

## Using wikis for effective peer assessment

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### KEYWORDS

Wikis, group work, peer assessment, communication

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**Abstract** In 2009, Curtin University began offering a Bachelor of Education (Primary) program fully online apart from practicum school placements. At Curtin, the Bachelor of Education course has the same structure and units regardless of whether it is taught on campus, regionally or online. The units match in content and assessment and all use Blackboard as the Learning Management System (LMS). For online students, the LMS is the sole source of unit information, documentation submission of assessments and interactions between the students, the teachers and the content and considerable thought has been given to assisting student development in the use of technology and optimising the likelihood of active engagement. Contrary to initial expectations, not all students were technologically sophisticated. Indeed many students were tentative—frightened that they would break something—and generally nervous about learning technologies. To engage students in the learning process, the decision was made to incorporate a wiki, TypeWithMe, into the group assignment. It was hoped that the wiki would benefit students in their group work and the peer assessments aspect of one of their assessments. The results indicated that even though students had concerns regarding their technological ability, they reported that TypeWithMe was easy to use and assisted in both their group work and peer assessment.

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### Background

In 2009, the School of Education at Curtin University entered into a partnership with Open Universities Australia (OUA) to become the provider of a Bachelor of Education (Primary) degree. This four-year degree is completed fully online with the exception of the teaching practicum requirements. The units are offered across four study periods of 13 weeks duration. Apart from practicum units (which run in the middle study periods due to school holidays), for each year of study, eight units are offered in two different study periods, meaning that study periods one and three each offer the same set of units and study periods two and four offer another set. This allows students a range of flexibility for choice and timing, even though two units per study period is considered a full time study load. The first cohort of enrolments across four units totalled 900 students. This initial large enrolment took staff by surprise, but the exponential growth of

the course over the next six study periods, saw the enrolments climb to over 5000 enrolments in one study period. The speedy growth of the course presented many challenges to those responsible for course management.

As this course is offered through OUA, there is open access to students for six of the eight first year units. Students from all states in Australia and internationally were attracted to the course and some units in particular attracted enrolments of over 2000 students. These students come to study from a variety of backgrounds that are not necessarily typical of a first year university student cohort. Many have not studied for a long time, some have left school before completion of Year 12, some are in full-time work and looking for a career change, some have English language issues and in terms of the skills necessary for negotiation of Blackboard and an online learning environment, most are technologically inexperienced.

Curtin University employs part-time tutors who act as a human interface between the university and its students. Each tutor is responsible for a group of approximately 75 students, giving content specific support for learning through a Blackboard site designed to encourage collaborative learning. Although recent literature discusses whether students are learning about technology or learning through technology, there is strong evidence that the integration of both is what leads to success. According to Salmon (2003), this combination needs to occur with and through interactions with other people. The teacher of any classroom, whether it has solid walls or is virtual, has much influence in shaping the learning environment and outcomes and carries the responsibility for creating the conditions that encourage a deep approach to learning which demonstrates a dynamic and interactive 'community of inquiry' (Garrison, Anderson & Archer, 2000). From the teachers' perspectives this means that they have pedagogical skills and content knowledge that allow them to manage a learning environment that develops and encourages students to think critically and to learn both independently and collaboratively. From each student's perspective, this requires higher-order cognitive processing that includes critical thinking and self-direction (Garrison & Archer, 2000).

Although studies have suggested that the ideal number for online tutorials is less than 25-30 (Anderson, 2004; Arbaugh & Benbunan-Finch, 2006), at Curtin, this ideal teacher/student ratio of 1:30 is not supported by economic reality. For this online course the tutorial groups have a student ratio of 1:75. These tutorial sizes of 75 students are something the course designers, tutors and students have to work with and around, but they do present an area of concern about how tutors are to maintain effective contact with their students and how to ensure that tentative students who are shy about using online communication mechanisms are not lost in the sheer weight of numbers. The staff involved in the teaching program chose to address this through the use of Web 2.0 applications that could be used to carefully introduce students to the concept of self-regulated learning, where the balance between teacher-directed learning and learner autonomy extends not only to the networked learning environment, but also to

assessment (Drexler, 2010). Once again, however, a challenge is created for staff. On one hand there is the formalized and structured LMS which guides students through weekly tasks and readings in much the same way as a face to face class would do and on the other, the desire to encourage students to learn through their interest in a developing community of practice (Wenger, 1999) where effective learning can be encouraged and developed.

