-share" cooperative learning strategy with another class of 154 students who did not. While recognizing the limitations of their study, these researchers concluded there was no beneficial impact from their use of cooperative learning, rather they reported a decrease in student motivation. However, the cooperative group strategy they used was ad hoc rather than intentional, carefully structured groups, that interact purposefully over the entire semester.

The literature reports a range of cooperative teaching/learning strategies. In their study, Johnson et al. (2000) identified at least eight different strategies within the category of cooperative learning. I suggest that not all strategies have the potential to have the same impact. It must be noted that the Vreven and McFadden (2007) study used only one (the most simple and casual) strategy; that is, sporadic "think-pair-share" in dyads and triads, rather than the more comprehensive, intentionally organized, semester-based cooperative group learning model that is the focus of the model discussed in this paper.

I have also tried to implement this model in asynchronous on-line courses but found that the delay in asynchronous discussions was challenging because some of the essential elements of cooperative learning were difficult to implement in that context. Wengrowicz et al (2018) also concluded in their study of online collaborative case-study based courses, that participating students did not understand how to interact effectively in online learning groups. They recommended that students be trained in collaborative online interaction before engaging in these courses.

I will now discuss how I implement the elements of intentional cooperative group learning in my graduate courses.

Cooperative Group Learning as Used in the Case Study Program

The cooperative group learning model used in the original case study is similar to but slightly different from traditional approaches to cooperative group learning as established initially by Johnson et al (2000).

Characteristics of Cooperative Group Learning

Cooperative group learning is very different from traditional group-work. Lee et al. (1998) explain "Cooperative learning is organized and managed group-work in which students work cooperatively in small groups to achieve academic as well as affective and social goals" (p. 97). Fink (2004) identifies three different approaches to the use of groups for learning: casual use, cooperative learning, and team-based learning (p. 10). Johnson et al. (1998), who strongly promoted cooperative learning when it was initially introduced, identified positive interdependence, individual accountability, face-to-face promotive interaction, interpersonal and small group skills, and group process as the main elements for effective cooperative group learning. Similarly, Michaelsen and Richards (cited in Branch et al., 2017) contend that "team-based learning implementation is based on four underlying principles: (1) teams should be intentionally formed to support learning outcomes; (2) students are accountable for their pre-planning and for working in teams; (3) team assignments should promote both learning and team development, and finally, (4) teams should receive frequent and immediate feedback" (pp. 272-273). These principles are integral to the cooperative group learning described below.

My teaching praxis includes the application of the theories that ground cooperative group learning. For instance, group activities and tasks focus specifically on the critical analysis of research and scholarly literature related to the topic of each course. I intentionally assign the students to heterogenous base groups of five or six members who stay together for the entire course. The students are required to meet specified, purposefully selected, individual and group tasks.

Clear Expectations and Instructions

Stahl (1994) points out that the most important consideration is that "cooperative learning groups are means to an end rather than an end in themselves" (p. 3). The goal of graduate education is the transformative understanding of complex realities, enabled by the students' abilities to critically analyze, evaluate, and differentiate among alternative concepts. To facilitate transformative learning, both the professor and the students must be clear about what the intended learning outcomes are for each course. For instance, in the graduate courses that I teach, the learning goal is that the students will not only gain a deeper understanding of the topic that is the focus of the course content, but also that they will identify and critically analyze and understand implications of the scholarly concepts studied, (such as equity and social justice issues) for their personal and professional contexts. This means that the learning tasks related to their individual assignments ask each student to critique the readings and lead discussions with their colleagues specifically exploring these implications from several perspectives. Likewise, the overall base-group tasks ask the students, as a group, to do a similar critical analysis of the synthesis of all the readings discussed in that session.

Colleagues have expressed concern that establishing learning outcomes for graduate students is too structured for adult learners in graduate level classes where deep learning is the goal, the nature of which may differ among learners. The feedback from my students suggests otherwise. They want and need to know the broad intended learning outcomes to understand the purpose of the learning activities and to help them assess the value of the learning. But De Hei et al. (2015) also stress that, "To enhance the benefit of collaborative learning, teachers need ... support in the design and implementation of collaborative learning to translate (that) knowledge …. into effective practice" (p. 232).

