

# I can't let them down!: Affiliative motivation and co-operative learning in higher education



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**Abstract:** *Two difficulties with group work in higher education are considered. The development of an assessment procedure integrating aspects of co-operative learning and Mastery learning to overcome these difficulties is described. Groups of students considered course material. Assessment focused on group learning. The procedure was structured to develop positive interdependence and individual accountability. Student achievement significantly improved. Students' attitudes are overwhelmingly positive. Comments from journals illustrate the effect of this process on a) students' attitudes to working in heterogeneous, co-operative groups and b) the value of group processing and the resolution of academic controversy. It is concluded that the prudent structuring of student learning experiences to exploit affiliative motivation can produce behaviours normally associated with intrinsic motivation.*

**Keywords:** *co-operative learning in higher education, affiliative motivation, achievement.*

Co-operative Learning, "students work[ing] in small groups to help one another master academic material" (Slavin, 1991, p. 71) enhances academic learning (Slavin, 1988, 1989, 1990, 1991; Webb Troper and Fall, 1995; Johnson, Johnson and Holubec, 1993; Johnson, Johnson & Stanne, 2000; Kagan, 1990). Johnson et al (2000) identified 191 investigations comparing the effects on student achievement of eight methods of co-operative learning to individualistic learning (effect sizes 0.91 - 0.09) and competitive learning (effect sizes 0.86-0.19). Brown and Palincsar (1989) and Tang (1993) conclude that groups working on problems develop higher level cognitive strategies involving "a search for meaning and a concern for developing competencies" (Andrews, Violata, Rabb & Hollingworth, 1994, p. 180) resulting in deep learning (Biggs, 1987). De Grave, Boshuizen and Schmidt (1996) imply that being confronted with alternative views creates dissatisfaction with one's existing state of knowledge, stimulating conceptual change. Co-operative learning develops social, collaborative skills (Johnson & Johnson, 1987), often being used to enhance the development of these skills and humane values (McInerney & McInerney, 1998, p. 191). Putting people into groups does not necessarily mean that co-operative learning will occur. It is possible for members to function as individuals rather than collaborating. To ensure co-operation the experience must be structured to create *positive interdependence* and *individual accountability*.

*Positive interdependence* entails group members accepting that they cannot achieve a goal on their own. "Every student embraces a responsibility for learning the assigned material and for making sure that all members of the group learn it, too" (Johnson et al, 1998, p. 29).

*Individual accountability* means that *all* members of the group are expected to achieve a set goal. "Team success can only be achieved if all members of the team learn the objectives being taught" (Slavin, 1989, p. 233). Carroll (1963) asserted that individuals do not greatly differ in the amount they can learn but do differ in the time taken to learn - a cornerstone of the Mastery learning technique (Bloom, 1968).

Motivation is the key to learning.

The chief impediments to learning are not cognitive. It is not that students cannot learn; it is that they do not wish to. If educators invested a fraction of the energy they now spend trying to transmit information in trying to stimulate the students' enjoyment of learning, we could achieve much better results (Csikszentmihalyi, 1990, p. 115).

Motivation stems from a number of different sources: intrinsic motivation generates behaviours directed towards achieving goals inherently satisfying to individuals. Social (or affiliative) motivation engenders behaviours aimed at receiving the approval of significant others (Biggs & Telfer, 1987, p. 96).

All teachers would like their students to be intrinsically motivated: to find material so interesting and enthralling that they had a strong desire to understand it. Such hopes are often doomed to failure, especially when students are taking compulsory papers to complete a qualification.

### **Co-operative learning in higher education.**

Since 1999 I have used a co-operative learning assignment in a compulsory educational psychology paper for teacher trainees. In higher education students are often formed into groups for assignments. Typically, each member in the group receives the same mark. The assessment procedures can broadly be divided into two groups:

- Only the group product is assessed, and
- Individual marks are averaged to produce a group mark.

Both methods are open to abuse and students often grumble about group functioning. Most frequently students complain that some members are not "pulling their weight". Less frequently, but still relatively often, members complain of "dominators" who neither invite nor implement others' suggestions. Thus some students feel sidelined and, in the worst cases, devalued.