Lecturers involved in this program agree with Rogoff's (2001) research which suggests that effective and deep learning occurs when instruction is focused on collaboration. Indeed collaborative learning and working in teams is recognized as a key competency for students (Guo & Stevens, 2011). Collaborative learning is different from cooperative learning. The former involves a concerted and coordinated effort to solve a problem, and the latter involves division of labour with each person taking responsibility for only part of the project (Roschelle & Teasley, 1995). Unfortunately, the formalised learning encouraged by the use of Blackboard promotes a focus upon learning as an individual and is targeted upon individual achievement at the expense of both collaborative and cooperative modalities. The challenge was to seek out technologies that would support collaborative learning. Staff acknowledged some areas of concern. They believed that there was some risk that students may become guarded and possessive about sharing material perhaps because they are used to the competitive nature of schooling. Students had to be encouraged to come to an understanding about the processes of online learning that can be geographically, intellectually and socially isolating.

Young and Norgard (2006) identified that students are likely to become more comfortable and more satisfied with online learning as their experience of the medium grows, suggesting that it is incumbent upon course designers to seek ways of increasing the opportunities for interaction and allowing students to adjust to the particular idiosyncrasies and benefits of this style of learning that requires some technological expertise. Whilst there is discussion that delivery through technological processes allows for varied access to learning materials, there are also claims that the technology is merely a vehicle to deliver the instruction rather than an actual influence on student achievement (Murphy, Penuel, Means, Korbak, & Whaley, 2001). The mandated use of the LMS within Curtin University means that course designers must seek out ways to engage online students in ways that do not merely become a poor cousin of face to face teaching and learning.

Seeking out technology support that is not merely an add-on, but will enhance student approaches to active participation and reflective practice was our biggest challenge. The chosen technology also had to 'fit' pedagogically with the aims of the unit and the course overall, as well as enabling (and not dis-abling) group work and peer assessment. Topping (1998) defines peer assessment as "an arrangement in which individuals consider the amount, level, value, worth quality or success of the products or outcomes of learning of peers with similar status" (p. 250). Within this study, students were asked not to assess

content, but rather to reflect on the value of the peer group in solving the assessment problem and producing a piece of work, the content of which would be evaluated by their tutor. We decided to use Boud, Cohen and Sampson's (1999) definition of peer review. It lists four components that our assessment design enabled students to engage in:

- Students work together to plan, engage in teamwork and become part of the learning community in which they have a stake;
- Reflection and exploration of ideas become more possible when the teacher is not an immediate presence;
- Students practise communicating in the subject area. They become used to peer critique and can adopt a reciprocal role;
- A group of students takes collective responsibility for identifying their own learning needs and how these might be addressed. This activity is a 'learning how to learn' skill as well as providing experience in learning how to cooperate with others.

As Boud et al. (1999, p. 414) remark, most sources of comment on peer review tend to be limited to its use as an instructional strategy for subject matter learning, the result of which may be reflected in examination results. We were more interested in exploring a path which might lead to the creation of community and authentic assessment. In addition, the pragmatism of initiating a process in which tutors were neither necessarily visible nor required by students was attractive in a massive online unit. We were also mindful that group interaction and cooperation is more likely where the tutor is not a constant presence (as noted above).

As the research participants were all first year students, we were wary of having them assess content. However, we wanted to send a message that we value working in groups that demonstrate cooperation and commitment. Boud et al. (1999) comment that although peer assessment has not been highly regarded in the literature, activity within a course is valued for the contribution it makes towards formal assessment. The challenge was to design a mechanism for peer assessment which students and staff saw as valid, transparent and worth effort to initiate.

This study describes the results of the impact of the chosen technological practice (that is, the wiki TypeWithMe) and its interaction with student attitudes to group work and peer review. The research questions investigated were:

1. What were student thoughts on using the wiki?
2. How did the use of the wiki influence student attitudes to group work?
3. How did the use of the wiki impact on student attitudes towards peer assessment?

