# Cooperative work supplemented by eGroups: learner perspectives

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***Abstract**: Online tools challenge and strengthen learning and teaching processes. 24-7 availability of teaching materials means educators need to continually identify what 'value added' students reap by attending class whereas access to online courses broadens learning horizons through distance education. Proliferation of software gadgets in learning management systems affects accessibility to, and delivery media for, course material. Evidence suggests that online tools help supplement face-to-face interaction for learners and instructors (learner-learner, learner-instructor). This puts the onus on resource administrators 'us teachers' to seek out and trial some of these tools. This study reports on basic ways by which communication between learners and instructors can be supported electronically in group-based cooperative work for on-campus units. Data from surveys, conducted at the end of the teaching semester, provides quantitative and qualitative insights into the usefulness learners perceive from having additional communication tools at their disposal.*

## Introduction

Approaches exist to improve student engagement in face-to-face learning (Finelli, Klinger & Bundy, 2001; Smith, Sheppard, Johnson & Johnson, 2005). In engineering education these include problem- and experiential-based learning methods (Al-Abdeli & Bullen 2005). Guiding principles for (good) class-based teaching practice have also been identified (Chickering & Gamson, 1987). Learning and Teaching (L&T) processes however face added challenges if done online, either completely (Olivas, 2002) or in blended online and face-to-face mode (Verkroost, Meijerink, Linsten & Veen, 2008).

To date, it is reasonable to state that the main platform for supporting online learning has been the Learning Management System (LMS), commercially developed or institutional based. In addition to functioning as portals for accessing teaching materials, LMS have been deployed to a wider range of activities including problem-based learning in distance education (Brodie & Porter, 2008). More elaborate uses extend to providing warning mechanisms of students needing support (Williams & Sher, 2007). These portals continue to evolve and host a growing myriad of online tools and add-ons from Wikis (Molyneaux & Brumley, 2007) to blogs and podcasts (Hsu, 2008) to name a few. Easy access to electronic teaching materials and the availability of online communication through LMS prompt pedagogical concerns about how traditional class-room based L&T can, or should, evolve in a technologically changing landscape. Shieh, Gummers and Niess (2008) propose a set of principles to support effective online teaching in reference to earlier work in the traditional, face-to-face teaching realm. Studies have also explored how online versions of lecture materials can be modified to engage students during class delivery (Blicblau, 2006) or how class (face-to-face) time can effectively be utilised if materials are already online (Wallace & Weiner ,1998). Surprisingly, some students continue to want printed handouts of online materials (Rothberg, Lamb & Willis, 2006).

One strength of face-to-face L&T is its capacity to facilitate fast, interactive and useful channels of communication for both learners (individual or group) and instructors. Utilised effectively in the face-to-face mode, communication helps promote group based cooperative learning (Smith et al., 2005) and good teaching practice (Chickering & Gamson, 1987). Similarly, many principles of good (face-to-face) teaching can be transferred to the online mode (Shieh et al., 2008). Works by Bauer (2008) as

well as Verkroost et al. (2008) suggest students supplement on-campus meetings with online communication. Even task completion times in collaborative (group) work with online communication, do not necessarily differ from those in face-to-face work (Kirschman & Greenstein, 2002). Staff involvement in online discussions appears to be a key factor in (online) courses. The frequency of postings and promptness of feedback can set the pace for student contributions (Olivas, 2002) and is valued (Shieh et al., 2008; Hutchinson, 2007; Lapointe & Reisetter 2008). Learners do not however perceive all electronic tools as being effective (Bauer, 2008).

This study reports on attempts to gauge learner perspectives of some online communication tools in small group (3 students) cooperative learning. Cooperative learning is taken here to refer to …

> … people working in teams to accomplish a common goal, under conditions that involve both positive interdependence (all members must cooperate to complete the task) and individual and group accountability (each member individually as well as all members collectively accountable for the work of the group) (Smith et al., 2005, pg 88).