To overcome these problems I structured the assignment to promote positive interdependence, individual accountability, academic controversy and the provision of explanations to maximize learning. "When students are confronted with opposing points of view, uncertainty or conceptual conflict results, which creates a reconceptualization and an information search, which in turn results in a more refined and thoughtful conclusion" (Johnson, Johnson & Smith, 1998). Webb et al (1995) have shown that receiving explanations rather than simply an answer is vital to increase understanding.

If only the group product is assessed then a non-contributing student can relatively safely leave it to others to make the effort and accrue the benefits. If a dominant individual can complete an assignment alone there is no incentive to share power and responsibility.

If assessment averages individual marks, a dominator may seek to control others that may create resentment, undermining the social value of cooperative learning. A non-contributing student may reason that his/her marks will be lifted by the marks of other students. Positive interdependence is annihilated by these student behaviours. Neither assessment method ensures that all members contribute to the task. An equally disturbing feature of these assessment practices is their effect, on individual accountability. Neither provides incentives for all to learn. Group assessment should foster learning for *all* group members.

To New Zealand students, conditioned by the individualistic and competitive education system, knowledge ownership is highly personal. When only a group product is assessed those with a deeper understanding may be tempted to control product completion. Others may be tempted to let them do so. When marks are averaged those with a deeper understanding may merely tell others what to do.

## **Method**

**1999**

"Heterogeneous groups are more productive than homogeneous ones when trying to create an environment that stimulates questions, explanations and discussions among group members" (Anderson, Nelson, Fox & Gruber, as cited in Margolis & Freund, 1991). Heterogeneity develops participants' tolerance (Johnson & Johnson, 1982)

I introduced heterogeneity by alphabetically allocating students to three or four-member groups to prepare for a 20% test based on twelve open-ended questions addressing 44% of the paper's topics. Students had to process information, form opinions and evaluate the plausibility of research claims to generate answers. The assignment provided students with an experiential exercise in co-operative learning, but also provided an incentive to reflect on course topics.

To promote individual accountability and encourage all members to accept responsibility, all members of groups sat the test but only one test was randomly selected for marking. This mark was allocated to all group members. Since all students had an equal chance that their test would be marked this communicated clearly to those with a better understanding the real advantages, to them, in sharing their understanding with others. Even if a "dominator" simply told others how to answer, their reasoning became apparent as questions specifically asked students to justify answers by relating research to their own experiences. While groups prepared for the test, significant social pressure was placed on "non-contributors" as evidenced by seven groups excluding members who were instructed to sit the test as individuals. The affected groups continued with reduced numbers retaining positive interdependence within their groups.

Open-ended questions constitute problems to be solved. Conflicting views create the dissatisfaction that De Grave et al (1996) argued resulted in conceptual change. An incentive existed to share understandings to obtain a better mark; the group goal that Slavin (1988) insists is an essential element of co-operative learning.

To further increase the sense of positive interdependence students were allocated one of the following roles when discussing questions:

*Leader* Keeps people on task; ensures discussions lead to consensus; prepares a reasoned answer serving as a *starting point* for discussion.

*Encourager* Ensures everyone has the opportunity to contribute.

*Summarizer* Summarizes discussions; states the agreed response.

*Checker* Ensures everyone understands the agreed answer.

Roles revolved around members for different questions. Students kept journals after each group meeting. I obtained permission to use some of their comments. These indicated that shared understandings, positive interdependence and academic controversy did occur.

"I had to learn how to put what I think aside completely and look at how someone else could have looked at it. In normal circumstances I would have just listened to what they had to say but not really taking [it] in and at the end still have gone back to my original idea."

"We would analyze each of the leader's responses, argue and compare these with other group members."

To incorporate the Mastery learning postulates that

- while all can learn the time taken for learning varies; and
- raising the criterion does not adversely affect success, (Kulik, Kulik & Bangert-Drowns, 1990)

The criterion was set at 60%. Since this procedure was novel and in anticipation of an adverse student reaction, members of groups scoring less than 60% were able to sit a parallel mastery test two weeks after the initial test and receive an *individual* mark. The ethics of this procedure were considered and approved by the College's Assessment Committee.

### **Participants**

331 trainee teachers studying a compulsory paper in educational psychology were originally formed into ninety 3- or 4-member groups. Four students withdrew from the paper or resigned from the College during the year.

### **Personnel**

The author was the principal lecturer in the paper. He and five other tutors marked the test.