## **Approach**

This research investigates one large first year unit within the online Bachelor of Education, (Primary) degree that ran in study period two of 2010 (31 May to 27 August). There were 2320 student enrolments, divided into 31 groups of 75 students with one tutor supporting the learning of each group. For many staff as well as students this was their first experience of online learning.

Newcomers to online learning face particular difficulties: many are new to study, many are tentative about embarking upon a new endeavour and many are very nervous about their capacity to succeed. We realised that a number of students, though attempting formal assignments, were not active on the Discussion Board either to discuss their learning or to post responses to their weekly readings and tasks. Our challenge was to attempt to introduce a community of practice through easy to use, flexible, intuitive and free technology in a setting where all students would have an opportunity to participate. We saw an opportunity to introduce this through an evaluative process.

We recognised assessment as another area that deserves attention in an online environment. Although quizzes had been suggested as a tool to measure understanding, we agreed with Palloff and Pratt (2009) who advised that online quizzes and tests may not serve students or instructors well and cite Milam, Voorhees and Bedard-Voorhees (2004) who suggest that as the paradigm for online learning is different, the methodology for assessing that learning should be different too. Peer review and assessment seemed to offer an instructional strategy which would engage all students and be instituted through small group activity.

### ***Teaching and Learning Activity***

The assessment exercise had its genesis in a reflective journal encompassing work which was completed weekly by all students. They were asked to discuss their views before engaging with materials and then again after content engagement. The assignment was creative in both content, choice of subject matter and mode of presentation, and therefore lent itself to group collaboration, discussion and cooperation. Having followed the journal entries of the students, we knew that all students who took part in this assessment had completed the journal to varying degrees of competency and therefore that all students would have some material with which to negotiate within the group.

Another challenge was the transparency of the assessment process. To this end we had to overcome general resistance to the process of peer review and group work generally, allay fears that the result might be in any way unfair, involve personal feelings or could not be effectively and objectively reviewed by the tutor.

We had previously noted from student feedback that both synchronous and asynchronous discussion had proven to be difficult when students were separated by time-zones within Australia (up to three hours from West to East in summer time) and

around the world with much larger time difference implications. Many students were in full or part time employment and many had family responsibilities that gave them a very limited window of opportunity to contact other students. To address these difficulties, we placed students in groups according to location time zones within Australia, and as far as practicable within reasonable zones throughout other countries. We found that this worked very well — only one student (located in Australia) complained that her family schedule interfered with her communication with other students. Enabling synchronous discussion through tutorial time-zone placement meant that we could expect that group discussion and peer assessment become a realistic endeavour.

We investigated a range of Wikis to support this process. Wikis have a range of features that can allow users to add content that can be edited by other users. They can allow the creation of documents without the need for technical skills around HTML. They can also show a history of a page's development that has been created, changed and mediated by the Wiki community (Guo & Stevens, 2011). We had previously experimented with a wiki application called EtherPad started by an innovative company in 2009. Within months, Google had acquired both the team and the application. After a vociferous worldwide protest, Google shelved its plans to kill off EtherPad and made it freely available and open source. A number of clones appeared. We chose a hosted site for the clone TypeWithMe (TWM), and introduced our students to the application. We asked them to form groups of five, with one member of the group having the responsibility of setting up a wiki and inviting other students in. We also asked them to invite tutors in, although we did not expect or want tutors to be part of the working wiki process.

TWM has a number of attractive features. It is elegantly designed, intuitive, agile and free and offers affordances which lend themselves to collaborative endeavour. Participants' written contributions are colour coded, there is a synchronous chat pad, a wiki page which is editable but undeletable and the site is private. Students within the same time zone were able to arrange to meet online, but also able to work asynchronously if and when they wished, leaving a message on the chat pad for other participants. There were a few hiccups. TWM went off-line twice for a couple of days which students found disconcerting, but because the site was hosted we were able to contact the CEO of the company and reassure the students that their work had not disappeared.