While educators tend to assume that graduate students are mature and independent learners who do not need much guidance, it has been my experience that it is critical to ensure that all the students have a sound understanding of the model, its theoretical grounding, its educational goals, the essential components of the application of the model, and the function of the model. I always have that discussion with the students in the first class and engage them in a small pilot exercise that helps them experience the main elements of that process before they engage in the full experience in the next session.

Heterogeneous Group Membership

Another critical element identified in the literature on cooperative group learning is the need for the base groups to be as heterogeneous as possible. As identified by Horsted (cited in Branch et al, 2017) "collaborating and benefiting from diversity are the keystones of innovative teaching and learning" (p. 4). Bay and Pacharn (2017) also stress the efficacy of "a group of heterogeneous students working together to help each other learn" (p. 318). This is particularly important if the goal is transformative learning. The intent of assigning students to heterogeneous base groups, based on diversity of gender, age group, academic background, ethnicity, and professional roles and experience for instance, ensures exposure to diverse perspectives which facilitates transformative learning.

To enable me to create these heterogeneous base groups, I invite the students to complete and submit to me before the course begins, a brief and confidential "Getting to Know You" form that is adapted as appropriate to the goals of the specific course. Felder and Brent (2001) recommend that "ability heterogeneity (should be) the primary criterion" (p. 69) for the intentional structure of the groups. As a proxy for this variable, I always ask whether the students are in a masters or doctoral program, and how many courses in that program they have already completed. I then assign each student to a base group of five or six students whose profiles are as diverse as possible. The students remain in these base groups for the entire course. Changes in membership are rarely made and only in extreme circumstances.

Positive Inter-dependence

Stahl (1994) describes positive inter-dependence as: "Essentially, tasks are structured so that students must depend upon one another for their teammates' and group's success in completing the assigned tasks and mastering the targeted content and skills" (p. 4). In my approach, base group members depend on each other for an insightful critique of the specific readings they each have accepted responsibility for. Completion of the group tasks also depends on each member's contributions.

In classes of 25 to 30 students there are generally five base groups (of five or six members in each). At the beginning of the group session all the students who signed up to critique the same article (one person in each base group) meet as expert groups, to discuss their understanding of the content of that article and validate (or revise as needed) their own analysis and critique. The students then move into their own base groups, and, consistent with the high-impact elements identified by Glasser (cited in Lazear, 1999), teach their analysis to the members of their own base group, and lead discussions of the implications of those scholarly writings, based on related literature and their own experiential knowledge.

In addition to the individual reading/critique responsibilities of each member, the groups are also assigned group tasks for each session. The group tasks ask the group to analyze the implications (of the scholarly readings collectively critiqued in that session) for their professional roles and for society. The five base groups then come together in a plenary session of the entire class. The reporters assigned in each base group for that session, report to the whole class the base group's conclusions on the group task and I facilitate a broader class discussion of issues raised.

Attendance and participation in the base group discussions have always been extremely high, largely because the students do take their responsibility to contribute their group's learning very seriously.

Individual Accountability

Closely linked to positive inter-dependence is the expectation of individual accountability. In my model, each student is expected to post an eight to ten-page critique (of the selected reading each student has accepted responsibility for) in their base group folder on the on-line course management site at least three days before the class where they will be discussing these critiques. Because of the compressed scheduling format (another unique feature of the original case study program option) the students are able to do so in the two or three weeks between classes. That means the students come to the next class having posted their own critiques for their group members to read, and having read five or six seminal articles and the critical analysis of each, as completed by their group members.

To emphasize individual accountability and the importance of these learning tasks, course grades (e.g., up to 10% per critique for each of the three required critiques in a half course) are awarded based on my assessment of each student's critiques as posted in the online group folder. In addition, I regularly provide my feedback and the grade for each critique at the next class session, after the base groups have met to discuss the critiques and before the general class discussion. Additionally, at the end of the course, base group members assess their own and their peers' overall participation in their base group discussions on an established Likert-type response scale based on previously established criteria, with an option to add helpful comments. The grade for this component is up to 15% of the total course grade. Participation in overall class discussions and a final assignment consisting of an in-depth analysis and critique of a self-selected topic relevant to the course goals make up the remainder of each student's course grade.