### **Setting and Apparatus**

Groups were required to meet for a minimum of eight hours in their own time to prepare for the test. At the test students were required to answer three of 12 open-ended questions listed in the course book. Each student received one of ten versions of the test each consisting of a different set of three questions. Students were unaware of which questions they would be asked to answer beforehand and had to be prepared to answer any of the twelve. The mastery test repeated this procedure.

### **Procedure**

Students were advised of the format of the task in March. The test occurred in August. Journals were handed in for scrutiny only. The Mastery test occurred two weeks after the first test.

### **Results**

The mean test score of the seventy-nine 'undisturbed' groups was 81.25%. Seventy-five scored better than the 60% criterion.

### **Discussion**

I had anticipated significant resistance to this novel assessment method since it assailed students' preconditioned view of the individualized ownership of knowledge. Some

vociferous and articulate students immediately branded the procedure as "unfair". The student body echoed to horror stories about "disaster groups". Yet only eleven groups (12%) were disrupted and only seven (8%) were disrupted by the non-contribution of a member. The overwhelming majority of students were extremely positive.

"Studying in a group helped me to prepare for the test because it helped me to develop my cooperative skills. Working in this group was a great idea because my understanding became a lot clearer."

Nevertheless some students undoubtedly found the process difficult at times. "In [one] question I was against some of the group's ideas and they could not see my view. After some discussion the group could see my view but decided to use other ideas."

Explaining their views and listening to others' opinions was the most valuable aspect of working together to attain a deeper understanding.

"Seeing things from a multitude of viewpoints meant clearer understanding."

"Personally, I learn more when I have verbalised my thoughts/arguments – having the opportunity to do so definitely helped my understanding of the readings – it was great to get instant feedback."

"When I am telling the group about my question I am repeating myself so I am learning it better myself and the others are asking questions that I don't think to ask myself so it's really helping me being in a group and the others seem to think the same."

Comments about the positive interdependence and individual accountability engendered by the assessment process provided the first clue that affiliative motivation might produce behaviours normally associated with intrinsic motivation. A significant number of comments indicated that students wanted to perform well to avoid letting down their group.

"Because I had other people relying on me to do my part I did and having to keep to some sort of schedule (meetings) was good because it meant that I had to have my part done ... which keeps me on track. When I got stuck they would help me out and also explain things until I did understand, instead of just doing their reading, giving their answer and then moving on [because] everyone knew we were going into this test as a team."

"Studying in a group helped me to maintain motivation and encouraged me to learn my questions."

"I didn't enjoy today's meeting because I was tired and crabby and generally I couldn't be bothered. I'm sure the others noticed this. If so, they didn't say anything. They just kept asking for my opinion or asking me questions. In a way this was good because it kept me focused on the task at hand."

Staying focused, striving to improve understanding and keeping to a schedule are behaviours normally exhibited by intrinsically motivated students. It is likely that a number of students would neither have chosen to study this compulsory subject nor, having been compelled to, would have found it particularly interesting. Nevertheless these comments suggest that affiliative motivation produced a simulation of intrinsically motivated behaviour. The diverse

timetables in higher education resulted in some groups having difficulty arranging mutually convenient meeting times.

Due to positive interdependence, assistance was readily given.

"When I was stuck there were other people there to help me because it was in their best interests that I also understood what I was doing."

This is not to say that students always felt comfortable.

"Knowing that only one of our test papers is going to be marked ... we are all under pressure. We all feel inadequate in some way and that we have a 50/50 chance of blowing it for everyone."

## **Later developments**

### **2000**

Groups of three are too small in higher education. Students may withdraw from either a paper or the institution and the remaining students may be asked to function as a pair not a group. Groups of five or six students were formed to minimize the effect of student withdrawals and resignations. Two additional roles were allocated:

*Verifier*- asks people to explain their opinions about how the questions should be answered and verifies that these opinions can be substantiated.

*Timekeeper* – for groups of six.

Despite sixteen students failing to complete the paper, the increased group size permitted viable group experiences for the remaining students.

- Four group meetings were scheduled in tutorial time.
- Students received course credit for their journals.
- The criterion for the initial test was raised to 65%.
- The greatest change was initiated by a group of 1999 students who suggested that pressure on individuals could be reduced by marking one question from each of *three* randomly chosen tests and totaling these marks to provide a group mark.