We felt that the assessment exercise, with its problem-based nature and freedom to choose a mode of presentation, would encourage students to discuss their learning and to cooperate in sharing technological knowledge, resulting in upper levels of cognitive development expressed in Bloom's taxonomy: analysis, synthesis and evaluation. We acknowledge that assessment is a form of power, but seek to subsume that power within actively designed processes that use constructivist principles. Further, studies have acknowledged that technology can support authentic assessment (Bennett, 2002 as cited in Buzzetto-More & Alade, 2006, p. 256).

Using Palloff and Pratt's (2009) rubric design approach we built a rubric created to test effective engagement within the group. Students were asked to assess engagement in five areas: Contribution, Quality of work, Preparedness, Working with others, and Time management within four degrees of competence: Routinely, Usually (or Almost Always), Sometimes, Rarely (as shown in Figure 1). The rubric was highly descriptive at each level, using verbs like participate, provide, contribute, procrastinate, ensure, listen, support, engage and share. We asked students to submit this as a private document through the Blackboard Assignment Manager and gave them one week after the submission of the assignment so that they would have some time to carefully consider the rubric. Half the marks for the assignment came from peer assessment of the effectiveness of individual contribution to the group effort and half the marks were assigned by the tutor for the finished product. This equal weighting was intended to show students that we take group work seriously and that we value their knowledge and opinion of group dynamics as an important contributory factor in the completed work.

<b>PEER ASSESSMENT EDP155</b>				
<b>Please note that you need to look carefully at this rubric <u>before</u> you start your group work. At the end of week eight, you will complete this rubric for yourself, before completing the peer assessment document for your group. (This will be supplied at the end of week 8 and must be placed in the Drop Box as directed by the end of week 9)</b>				
CATEGORY	4	3	2	1
<b>Contributions</b> 4	Always provides useful ideas and material when participating in the group discussion. Takes on an organizational role in the group and puts in considerable effort.	Generally provides useful ideas and material when participating in the group discussion. Is a reliable and competent group member.	Occasionally provides useful ideas and material when participating in the group discussion. A satisfactory group member who is obliging and does what is asked. Not always self-directed.	Very rarely provides useful ideas when participating in the group discussion. May refuse to participate or actively obstruct progress with argument or obstruction.
<b>Quality of Work</b> 4	Work is of consistently excellent quality.	Work is of high quality.	Work occasionally needs to be edited by other group members to ensure quality.	Provides work that is not up to standard and cannot be used without considerable revision by others
<b>Preparedness</b> 4	Work is always ready. Is proactive in looking for material	Almost always looks out needed materials and is ready to work.	Sometimes provides materials but is difficult to keep on focus.	Has to be constantly be reminded and chivvied to supply work.
<b>Working with Others</b> 4	Actively listens, shares and supports efforts of group members and attempts to keep the group working harmoniously. Self- directed and positive about the task. Is reliable about meeting on-	Generally listens shares and supports group members. Is a team player and rarely misses an agreed on-line meeting.	Usually listens, shares, and supports the group. Sometimes causes problems, but is generally able to accommodate group decisions. Might miss the	Finds it very challenging to work with a group: behaviour can be difficult. Rarely if ever engages in synchronous

	line and contributes well to the wiki discussion.		occasional synchronous discussion, but usually “catches up” on the wiki later.	discussion: is not present on the wiki. Is content to let others do the work and “go along for the ride”
<b>Time-management</b> 4	Is always mindful of time constraints, and tries to keep the group organised and working to a schedule. Can be relied upon to keep to deadlines.	Almost always is aware of group agreed deadlines and can usually be relied upon to produce material on time.	Sometimes procrastinates, but comes up with material on or just after the deadline. Can cause anxiety in group members by not always being reliable about agreed timelines.	Cannot be relied upon to produce material on time. Has many excuses and group deadlines have to be extended because of poor time management.

**Figure 1:** Rubric for Assessment task.

It is recognised that some students dislike group work and indeed, some feedback on the unit indicated that for some students this was indeed the case. Student responses indicated that this was mainly linked to unwillingness to engage with others, a perception that less able students would benefit undeservedly and that perceived personality clashes might affect marks. However, staff reassured students by explaining that the non-deletable Time-Slider function within the application could be useful if tutors felt that students’ assertions of non-performance by an individual needed to be verified. In these few cases, students were directly contacted by the tutor and asked to give some reasons why they should share in the mark assigned to the finished assignment by the tutor. Students in this position were uniformly unable to do so as the real time chat pad and the undeletable evidence on the wiki page demonstrated their lack of engagement.

