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University students' perceptions of collaborative learning and assessment

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Abstract

Although collaborative learning is strongly supported in psychological learning theories and research findings it is not used extensively, especially in tertiary settings. The aim of the study reported here was to examine changes in adult students' perceptions of collaborative learning and assessment issues and the fairness of these practices in relation to their personal goals and learning preferences over the period of their participation in a semester course focussing on collaborative learning in both content and process.

Students (n=31) enrolled in the collaborative learning course, completed questionnaires in the first and last week of the course. The questions concerned students' learning preferences (cooperative, competitive, individualistic), motivational goal orientations, concerns about group learning and perceptions of the fairness of group assessment.

The paper highlights some of the issues that need to be addressed for the successful implementation of collaborative learning.

BACKGROUND

Within the field of adult learning Candy and Crebert (1990) argue for the greater use of "collaborative learning teams and shared projects", peer assessment and consultation in place of more individualistic frameworks. In concert with many other writers, they maintain cooperative endeavours are closer to the world of work and everyday endeavour. Resnick (1987) argues that in school a student succeeds or fails at a task independently of what other students do, whereas in work, personal life and recreation much activity is socially shared such that "each person's ability to function successfully depends on what others do and how several individuals' mental and physical performances mesh" (p 13).

The importance of social interaction in learning has been recognised in theories of learning for many years (eg Piaget, Dewey, Vygotsky) supported by considerable research evidence. Cook's (1991) review of the use of collaborative learning strategies (variously called team, syndicate or collaborative learning, peer tutoring, small group interaction) in universities concludes these strategies are effective in raising the level of students' "achievement and attitude" (p27). Studies of cooperative versus competitive or individualistic learning environments in schools (eg Ames & Ames, 1984; Johnson & Johnson, 1987; Slavin et al., 1985) provide evidence for the superiority of cooperative goal structures and learning environments in promoting the learning of complex material (but not rote memory recall tasks), perspective taking, self-perception and self-esteem and students' acceptance of each other. Although there are fine theoretical distinctions between collaborative and cooperative learning the two terms will be used interchangeably in the present discussion. Why are collaborative learning strategies used so little? Johnson suggests teachers and students are reluctant to use new methods within existing organisational structures. Cook (1991) found that many studies stressed the importance of the preparation of instructors and students for successful cooperative learning experiences. From interviews with teachers conducted by fourth year students as part of their education courses, it is apparent that many teachers attest to the increased time for preparation and implementation of interactive teaching strategies, but many others claim cooperative learning does not fit well with normative or externally managed assessment procedures (MacCallum, 1993a). Students also express concerns about assessment issues, such as "I like to get Distinctions and High Distinctions and I didn't want to do the collaborative exercise because I was afraid others within my group would not share the same expectations as me" (Tidman & MacCallum, 1993) and "how will the teacher know who has done the work?" (MacCallum, 1993b). Recent research with adult students in interactive video conferencing (Walsh et al., 1993) and evaluation of teaching and learning collaboratively (Tidman & MacCallum, 1993) reveal that even though initial tentativeness about learning interactively subsides after a short time, for some students and teachers assessment issues continue to raise questions of performance, fairness and grades.

In Johnson and Johnson's formulation of cooperative learning, reward (or goal) structures are defined by the means rewards are distributed amongst students, a cooperative goal structure existing "when students perceive that they can obtain their goal if and only if the other students with whom they are linked obtain their goals" (Johnson, 1980, p 133). Using this definition, Ames and

Ames (1984) found that students in cooperative classrooms attend to group outcomes as well as to their own achievement. While these elementary school students' (especially low achieving students') perceptions of competence were enhanced in cooperative groups when the group succeeded on the designated task, their perceptions of competence and positive affect decreased when the group as a whole did not succeed, raising questions of responsibility. Group failure has ramifications for all students (and particularly high achieving students) if the task is an essential one for passing a course or obtaining a high grade. Cook's review of research found features present in effective cooperative groups to be positive inter-dependence but also individual accountability. Thus how students work out the goals of the group in relation to each others' goals will affect the interactions within the group and its academic and social outcomes.

