

## Listening to Student Opinions about Group Assessment

Judith Mousley

*Deakin University*

<judith.mousley@deakin.edu.au>

Coral Campbell

*Deakin University*

<coral.campbell@deakin.edu.au>

This paper illustrates the way two teacher-researchers are listening to mathematics education students' voices in a Masters course. Group assignments have their advantages but it is difficult to ensure strong collaboration, high-level analysis and discussion, a good spread of work between group members, and positive social interactions. This research set out to explore one way of attending to these problems in a mathematics education Masters unit. Students submitted (unmarked) individual essays before combining them to create (graded) group assignments. They completed surveys about group work before and after this activity, and some were interviewed. Expecting individual work before group work led to increased levels of engagement, very high quality work, use of skills in analysis and critique, and good levels of student satisfaction.

### Introduction

Assessment is an important part of any educational process. Accomplishment is not signalled only by the completion of a unit of work, but also by the extent to which students have engaged with the topic at hand. Further, generic skills including effective communication, information seeking, analysis, and critique are being valued increasingly. Therefore, assessment must fulfil a number of different purposes.

In teachers' professional development courses, the most common form of assessment is formative, using feedback that identifies potential for improvement (Falchikov, 2005). Formative tasks are also used as the basis for teaching and learning when assessment tasks emphasise the student's role in coming to understand content. It is also a common part of mathematics teacher and teacher education rhetoric that group learning situations provide educational advantages for students and develop learning that is a mix of knowledge acquisition and collaborative skills. Through participating in group learning, students (whether children or teachers) should develop improved communication and negotiation skills, and better understanding as well as critical thought and deeper learning through debate. Supposedly, students working in groups reflect on their learning and are more able to externalise their thought processes as well as helping others to understand the content.

However, research on group assessment has shown that many group tasks fail to deliver on these skills, in particular the opportunity for the development of active debate and critical reflection. Too often, both mathematics education and teacher education tasks allow for inequitable contributions and for dominance by one or two individuals to occur (Nightingale et al., 1996; Ramsden, 2003).

The research reported in this paper aimed to investigate and respond to students' voices about group work. We sought to find out what Masters mathematics education students saw as advantages and disadvantages of group assignments, and to change our practices accordingly. A new approach was developed, and again student voices were captured in the evaluation of this change.

## Methodology

Students enrolled in the wholly-online 2006 Masters unit entitled *Teaching Mathematics Successfully* were sent an initial survey on-line, together with ethics forms. The survey question requested their opinions of the advantages and disadvantages of group work in mathematics classrooms as well as group assignments in their own studies. (This paper focuses on the teachers' opinions about a change made in their group assignment.) The survey data were grouped into three categories related to group assignments: perceived advantages, perceived problems, and advice to lecturers. Each of these categories was divided into subgroups of types of advantage, problem, or advice.

After completing the initial survey, the students completed the same group assignment that had been set in 2005. However, given negative 2005 student feedback on the group assignment, and consequent discussion amongst the lecturers about this, it had been decided that the group assignment would be completed in two stages. Thus the students completed and submitted the assessment task individually before working together as a group of 3 or 4 to produce and submit a group assignment, drawing on the best features of their efforts. Only the group assignments were graded. The initial, individual assignments were filed as a record of students' efforts, but not marked.

We had been satisfied with the previous year's group assignment. It involved writing a literature review, analysis and critique of relevant, common practices, and action research in a mathematics classroom leading to the writing of a report. Student feedback on the assessment task itself, an inquiry into one of the "6 components of quality mathematics teaching" identified by Sullivan and Mousley (1996), had been very positive. In addition, while allowing for some student choice it was inquiry-based and had the potential to seek evidence of extensive research and reflection. It also had seemed to meet many characteristics of good higher education assessment practice. For example, our review of research by Biggs (2003), James, McKinnis, and Devlin (2002), Nightingale et al. (1996), Ramsden (2003), and Nulty and Kift (2003) suggested that effective assessment:

- is closely aligned with course content and expected outcomes;
- is valid, reliable, and ethical in nature and free of cultural bias;
- requires completion of authentic activities with emphasis on promoting learning;
- focuses on eliciting student understandings and demonstration of higher order skills;
- provides constructive, diagnostic feedback;
- utilises a variety of methods across assessment tasks;
- allows for some student choice and caters for different learning styles; and
- is cognisant of staff and student workloads.

However, the feedback indicated that the 2005 students (practising mathematics teachers in primary and secondary schools) did not like the fact that it was a group assignment. It seemed ironic that mathematics teachers who generally praise and use group work with their own students objected to group assignments, and this contradiction stimulated this research. Our primary aim was to find a way to listen to students' voices in a way that respected their views about group work but responded to their criticisms of it.

After submitting the group assignment then receiving their grades and feedback, the students who had responded to the first survey were sent a second one. Those who responded and indicated a willingness to be interviewed were later telephoned. Again they were asked for their opinions and advice about the use of group assignments.

Forty-four students responded to the first survey, 38 to the second, and 26 were interviewed by telephone. To meet ethics guidelines, the surveys and interviews were implemented by Coral Campbell, who did not teach the unit.

## Results

Data from the initial survey showed that the teachers used group work in their classrooms and they described many reasons for this. Overall, the idea of group work in classrooms was received positively, with no respondent citing problems other than classroom management issues such as children’s off-task chatter. The most common advantage cited was the development of mathematical understanding resulting from children sharing of ideas and procedures, peer explanations, and combinations of individual expertise (40 responses, 90%). The most common responses are shown in Table 1.