Time on Task and Sufficient Time to Discuss

It is essential to set relatively tight timelines for these group discussions to discourage out-of-field discussions, while allowing sufficient time for each student and the group to engage in meaningful discussions, but it is also a challenge. In my approach, it is the responsibility of the

person assigned as time-keeper for that session to facilitate effective time management by the group and timely completion of all the tasks. The groups do have the option of requesting more time, if time limitations become a detrimental challenge.

Group Process Roles and the Role of the Professor

Generally, few if any of my graduate students have engaged in any formal learning about positive, promotive, group roles, which means there is a need for the students to learn how to be effective group members in fulfilling their own responsibilities as well as contributing to the joint task. In my approach, these roles are explained and adapted to the specific focus of the course as needed. Students are assigned different roles that they are responsible for on a rotating basis in each base-group session. These include: process person (responsible for beginning the discussion and encouraging all members to participate); time keeper (assists the group to move forward within the defined time frame); scribe (responsible for note-taking), and "gofor" (the person who takes responsibility for collecting resources needed or summoning the professor as a resource when and as needed). Finally, the reporter presents the group's completed group task to the whole class for further discussion in the plenary session. In commenting on the efficacy of the use of cooperative group discussions, Student C2-13 stated,

> Unstructured group work is less useful in that without assigning roles, individuals are hesitant to assume a leadership role for various social reasons and hence the work is unfocused because of the lack of leadership and differing or unclear objectives among members of the group. The assignment of roles and reporting back to the entire class leads to a higher level of intellectual stimulus and reduces passivity.

Face-to-face Interaction

There is general agreement in the literature that it is important that the base group members in any educational context are able to make eye-contact with each other in a secure and safe environment. For the group learning portion of the classes, I schedule each group in separate small seminar rooms (or opposite ends of a large classroom if seminar rooms are not available). This fosters authentic face-to-face interaction and provides a safe environment to express questions without being overheard by others.

Role of the Instructor

Traditionally, instructors move from group to group and join in a group's discussion before moving on to the next group. My observation has been that this often interferes with the momentum of the group's discussion as the conversation gets redirected towards the instructor who joins the group discussion in progress.

In my model, the professor is a resource to be called in when the base group members have a question or would like instructor input—after which the instructor leaves the group to continue their discussion uninterrupted. To mitigate this intrusion, my approach is to be available to join a base group discussion at any time if requested (by the "gofor") and then retreat when no longer needed. I have found this generally works well, but it means that I must trust the students'

commitment to stay on task, which is facilitated by the assigned group tasks and tight timelines. This approach works well, as long as the students understand fully the rationale for this approach.

Students' Perceptions of their Experience in a Cooperative Learning Group

What I now report is a post-hoc analysis of deidentified responses in a much larger study of 86 participants who completed a lengthy online survey and the 17 of the students (randomly selected from each cohort) who also participated in semi-structure follow up interviews. This analysis is limited to the two questions (identified below) that specifically requested the students to describe their perceptions of their cooperative group learning experience in the Master of Education program that is the context of the original case study.

Research Design and Methodology of the Original Case Study

The original evaluative case study was an extensive mixed-methods case study of an innovative Master of Higher Education in Leadership, Cohort option program at the University of Toronto. The findings of the complete case study are published on an open source website (Janzen, 2014).

The Program

In 2007 the University of Toronto began an innovative program, the M.Ed. in Higher Education Leadership, Cohort option, at the Ontario Institute for Studies in Education (OISE) with a unique four, half-course Leadership Certificate program option embedded in the 10 half courses required in the M.Ed. curriculum that was "specifically designed for individuals aspiring to be, or currently in leadership roles in higher education in colleges and universities" (Janzen, 2014, p. 227). The program was developed in response to the expressed needs of middle management professionals who had considerable experience in leadership positions in colleges or universities. Because many of these professionals had graduated from undergraduate studies many years previously (some 10-20 years earlier) it was deemed useful to admit the students in cohorts (together for the first seven core courses) and schedule the classes in a compressed format. That is, classes are held on four week-ends (i.e., Fridays 2 pm to 8 pm, and Saturdays 9 am to 2 pm) per course per semester, instead of the traditional three hours per week for 12 weeks per course per semester. Cohort 9 of this program option is currently in progress, and Cohort 10 will be admitted in the fall of 2021.