The foregoing discussion suggests that students respond similarly to particular environments. When students are asked for their perceptions of their classroom environment, however, not all students in the same classroom perceive the classroom goals in the same way (eg Nicholls & Thorkildsen, 1987; MacCallum, 1993b). Further, students differ at any one time with regard to their preferences for different learning environments and over time and contexts change their preferences (Owens, 1984). MacCallum (1993b) found that high school students within the same classes varied in their personal goals and perceptions of their classroom as mastery¹ or performance oriented and had differing beliefs about the usefulness of cooperation with other students or the value of discussing ideas with others. Overall students were less able to differentiate their beliefs about the causes of success four months after the transition from primary school to high school, than they were prior to the transition or later in their first year of high school. This apparent confusion over the causes of success seems most likely to be in response to the new environment. New situations and learning tasks are known to produce different responses depending on students' goals. For instance, anxiety, withdrawal, concentration on surface learning is often associated with performance goals whereas persistence, effort and modification of study strategies with students with mastery, learning or deep processing goals (eg Dweck & Leggett, 1988; Volet & Chalmers, 1992). It is possible though, that a new environment especially if it is mastery oriented and non competitive in goal structure may be a suitable climate in which mastery or cooperative goals and beliefs may be enhanced and goals other than these susceptible to change. Some students, however, may perceive the cooperative structures to be in compatible with their personal goals and course or professional requirements.

Recently Nicholls and Thorkildsen (1991; Thorkildsen, 1989) have suggested that one way in which elementary school students critique education is with respect to their perceptions of the fairness of educational practices including testing practices. It is also possible that adults students' critiques of collaborative learning may include their perceptions of the fairness of assessment practices. Previous research in the area of collaborative learning has focussed on academic and social outcomes of cooperative learning and more recently on the types and frequency of verbal interaction, but rarely on students' perceptions of the changes they have to make to their goals and strategies for learning, the effect on their perceptions of assessment issues and the fairness of these changes. Considering the increase in interest in cooperative teaching strategies in recent years coupled with increased competition for employment opportunities, it is important that we gain an

understanding of students' perceptions of the usefulness and fairness of collaborative learning and various assessment procedures.

Specific Empirical Aims

1. To investigate the changes students make in their personal goals and learning environment preferences in response to being a member of a collaborative learning group.
2. To analyse inter-individual differences in students' perceptions about collaboration, especially in relation to their personal goals and preferences for cooperative learning environments at the beginning and end of the course.
3. To investigate students' perceptions of the fairness of collaborative learning and assessment procedures.

METHOD

Subjects: 31 (24 females, 7 males) internal students enrolled in a fourth year tertiary education course, for which the researcher is the course coordinator. Students participated on a voluntary basis. There was a mixture of pre-service education students and in-service teachers working in areas ranging from pre-school to adult education. The semester course involved 12 weeks of seminars, including group work, larger group discussions, activities and some lecture-style presentations. Students would have worked in a number of groups, but principally in two groups for about 3 hours and 6 - 8 hours respectively. One involved working on short answers to theoretical questions in a randomly selected group and the other involved students working on a topic of mutual interest within collaborative learning to facilitate an activity for the rest of the class. In both cases the activities were assessed and students were awarded a group mark. For the interest group activity students could choose from a number of assessment options, including the presentation, written theoretical aspects, reflections on the group process.

Procedure: Students completed 20-30 minute questionnaires at the beginning (Week 1) and end of the semester course (Week 12).

Measures: Questionnaires were similar at both times and were composed of both closed and open-ended questions.

Motivational orientation. The motivational orientation instrument measures students' motivational goals or personal definitions of success. This was based on Nicholls' Motivational Orientation Scales (1989; Duda & Nicholls, 1992). There were four motivational orientation scales. The stem for each item was "I feel most successful at university if...". Sample items were (A) Task Orientation (7 items, Alpha = .76) "I learn something interesting";

(B) Ego Orientation (7 items, Alpha = .82) "I score higher than other people"; (C) Work Avoidance (4 items, Alpha = .80) "I do well without trying", and (D) Collaboration (2 items, Alpha = .83) "my friends and I help each other figure things out". The questionnaire followed the Likert format with students responding on a four-point scale, (1) "strongly disagree", (2) "disagree", (3) "agree", and (4) "strongly agree".

Learning Preferences. This instrument measures students' preferences for specific learning environments and was based on the scales developed by Owens and Barnes (1992). There were three modes of learning each with 10 items. For each mode, a number of preference issues are included, ie speed of working, benefit for the future, quality of work produced, affect. The stem was "When participating in a university course..." and sample items (A) Cooperative (Alpha = .80) "working in a group leads to a poor result", (B) Competitive (Alpha = .76) "I like to try to be better than other students", and (C) Individual (Alpha = .66) "I like my work best if I do it myself without anyone's help". The same Likert format as above was used.