Table 1  
*Teachers’ Views of Group Tasks in Mathematics Classrooms*

| <b>Advantage/Disadvantage</b>                 | <b>n=44</b> | <b>%</b> |
|---|-------------|----------|
| Sharing of ideas, explanations, and expertise | 40          | 90       |
| Development of social skills                  | 33          | 75       |
| Peer support and tutoring, modelling          | 29          | 65       |
| <i>Children’s off-task chatter</i>            | 28          | 63       |

It is recognised that assessment of group products is different from merely working in groups in class, but the teachers’ responses in the initial survey were quite different from the above when it came to their own assessment. Lesser numbers of students listed advantages, and they listed many disadvantages, as exemplified in Table 2, the primary one being “Others always share the marks I alone should have earned”. Advantages still included sharing of knowledge where “the sum is more than the parts”, and peer support was mentioned as “helpful in distance education”.

Table 2  
*Teachers’ Views of Group Assignments in Masters Courses (pre group assignment)*

| <b>Advantage/Disadvantage</b>  | <b>n=44</b> | <b>%</b> |
|--|-------------|----------|
| Sharing of knowledge   | 9           | 20       |
| Peer support   | 5           | 11       |
| <i>“Free riders” sharing equal marks</i>                                   | 32          | 70       |
| <i>Poor distribution of responsibilities (18, 41%)</i>                     | 18          | 41       |
| <i>Time management (getting others to complete their sections on time)</i> | 12          | 27       |

After completion and submission of the individual assignment, then working together to write and submit a group assignment that drew on the best elements of each, and after all students’ work had been returned, the second survey was administered. The results were quite different. Students listed many more advantages for group work this time, especially in relation to the teacher education context (Table 3).

Table 3  
*Teachers' Views of Group Assignments in Masters Courses (post group assignment)*

| <b>Advantage/Disadvantage</b>            | <b>n=38</b> | <b>%</b> |
|--|-------------|----------|
| More ideas/insights                      | 28          | 73       |
| Each person bringing their own strengths | 22          | 57       |
| Wider range of resources                 | 12          | 31       |
| Sharing or reading/workload              | 5           | 13       |
| Rich discussion / alternative views      | 5           | 13       |

Students contacted by telephone mainly talked about social and academic support available to them working on line as off-campus students (50%), learning about different ways of responding to the assessment criteria (42%), and learning academic skills such as structuring and presentation of essays (19%). It was clear that some students had been stretched by the group's analysis of their individual work.

It takes you out of your comfort area. Having your ideas challenged, engaging with others' ideas.

It forces you to look outside your line of thought.

Primary, secondary, adult, and special ed. all talking about the same issue. It was SO enlightening.

Collis (1998) and Reeves (2000) write about the importance of collaborative group work to set the context for on-line students' support. There were a few complaints during the interviews about the logistics of on-line group work including multiple versions (15%), about "different ideas and ideologies" (1%), and the "need to agree on a common structure" and "melding of writing styles" (1%).

However, in both the interview and the students' later formal evaluations of the unit and its teaching, there were no complaints about the primary disadvantages cited before undertaking the new version of his assignment: uneven input or difficulties getting group members to communicate and contribute. On the contrary, it was surprising how many groups commented that they "must have been lucky being in a group where everyone contributed heaps". Two students "felt pressure to continue" despite family problems but received "much-needed support". One student in Hong Kong wrote, "I met people!" However, there were also hints of the usual group conflicts when a student mentioned that a member of her group had "dominated all maths discussions", and another felt that her "assignment contributions were not included well".

One student felt that 10 to 20% of the marks should be given to the individual drafts, but other students did not mention spontaneously the fact that it was not marked; and when asked, made comments like "It worked well that way and we knew you had it there if there were any arguments". When asked what advice they had for lecturers, students advised that less time was needed for individual essays and more for group improvements. Three friends suggested that "geography could be considered to allow face-to-face and telephone exchanges", echoing the advice of Herrington, Oliver, and Reeves (2003) who encouraged lecturers involved in distance to consider how students can arrange occasional face-to-face meetings.

In summary, it is clear that the students – teachers who generally valued group work in their own mathematics classroom – felt more positive about group assessment after undertaking the two-step process. While the "think, pair, share" process is commonly used

in primary classrooms, it would be useful to try this process for group work and assessed tasks in secondary mathematics classrooms. We will continue to use it in teacher education.

## Conclusion

Despite these suggestions for minor improvements, the idea of unassessed individual essays becoming the basis for an assessed group assignment was very well received. A few of the teachers commented that they were going to try this idea in mathematics classes; and indeed, this would be a worthy topic for further research.

When the research was introduced to students, they were told that the lecturers were interested in their ideas and perceptions of the assignment experiences. Many of them commented in the interviews about their interest in the research process and expressed their appreciation of “an opportunity to try new learning methods”.

This is the first time that anyone has asked me what I think about assignments. It is surprising that it's a maths unit, but it has me thinking about ways of listening to my own maths students. I wonder if they like group work and see advantages. I am going to ask them. We are going to keep studying the same units and critiquing each others' work even if we can't do group assignments.

It has been exciting to find a way of organising group work that requires but values the contributions of individuals. We will continue to research other aspects our teaching in both pre-service and postgraduate mathematics education, and to listen to students' voices.

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