The considerable and diverse experiences of the students in their responsible professional roles, make the constructivist and cooperative group learning approach particularly attractive and appropriate for facilitating transformative learning. The intentional cooperative group model as described in this paper was used in at least four of the seven core courses (the additional three half courses are individual electives). Other more traditional strategies such as lectures, guest speakers, video presentations, and general class discussions were integrated in all the courses as well.

Of the 109 students in the first three cohorts who had completed the program at the time of the original case study, I was able to reach only 86 (79%) to invite them to participate in the study by completing a lengthy (52 items) anonymous on-line questionnaire. Seventy-seven of the 86 (90%) students invited consented to participate in the study and all completed the on-line questionnaire survey, though not all completed each of the questions. Of those who indicated (by

separate email) their willingness to participate in a follow-up interview, I selected a 20% random sample of 23 students, representative of all three cohorts. Of this sample, 17 students (74%) participated in audio-recorded, semi-structured, about one hour long, telephone interviews (conducted by a neutral third-party) to provide a deeper understanding of survey findings. Telephone interviews were used since the consenting graduates were scattered across the province and in-person interviews would have been difficult.

So How Did the Cooperative Group Learning Work? (Theories in Action)

To assess the efficacy of this cooperative group-based learning process in action, three questions (SQ39, SQ40, & SQ41) in the online survey specifically asked for the participants' perceptions related to their experience of this aspect of their program. These questions that are the focus of this post-hoc analysis addressed only this one element of the full study which sought to evaluate the effectiveness of the entire M.Ed. in Higher Education Leadership Cohort option program. I now present the findings related specifically to the topic that is the focus of this paper.

Findings Related to the Cooperative Group Experience

While the original mixed methods case study (approved by the University of Toronto Research Ethics Board) explored the efficacy, effectiveness, and efficiency of the many aspects of the development and delivery of this innovative program option (Janzen, 2014), this paper focuses only on the post-hoc analysis of secondary data that related to the three questions that specifically asked for the students' perceptions of their experiences in the intentional cooperative group learning; that is, specifically on the findings related to the perceived efficacy of the cooperative group learning process. I report the responses of the study participants to these questions below, as well as the relevant responses of the participants interviewed (Janzen, 2014).

Survey Questionnaire Responses

Survey Question 39, in the section that related to the teaching/learning process, asked the students to rank, on a four-point Likert-type scale, their responses ranging from strongly disagree to strongly agree, whether the group-work had assisted their learning. Participants were informed in the consent form that they were free to decline to answer any questions they did not wish to answer. Seventy-five (97%) of the 77 participants completed this question. Sixteen (21%) of the respondents were male and 59 (79%) were female. In total, 70 (93%) of the respondents agreed or strongly agreed that the group-work "assisted" their learning. This included 14 (88%) of the 16 males and 55 (93%) of the 59 female respondents. Not surprisingly, the overall ratio of agreement to disagreement responses of the male participants, though still very positive, was lower at a ratio of 7:1 (i.e., seven positive comments for every negative comment) compared with the much stronger response for the females with a ratio of 14:1. The small number of male respondents (n=16) compared to females (n=59) in the study may well have contributed to this finding; it is also consistent with the literature which generally describes females as more drawn to group discussions or collaborative activities than males. Table 1 depicts these findings.

Table 1
Aggregated Responses for all Three Cohorts by Gender for Group Work Assisted learning (SQ39) (*n*=75)

Response	Males		Females		TOTAL	
	#	%	#	%	#	%
Total Responses	16	21	59	79	75	100
Strongly Disagree	1	6	0	0	1	1
Disagree	1	6	4	7	5	7
Agree	11	69	23	39	34	46
Strongly Agree	3	19	32	54	35	46
Total	16	100	59	100	75	100
Ratio Agree: Disagree	7:1		14:1		11:1	

Source: Extrapolated from Table 21 (Janzen, 2014, p. 132).

The next question (SQ40), asked participants if the group-work had assisted their learning, to tell us how it did that. A total of 91 comments were received in response to this open-ended survey question. Table 2 presents the themes identified in participant responses to that question.

Table 2
Qualitative Responses to "If the group work DID enhance your learning, how?" (SQ40)

	Total	
	#	%
Total Number of Comments	91	100
Themes identified in comments: *		
Enhanced learning	39	43
Enjoyed/benefitted from sharing ideas, dialogue	31	34
How to work with others	7	7
Relevant to our professional roles	4	4
Facilitated Networking	3	3
Experienced some challenges – no explanation	7	8

Note. Many comments touched on more than one theme! Source: Extrapolated from Table 22 (Janzen, 2014, p. 134).