## Findings

In a post-unit survey, students were asked to comment on the wiki experience (see Table 1), There were 247 responses out of a completing cohort of 1147 students and, even though most of the respondents had not used a wiki before, the overwhelming majority reported they found the wiki easy to use and could use it sufficiently to teach another how to use it.

**Table 1:** Student Responses to Questions Regarding the Use of Wikis and TypeWithMe

Question	Yes		No	
	Respondents	Percentage	Respondents	Percentage
Is this the first time you have used a wiki?	192	79%	51	21%
Did you find TypeWithMe easy to use?	202	87%	31	13%
Do you feel that you have learned enough about wikis to show someone else how to use this technology?	159	92%	14	8%



These results were enough to confirm that the careful introduction of this technology was a strategy which enabled students to engage positively in group collaboration. An additional survey administered by OUA served to further confirm this view. There were 255 respondents to this survey scored on a Likert scale of 1 - 4 with no neutral option. Mean scores revealed an overall satisfaction rating for the unit of 3.30 significantly higher than provider and OUA mean scores.

Several students' responses on the use of the wiki reflected the ease of communicating, for example, "enabled working in groups to be so much easier," "helpful when we needed to talk," "a good way to communicate when not everyone can be online at the same time," and, "record of our conversations, ideas, etc., that others could use to catch up on if they missed a 'meet up.'" The wiki also had an impact on the community cohesiveness: "I found the use of wiki with the group assignment very helpful and through this I have found a bond amongst some of my fellow peers making life studying on line a lot more relaxing," "great tool for meeting up with people," and, "a collective for ideas." Most negative comments focused on non-participation or poor connections, rather than the use of the wiki.

Students' feedback addressed the positives of working in a group, for example, "group work allowed for usually isolated study work to become less lonely," "the assessment had me constantly assessing my own learning," "group work kept us active," and, "group work helped us to connect." The use of the wiki impacted on the group work, "TWM was really user friendly and an efficient way to work as a group," "TWM was really easy and a great way to communicate," "the use of wiki pages helped in building knowledge understanding and creating a community of learners," "the group assignment, where we were able to pick the mode of presentation and topics we wanted to discuss," "the use of new technologies to engage and motivate," and, "learning how to learn in a more efficient manner."

The peer assessment exercise returned valuable information about group dynamics which was made transparent by the group wiki. It was made clear to students that if they failed to engage with the exercise that they would not automatically be assessed merely because their name was in the group list. In cases where there was discordance within groups, the tutor or unit coordinator used the time slider to determine the level of contribution and this was used in allocating marks. Of the 147 written responses to the question regarding experiences using peer assessment for the assignment, 98 were positive and 33 were negative (with 16 either neutral or not addressing the topic). As mentioned previously, specific comments addressed issues regarding the group dynamics (enabling the tutor to "get a real inside look at how the group worked together" and enabling students to "reflect on other peoples (sic) efforts"), as well as the opportunity to provide feedback to colleagues ("helps with the whole experience of giving constructive feedback," "I appreciate the experience of evaluating my peers as I see it as good practice") and the impact on their own learning (such as application of the criteria giving greater

consideration of the criteria – “it actually put into question what standards were to be achieved;” and how to work in a group – “it helps to improve performance for the next group assignment”).

## Conclusion

Even though a large proportion of students had not used a wiki an overwhelming majority found TypeWithMe easy to use and felt confident enough in their ability to teach someone else how to use it. Student responses to the unit satisfaction surveys showed that group work was seen in a positive light, with comments often linking the technology used (TypeWithMe) to the positive aspects of group work. This demonstrates the impact of the technology on the collaborative aspect of the assessment and reiterates the importance of matching the technology to the task. Further research to investigate which aspects of the wiki had most impact would be beneficial as it would assist in making strong links between pedagogy and the features offered by technology.

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