## The Learning & Teaching Setting

The platform for this investigation is a thirteen-week unit of study ENS2108 Mechanical Science covering fundamental topics in thermodynamics, heat transfer and fluid mechanics. ENS2108 runs in on-campus mode with students having the opportunity to communicate face-to-face by attending lectures, tutorials and laboratories. Student assessment is based on a mid-semester test (20%) and an end-of-semester examination (50%). Two assignments are also declared at the semester start (different submission datelines apply). Assignment-1 (15%) is individual-based and designed to help students work through and scaffold a range of topics. Assignment-1 features multiple questions with submissions for each straddling the first seven weeks of teaching. Student works are marked and feedback given before the next lodgement. Assignment-2 (15%) is group-based and necessitates a single submission at semester close. Assignment-2 has one part where students report on lab work and another calling for a 3,000 word write-up on a thermofluids (engineering) system, physical phenomena or topic of relevance to ENS2108. Themes selected by students included vehicle aerodynamics, combustion engines, engine cooling and pressure measurement systems onboard aircraft.

## Learning Management Systems (Traditional) and eGroups

ENS2108 has its own extensive, well managed, online site hosted within the university LMS called MyECU. MyECU is the entry point for ECU students and gives access to unit teaching sites (managed by unit coordinators). In many ways, a (traditional) LMS includes areas of: announcements, unit and staff details, unit teaching materials, assessments and journal entries on weekly class coverage. To facilitate group based work, other tools were then activated inside the (traditional) LMS. This was done with the intent of extending options for group communication through electronic means (beyond face-to-face mode). The term ‘eGroup’ used in this study refers to the deployment of (group specific) electronic tools in the form of discussion boards, file sharing facilities and e-mail. These eGroup tools are made available to specific members of each team (only) as well as their lecturer.

A peer review of the ENS2108 MyECU site was done and aimed to identify if students (using the eGroups) were also supported by a well authored LMS (details in Appendix). This was believed important for two reasons. A well authored LMS dispels concerns that students revert to eGroup tools to compensate for a poorly supported (traditional) LMS. A well managed LMS might also lead to better (online) student engagement and thereby increase the likelihood of them using eGroup add-ons.

## Learner Surveys

Sixteen students completed all thirteen weeks of ENS2108. Thirteen students took part in the eGroup surveys. These surveys were paper-based (administered in class) with students given choice of participation. Participants also had the option of identifying their names or eGroup designation on the completed forms. These identifiers could also be left blank. Eight questions were included in the survey, detailed in Table 1. Only the results of seven questions are reported here. A single question (Q2) was later excluded due to mistyping. All surveys were administered in the last week of semester coinciding with the end of Assignment-2. Individuals had the option of forming eGroups of choice or

were placed into groups if this was not done. Six teams were formed, each of which was given an eGroup designation (A, B, …, F). One student undertook Assignment-2 on their own. This was primarily due to them missing a few weeks' of class at the start of semester (when teams were formed) as well as withdrawal of the other two members in their initial group. The student did respond as part of those surveyed but their data was excluded from those reported here. The student did however engage the lecturer in the discussion board and also utilised the file sharing facility. This left five eGroups of three members each within the survey pool. Graduate attributes in this unit are "ability to communicate", "critical appraisal skills" and "ability to generate ideas".

## Learner Perspectives

Figure 1 shows summary data from student surveys. Responses to Q1 indicate that students believe eGroup tools were useful to their work. Attempts to identify whether using e-mail was preferred over the discussion board (Q3) were inconclusive. Data did however (marginally) reveal preference for use of small discussion boards (team-based) over wider (class-based) discussion forums (Q4). Responses (Q5) also show a desire by students to have more eGroup like facilities within a (traditional) LMS.

Responses to Q6 are shown in Figure 2. This question gauged student perceptions on specific outcomes of eGroup usage. Responses (in order of popularity) were: access to lecturer feedback, achieving group based work more effectively, better group communication and (lastly with minimal agreement) getting work done on time.