Of the five themes identified in these comments (Janzen, 2014), the most frequent comments (n=39; 43%) fell under the theme "enhanced learning" as the perceived impact. For instance, a student in Cohort 1 commented:

> (The) discussions were priceless. I learned from sharing ideas, varied interpretations /opinions, debating many of those. Base group and expert group time was where I had the majority of my 'aha' moments. It gave us the time (through structured activities) to think about what we learned/read. (C1-7)

Another 31 (34%) of the comments fell under the theme "enjoyed/benefitted from sharing ideas (and) dialogue" as reflected in the following comment: "(I) loved the group-work. I learned from my peers' stories, their opinions, views and experiences…." (C3-3); "It was helpful to share ideas with others.... Great to hear from people with different experience and perspectives than my own. It was also great networking" (C3-8); and "…working with people from different backgrounds provided different viewpoints" said C3-10.

Seven (8%) of the comments indicated the group activity taught the participants "how to work with others," and four (4%) identified the group-work was "relevant to (their) professional roles." For example, a student from Cohort 1, C1-9 wrote, "Everyone in our Cohort came from such diverse backgrounds of education and work experience, so the interaction during group sessions was enriching. I learned as much from my colleagues as I did in the formal classroom setting."

By contrast, there were only seven comments (of the 91comments in total) in response to Survey Question #41, which asked participants to explain why they felt that the group-work did not assist their learning. C1-4 wrote, "It depended on the group at times. In some groups, there were less motivated or perhaps less extraverted people. The discussions in those groups were not always sustained and sometimes moved in other directions." And, "I was not particularly comfortable with the amount of the group-work. (I) work much better on an individual basis," explained C1-11.

Student Interview Responses Regarding the Cooperative Group Experience

Of the random sample representative of all three cohorts, 17 (74% of 23) participated in the interviews which explored survey responses in greater depth (Janzen, 2014). When asked about their experience in the cooperative group learning component of the course, C2-1 commented: "…you tend to learn more when you teach others versus sitting there and listening to a lecture. Certainly, those courses that were more group-work based, I definitely got more out of." However, one person interviewed mentioned an experience in the program with a traditional group that was "dysfunctional" and "very frustrating." C1-9 stated "That made it hard to make any progress. That was probably the most frustrating experience, but it was only that one group," and interestingly, it was a non-cooperative learning group in an elective course.

Limitations

An important limitation of this study is that the evidence provided is based on the students' self-reported perceptions of the efficacy of their experience of the process in the intentional cooperative learning groups in their graduate courses and not based on objective measures of the actual impact on the intended learning. Given the complexity of the many intersecting variables associated with learning at any level, but especially at the graduate level, where the students come from a diverse range of education and many years of life experiences, it is difficult to see how one could isolate any one aspect of the complex learning context and experience, and measure, with any degree of certainty, its impact on actual learning. However, the value of reflection is well recognized in research. Though perhaps somewhat optimistic, it is reasonable to assume that the students' perceptions can serve as a proxy for the potential for positive impact on the students' transformative learning, and by extension on the achievement of expected learning outcomes.

Conclusion

Though not generalizable, the findings I have presented from my analysis of the relevant secondary data of my case study (Janzen, 2014), and my personal experience in using the described model of cooperative group learning in teaching graduate students in Higher Education over many years, suggest the value of this model of cooperative group learning—if thoughtfully organized and intentionally structured.

The participants' written and verbal responses clearly reflect the model's efficacy in fostering transformative learning through constructivist discussions between members of the expert and base groups as described. While the overall quantitative response to the efficacy of the model in assisting student learning was very positive, perhaps not surprisingly, fewer male participants reported that they found the experience positive than did the female participants. As to how it facilitated their learning, the two strongest themes by far were that it "enhanced their learning" and secondly that they "enjoyed and benefitted from sharing ideas, dialogues" in the group process.

Further research on this, and other perhaps more elaborate models of cooperative or team-based group learning, is needed with respect to measuring the actual impact on transformative learning in graduate students. The findings in this study suggest that such research is well warranted.

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