Goals for the Course Students were asked for their reasons for enrolling in the course and their specific goals for the course. Two open ended questions were used on the first occasion, "Why did you enrol in this course?" "Have you specific goals for this course?" As for all the open-ended questions students were asked to give details and reasoning for their responses. Concerns about Collaborative group work Students were asked for their concerns about collaborative learning. As concerns may be between a teacher and student perspective, they were asked two questions, "Do you have any concerns about students working together in groups? (a) In this course as a student, (b) In a class where you are/would be the teacher". Similar questions were asked on both occasions. Beliefs about the fairness of assessment of group work To assess students' perceptions of the fairness of group assessment, students were asked one question on the first occasion, "Do you think working in groups in a tertiary course for credit is fair? Why/why not?" and two questions on the second occasion, "20% of your assessment towards a grade in this course is from a group mark from working in two groups. (a) How do you feel about this? (b) How would you arrange the assessment in this course?" Beliefs about collaborative work. This was assessed by an open-ended question on the end of the second questionnaire, "If you answered this questionnaire in a group would you have answered differently? Why?" Responses were coded, Yes, in a positive way, Yes, in an inhibitory way, Yes, differently but not with a judgement as to better or worse, and No.

RESULTS AND DISCUSSION

Change in motivational goals

There was little change in students' motivational goals except for a marginal strengthening of collaboration goals, ie "helping each other" made students feel more successful (see Table 1). The lower correlation between times for collaboration goals than the other motivational goals suggests the change was not the same for all students. With respect to the relative strength of different goals for the group as a whole, at the beginning of the course task goals made students feel most successful, coupled with fairly weak ego goals and work avoidance

tendencies. After the collaborative course students' collaboration goals were closer in strength to their task goals.

Change in learning preferences

There was no significant change in students' preferences for Cooperative or Competitive learning environments, but there was a decrease in student preferences for working individually (see Table 1). As the Individual scale was psychometrically poor for a ten item scale, change in the individual items was examined. The item that showed the greatest decrease ($p < .05$) was "if I work by myself now I will manage better later". As there was a strong correlation between students' preferences at time 1 and time 2 ($r = .72$, $p < .001$), the results suggest a definite shift in these reasons for preferring not to work individually. It is a fairly common belief that individuals need to master things by themselves so they can perform later, but this is questioned by these students at least in relation to the education course they were studying.

A student, whose preference for cooperative learning environments (CLE) was consistently high mentioned her dislike of working independently in response to a question about satisfaction with learning. On the first occasion she said:

I have achieved good marks but have had to work independently most of the time - which I do not like. (S2, female, over 25, teacher) But at the end of the course she found it even harder to work independently and she was still only partly satisfied with her learning:

I have enjoyed the group work and collaborative aspect but found it difficult to motivate myself for individual assignments. I have not worked as well on individual assignments as I would in other courses totally dependent on individual work.

Thus, including cooperative or collaborative work for students may affect the way they approach work they are required to do individually. Another item that showed a decrease in preference (marginally significant) was a competitive item "trying to be better than others makes me work well" which also showed strong correlations in preferences between times ($r = .73$, $p < .001$). The cooperative item, "working in a group scares me" showed a similarly strong correlation ($r = .77$, $p < .001$) and a marginally significant movement toward stronger disagreement.

These preferences were worded in terms of personal preferences and the findings suggest working in groups changed some beliefs students held concerning the relationship between learning and other people.

Goals for the Course

Students gave varying reasons, and often more than one, for enrolling in the course, 33% said it was in order to gain a qualification, 59% mentioned interest, 44% mentioned classroom use, and 30% mentioned personal development of some kind. Students' specific goals for the course were related in some ways to their purpose in enrolling. The goals of 74% students involved gaining skills and knowledge for the practical use of collaborative

learning, 37% wanted to learn and understand about collaboration at a theoretical level, 19% wanted to experience collaboration and 9% wanted to complete the course for credit. Students generally had one or two types of goal for the course, most being practically oriented, but in terms of facilitating others to collaborate. Only about one-fifth had goals for themselves to learn through membership of a collaborative group.

Only about a quarter of the students thought they had changed their goals over the course. The responses to the questions, "Were your initial goals met? Did you have to change your goals?", showed different students had quite different concerns and experienced change in different aspects of the collaborative experience.