A free to comment question (Q7) on what students believed the best aspects of eGroups yielded:

- "The fact that its like an online classroom. We could discuss any issues with the lecturer and other students. File exchange is a great idea - makes life easier"
- "Able to have lecturer feedback in assignment"
- "Easy set-up: no need to exchange different e-mails; easy file sharing; get help from lecturer as well without having to specifically e-mail or meet up"
- "It is very easy and fast. When you send a post everyone gets it almost instantly, you don't have to send each individual the same question"
- "helped complete group work! Made communication with the lecturer much easier"
- "File exchange and seeking feedback from the lecture [*sic*]"
- "Small discussion board. The use of file exchange feat*ure* is also a good *to*ol"
- "To get the lecture reply and the reply can show to *the g*roup member wit*hou*t doing any work on it"
- "It was very helpful in communi*cat*ing with your grou*p & e*xchang [*sic*] fi*les* was helpful"
- "Not having to separately email *al*l the *fil*es to gro*up me*mbers"
- "*Our* gro*up di*d not use the disc*uss*ion bo*ard*. In a gr*oup o*f 3 it *is* not *neces*sary. In a large group it would be great i.e. motor*spo*rt project"

Another free to comment question (Q8) on what aspect of eGroups needed improvement gave responses that were mostly technical in nature:

- "Lack of awareness. Never really appreciated the full potential of it until it was too late"
- "More user friendly instead of having to click on multiple links"
- "Layout should be a bit newer (like modern style forums)"
- "I hope to have something like chat box so it is more easy to communicate"
- "It would be handy in you could just click the communication link & it would go straight to your discussion board"
- "I had issues with File Exchange, could not open 12 pdf files, I'm unsure what the issue is"

## Conclusions

Extending a well authored, but traditional, LMS to include even basic file sharing and (text) discussion tools is perceived as beneficial by students. The (limited) data of this study suggests that more usage of such tools is warranted in cooperative work. A prime benefit from using these tools appears to be helping students seek feedback and communicate with lecturers. Other studies in the field also support this notion (Hutchinson, 2007; Lapointe & Reisetter, 2008; Olivas, 2002; Shieh et al., 2008). Such tools are readily available in some LMS and feedback suggests a desire for their use more often.

| Table 1: Questions reported on eGroup usage (student surveys) | | |
|---|---|---|
| | Survey Question | ***Reply Score Range*** |
| **Q1** | Do you believe the provision of the eGroups facility to you (File Exchange, small Discussion Board) was useful in helping you complete your assignment? | ***Scale 0:*** *I think it was not useful*<br>***Scale 10:*** *I think it was very useful* |
| **Q3** | Did you prefer using the small Discussion Board (on eGroups) to communicate with the rest of your assignment group rather than using regular e-mail? | ***Scale 0:*** *I used regular e-mail more than the Discussion Board to help complete my assignment.*<br>***Scale 10:*** *I used the Discussion Board more than regular e-mail to help complete my assignment.* |
| **Q4** | Would you feel more comfortable using the Discussion Board (on eGroups) to communicate with only your small assignment group or would you feel just as comfortable using the Discussion Board if it were open to the complete class? | ***Scale 0:*** *I would feel just as comfortable using the Discussion Board had it been open to all class.*<br>***Scale 10:*** *I would feel more comfortable using the Discussion Board within my assignment group only.* |
| **Q5** | Would you like more units of study (in addition to ENS2108 Mechanical Science) to have eGroups (small Discussion Boards, File Exchange) activated within MyECU? | ***Scale 0:*** *I do not see the need for having eGroups in more units of study.*<br>***Scale 10:*** *I definitely want more units of study to have eGroups.* |
| **Q6** | What were the outcomes of you using eGroups in this unit? | **Q6-1:** achieve group based work more effectively<br>**Q6-2:** communicate with the rest of the group more effectively<br>**Q6-3:** seek feedback from my lecturer if they were not available<br>**Q6-4:** probably get our group work done ontime |
| **Q7** | What were the best aspects of using eGroups (File Exchange, small Discussion Boards) in this unit? | |
| **Q8** | What aspects of using eGroups (File Exchange, small Discussion Boards) need improvement or expansion? | |