The following quotes from 2000 journals are grouped for convenience.

### ***Heterogeneous groups.***

"Having a mixed ability in our group was really helpful because people like me who are slower learners could learn from the faster learners."

"Questioning definitely helped clarify as I explained and answered questions."

### ***Academic controversy***

"The most important thing I learned ...was that it is necessary to express your opinion and debate your reasons...because even if you are wrong the others in the group can say why and you can see why a different opinion might be better."

"Also I think when you argue your point and compare notes ... it helps your own understanding even if you disagree with thier [*sic*] opinion."

### ***Affiliative motivation***

"When talking about others' views and comparing them to my own a question is clarified and summarized on a unified agreement because we all have to have the same ideas for the test."

"This being the ... final scheduled meeting I also thought it was important to have read over all our other proposed answers so I didn't let others down."

Two of the fifty-nine groups in 2000 failed to reach criterion as did one student who sat the test as an individual. Five students did not sit the initial test for a variety of reasons. Sixteen students were eligible to sit the Mastery test. Thirteen did so (mean =70.36%).

### **2001**

A group-processing tutorial was introduced. It is essential that groups take time to identify "ways to improve the processes members have been using to maximize their own and each other's learning" (Johnson et al, 1998, p. 5). Since one unexpected finding was that students from different groups were comparing understandings, a website was set up so groups could interact about proposed answers.

## **Results**

While results are not directly comparable as the questions, articles and students were different each year they are presented for interest. 328 students enrolled for the same paper in 1998 had taken a similar test, without criterion, marked on an individual basis.

<b>Year</b>	<b>N</b>	<b>Mean score (%)</b>	<b>s.d.</b>
1998	328 individuals	67.74	16.39
1999	79 groups	81.25	11.0
2000	59 groups	81.7	2.02
2001	54 groups	84.49	1.884

**Table 1 : Results: 1998-2001**

All 54 groups in 2001 reached or bettered the criterion of 65% despite exclusions and resignations. Students' comments are enlightening.

### **Academic Controversy**

"I found [the group discussion] so helpful I felt excited ... because I know I'm going to do better and be more prepared as I have a better understanding and source for my knowledge through sharing of our ideas."

"... in the end I was quite convinced of the others' view and less sure of my own. I was amazed that I would never had [sic] had another dimension to the answer of the question had I not talked it over with somebody else. It was truly a valuable learning experience."

### **Changing attitudes**

"I've got to confess that I was feeling pretty negative about the whole project when I arrived but I found our group worked really well together. It might turn out to be OK after all."  
[After the first meeting]

"Everyone is genuinely interested in the others' viewpoints and there are more discussions now and less of the pure acceptance [third meeting] which I like and it's quite fun. I never thought I would say this paper was fun!"

### **Group processing**

"I think this session was like a turning point for our group because for the first time it felt like

we were getting somewhere and making progress."

"A group (processing) session is an excellent idea. It wasn't until that session that our group really came together."

### **Affiliative motivation**

"Having responsibility for my own learning and the group's certainly encouraged active learning on my behalf."

"Group work gives me the motivation to keep producing good answers."

"The pressure of knowing that I would let these people down if I didn't work and learn the information kept me busy and on track."

Not everyone enjoyed the experience.

"Sharing and collaborating our answers was hard work. I now realize I prefer to work alone."

"I didn't like working in a group. I like to work on my own or with a few people I've chosen to work with. I found it hard to be positive and participate honestly. I wanted to say a lot of things but in the interest of getting things done efficiently I didn't say them and then I got frustrated at myself and at the group situation and then I got angry and I felt like it was this big repeating cycle... because I was so negative I made it hard on the other members of the group."

### **Major outcomes**

- Basing questions on course material entices students to not only experience co-operative learning, but also to consider course content as would intrinsically motivated students
- The concept of the personal ownership of knowledge is well established and this is the largest impediment when "selling" the assessment to students. Only by structuring the procedure to incorporate positive interdependence can high achievers be persuaded of the value of sharing their insights. Yet this sharing of knowledge is integral to higher education.
- The resolution of academic controversy develops understanding
- The careful structuring of learning conditions to achieve affiliative motivation offers hope that the learning behaviour of many students can be brought to closely replicate that of those intrinsically motivated.

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