I can't remember what my goals were. They don't seem important now. My individual goals changed as the group expanded and grew. (S2, female, over 25, teacher)

My goals did change. I opened up to learning from my peers more than I initially expected I would. (S6, female, over 25, f/t student) After the first assignment I realised I had to work together with others to a greater degree than I expected. There was going to be less individual assessment than I anticipated. So I had to make myself accept that I was going to have to work more as a team member. (S15, female, over 25, teacher)

My goals did change as the course progressed as there was an apprehensive feeling as how it would be to work in a group. (S19, female, over 25, teacher)

I feel as if my goals have changed. I will be making a strong effort to use CL in the classroom. (S22, male, over 25, teacher)

Concerns about Collaborative Learning Students had a number of concerns about collaborative learning and their concerns did not decrease over the semester (see Table 2). In terms of collaboration as a student, they tended to have similar concerns but of a more specific nature at the end of the course than at the beginning and were related to experience in particular groups. Concerns concentrated on: difficulties encountered in groups, such as differing goals, unequal contributions, social and emotional problems, finding extra time to meet, and size of groups; and assessment concerns about the incompatibility with university emphasis on individual performance. From a teachers' point of view there were other concerns as well, such as lack of control, insufficient class time and lack of support from peers and parents.

Fairness of Group assessment

At the beginning of the course, only 15% (4) students thought group assessment was unfair, and this reduced to 7% at the end of the course. Only one student thought it was unfair at both times and she thought groups were only as good as the weakest link so assessment should be individual only. Her preference for cooperative learning environments (CLE) decreased over the time, from about one standard deviation above the class mean to half a standard deviation below. Another student thought group assessment unfair if lazy students

got a good mark (time1) but moderated at time 2, saying it was fair unless all group members put in 100%. This student's preference for CLE also decreased about one standard deviation, from a little above the mean to below the mean. The other two students thought it fair at time 2, if it was appropriate to the course aims. Both of these students' preferences for CLE were initially low and increased over the course. One student changed the other way thinking it was fair at time 1 if there was a balance between group and individual assessment, but at time 2 she thought it disadvantaged honours' students if other students were happy just to pass, and suggested purposeful grouping. This students' preference for CLE remained high over the course and her preferences for individual learning decreased so her statement appears to be one of qualification in particular instances. Another 33% students thought group assessment was fair at time 1, conditional on the group assessment being carried out correctly and if there was individual assessment as well. At time 2 all but one of these students was happy with group assessment and most thought the group assessment should make up more than 20% of the total grade for the course. In fact, at time2, 61% students thought group assessment should be more than 20%. These thoughts were expressed in the following extracts:

I think it is a good way of assessment as the dedication needed to explore individually the text and then be able to express and develop one's opinions on different subject matters should be taken into account when grading. If students are motivated and comfortable in an environment the task of sharing will be made easier if we as a group can reach that point at the end of this course then credit I believe, is due to each member of the class. (S1, female, under 25, teacher) I feel it is valid to have at least this amount [20%] to give credence to course objectives but if I'm entirely honest I think I would have usually got a higher mark if it had been individual assessment. How do I reconcile this? I don't mind as long as my final mark is one I am happy with. (S29, female, over 25, teacher)

I feel comfortable with this form of assessment. The low percentage allowed more freedom in participation in the groups. This created less stress. (S30, female, over 25, f/t student)

I like working in groups, and feel I do better when doing it, so I prefer a group mark. (S27, female, under 25, f/t student).

Evaluation of Collaborative Learning Experience

Students' responses to the question, "Do you think you would have completed this form differently if you had completed it collaboratively with three others in this course?" give an overall indication of students' evaluation of their own experience of collaborative learning over the course. The responses indicate that 18% of the students perceived collaboration had a negative impact on learning or putting forward ideas (see Table 3).

The majority of students perceived a positive or non-negative change as a result of collaboration. For these students, collaboration results in changes in ideas or thinking and structuring of responses. Some thought collaboration would result in more, different or better ideas or rekindle past experience, others focused more on greater detail, clarification or extension of ideas or deeper thinking. The aspect of learning that changed varied, with some students talking in terms of their own thinking, others in terms of the product, others

with the process of discussion or change in ideas or thinking, or assistance in the process of decision-making. For example:

could have generated better ideas, more useful and better structured ideas (S19, female, over 25, teacher)

other ideas can help you clarify your own and extend and deepen your thinking (S6, female, over 25, f/t student) more ideas, would possibly not be agonising over the assessment question like I am, more opinions, some personal ideas would not change but would be extended (S3, female, over 25, p/t employment) discussion then more systematic noting down of answers (S20, female, over 25, f/t student)

The students who focused on negative change through collaboration dealt mainly with lack of honesty or freedom, and making allowances with the inference that responses would be compromised or lacking in some way. For example:

I would have to incorporate others ideas into my own and it would be highly improbable that we would be in total agreement (S11, male, over 25, teacher).