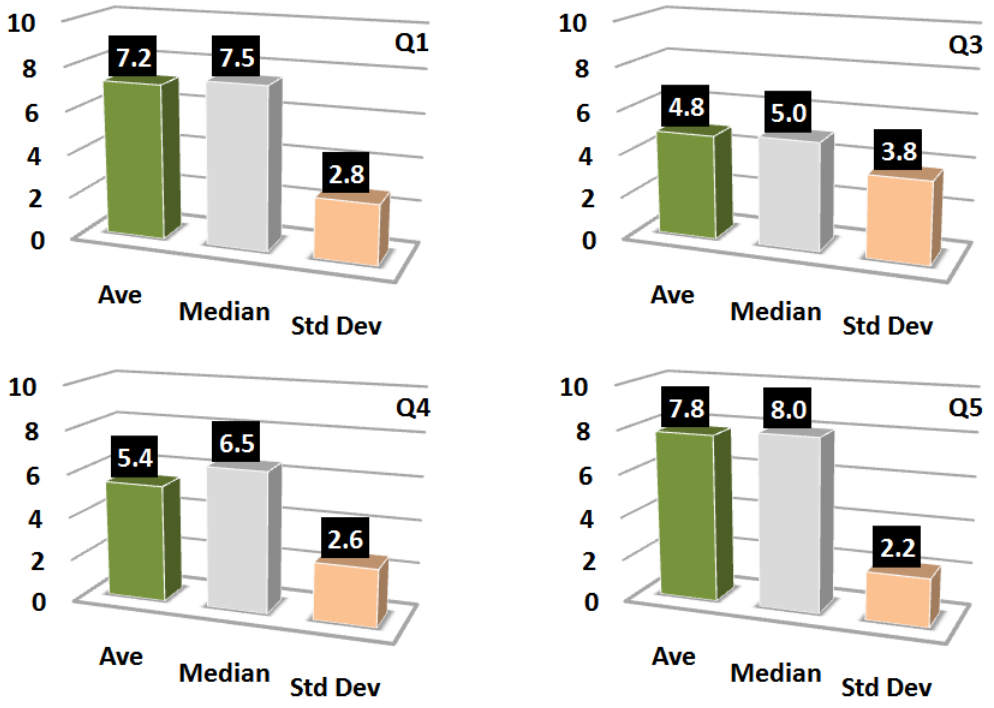


**Figure 1: Summary of responses in student surveys (Q1, Q3-Q5)**

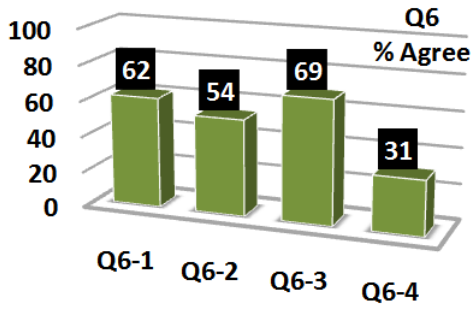


**Figure 2: Summary of responses in student surveys (Q6)**

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## Appendix

At the end of the teaching semester, peer reviews were sought from a senior (professorial) academic in the School of Engineering as well as an educational (LMS) designer. The review included a series of twenty-two questions covering several content areas of the MyECU site for ENS2108, excluding those for the eGroups. The last four questions of that survey were summative in the sense that they provided an 'overall impression' of the site. Table 2 in the Appendix lists these last four questions, all responses of which were in the 'strongly agree' category.

| **Table 2: Questions on 'overall impressions' of LMS site for unit (peer surveys)** |
|---|
| Q-The MyECU site for this unit helped students have a "clear understanding of what was required" of them? |
| Q-The MyECU site for this unit indicates "the learning materials in this unit were helpful"? |
| Q-The MyECU site for this unit reflects a unit that was "well organized"? |
| Q-If you were a student, how would you agree with the statement that "you are overall satisfied with the MyECU site for this unit"? |
| **Key to responses**: SD=strongly disagree; D=disagree; N=neither agree nor disagree; A=agree; SA=strongly agree |

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