I would not be embarrassed to let others know my opinions. Conferring with peers would probably result in polite/compromised opinions being recorded (S16, male, over 25, teacher).

would not have felt as free to express my true feelings for fear of upsetting someone (S8, female, over 25, p/t student).

Hard to be quite so honest - sometimes though good to get a group feeling. Maybe there's a place for both (S5, female, over 25, teacher).

Implications for Collaborative Learning in tertiary education Even in a course named Collaborative Learning, only a small proportion of students had goals for the course which included participating in collaboration. In university courses students do not expect to collaborate. Partly this is to the belief that universities give individual awards which need to be assessed by individual means. The compatibility of collaborative learning and assessment is an important issue which needs to be discussed at all levels within universities. It isn't simply a case of changing teaching and learning. Most of the students in this course thought group assessment was fair, as long as it was appropriate to the aims of the course. As the aims of this course included participation in collaborative groups, it was perceived to be appropriate and just over 60% thought group assessment could make up more than 20% of the assessment in this course. If students thought participation in groups was not appropriate to a course then, it is likely that students would think group assessment was not fair. It seems important, then that course coordinators who want to incorporate group or team work or collaboration of any kind into their courses, make group work a component of the course aims and clearly relevant to the substance of the course.

The change in students' preferences for working individually suggests encouraging collaboration may have an impact on students' preferences and motivation to work individually on other aspects of their study. Just as it is important to provide support for

students as they learn to work together, for some students it may be necessary to provide support of some kind to facilitate individual work.

Students did express a number of concerns about collaborative learning, at the beginning and end of the course. Some felt they did not have the necessary skills to solve problems of group dynamics and differing goals. Others commented that the process of reflection on themselves as a member of a group and the process of becoming an effective group helped them work through problems and work out strategies for improving the way the group worked and consequently, they believed, enhanced their own learning. It is important then to develop students' skills in negotiation and reflection and to provide time for groups to engage in them. Other concerns related to group membership and group size and were specific to particular groups. For the tasks involved in this course groups of two had difficulties developing ideas and covering the workload, whereas groups of six spent excessive amount of time organising who was doing what and maintaining group cohesion.

Providing students with experience in several groups means students maybe come more aware of collaborative issues but also allows them to contextualise particular concerns and consider ways of overcoming them.

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Table 1: Motivational Orientations and Learning Preferences over a Semester

Scale	Time 1	Time 2	t-value	Correlation (T1, T2)	Motivational orientation	Task	22.59*
Ego	15.88 (3.73)	15.93 (2.63)	-0.10 ns	0.80***			
Work Avoidance	8.87 (2.28)	8.63 (1.93)	0.57 ns	0.56**			
Collaboration	5.88 (1.07)	6.29 (0.86)	-2.01 p=.057	0.47*			
Learning preferences							
Cooperative	31.97 (4.05)	31.66 (3.52)	0.41 ns	0.61**			
Competitive	25.35 (4.27)	24.88 (3.35)	0.69 ns	0.60**			
Individual	23.94 (2.77)	22.50 (3.32)	1.97 p=.066	0.52**			
Mean (standard deviation), maximum score per scale: Task & Ego, 28; WA, 20; Coll, 8; Learning preferences, 40.							
n=24							

Table 2: Concerns about Collaborative Learning as a Student, and as a Teacher

Percentage responses	Concerns	Time 1	Time 2
As a student:			
No concerns	4	12	9

Some concerns 5668
 Group (equal sharing of workload, choice of partners, disagreement, different goals) 4150
 Personal (preference for lectures, intimidated by others) 190
 Assessment (normative assessment not conducive to CL, universities concentrate on individual marks, disappointment if others don't do as well as I want) 1125
 As a teacher:
 No concerns 4125
 Some concerns 5964
 Group dynamics/students (everyone contributes, different backgrounds, few who don't relate well) 3726
 Organisational (amount of class time, control, noise, covering content, evaluation) 3025
 Personal (attitudes of colleagues/parents, concerns for individual achievement) 718
 Assessment (accountability, accuracy of individual contribution) 1114

Table 3: Evaluation of Collaboration

Response (n=27)	Percentage
No	15
Yes, different, but not qualified as (+) or (-)	25
Yes, extensive (+)	39
Yes, inhibitive (-)	18

1 Recent research suggests similarity in students' beliefs about success in collaborative and mastery learning environments. Mastery learning environments focus on student understanding, improvement, effort and learning from mistakes.

2 Ethical Concerns: Measures were undertaken not to disadvantage students by participation or non-participation. All questionnaires were anonymous, and to enable matching of before and after questionnaires students wrote their own distinguishing number or sign on the questionnaire which they recorded themselves.