Online teaching as a reflective tool in constructive alignment

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Abstract
Online learning has infiltrated tertiary learning and teaching applications. It has also presented some serious challenges for learning and teaching outcomes, not the least of which is reducing / eliminating meaningful contact and interaction with students. Nevertheless, online learning presents enrichment in the construction of meaning in student learning through opportunities unfathomable for most university teachers when they were students. In this review, we present our ongoing journey in integrating web-support into teaching undergraduate units in early childhood within a constructive alignment framework (Biggs, 1999), the lessons we learned, and the pedagogical / curriculum reflections and revisions we undertook in quest of maximising teaching learning outcomes for our students. We conclude at this point in our journey, that online learning is an indispensable reflective tool that contributes to student empowerment when it enriches but does not displace face-to-face teaching. Additionally, we maintain that relational and socio-emotional contexts of learning enriched with online communications are paramount in obtaining deep learning.

Background:
Information and communication technologies (ICT) have visibly transformed teaching and learning, and present the potential to support constructivist approaches that develop learning environments more conducive to self-regulated learning (Candy, Crebert, & O'Leary, 1994). Benefits of web-supported learning include flexibility of access, and maintenance of parity between the learning experiences of internal (on campus) and external (distance) university students. Additionally, the introduction of new learning approaches may encourage more self-reflection, and the provision of access to interactive and ongoing communications may encourage participation towards construction of students' own learning experiences.

The expected benefits associated with online learning environments have provided teachers and researchers with opportunities to bring fresh perspectives into teaching pedagogy. Biggs (1999) has been influential in the field of tertiary teaching with what he calls constructive alignment, which has two fundamental streams: a) learning results from what the learner does, and b) learning / teaching activities must be congruent and consistent with the objectives the course is designed to achieve. In this model, student engagement with learning tasks is seen as being central in achieving meaningful or deep learning. The question that needs to be addressed therefore, is the following: which combinations of course and instructional design, ICT, and teaching practice variables...

* I speak for my colleagues who have been on the teaching teams with me, namely Lynn Clugston, Sheila Degotardi, Jan Tent, Adrienne Beattie and Margaret McNaught, and extend our sincere appreciation to our colleagues at the Center for Flexible Learning, and the Library, most notably Maree Gosper and Trish Edmonds for their invaluable assistance and collaboration in many of our ventures. I acknowledge with gratitude the various MU Teaching Development Grants small and large in assisting with our journey.
yield deep learning outcomes, and how can these be calibrated to obtain constructive alignment?

Our experience of teaching undergraduate core units which are fully online on a WebCT platform over the past five years is viewed in such a context of reflections in constructive alignment: it has enabled us to revisit our teaching practice to elicit meaningful student engagement and deep learning, thus making reflections and course revisions imperative. This presentation will summarise the context and the outcomes of this ongoing journey into uncharted territory that we now call home.

**Teaching/learning contexts**

The context of this investigation is the systematic evolution in the design and delivery of two undergraduate units over the past five years at the Institute of Early Childhood, Macquarie University, Sydney. The inquiry started by questioning the effectiveness of the online teaching in its inaugural applications, and moved to curriculum re-design to elicit deep learning, using the online learning platform as an additional reflective tool. Currently, both of these units are delivered using almost identical instructional strategies, although their contents are very different. The units are ECH 120 Teachers as Researchers, and ECH 320 Developmental Difference and Disability.

**Phase One: early experiences with ICT**

The initial flexible/online learning package for ECH 320 in 1998 was seen as a major innovation; in hindsight, it needed to be treated as an additional variable, and not the core of teaching/learning. It employed multiple technologies such as weekly face-to-face (audiotaped) lectures, a text book, as well as a unit web site, which contained three major components: course information (unit objectives, outline, assessment tasks, schedule of events), curriculum content (lecture overheads, weekly tutorial exercises and case studies, application and reflection questions and self-assessment tasks), and communication facilities (bulletin boards and personal mail).

In the first application of ICT, the teaching and learning activities designed on the web tutorials for the internally enrolled students essentially replaced the face-to-face tutorial sessions. Thus both internal and external students had comparable experiences in that they had access to lectures (in person or through audio tapes), online only tutorial activities, and a communication platform to post and share experiences.

Student evaluations of the unit indicated that while some attributes of this mode of learning were responded to very favourably, e.g., being able to access the online lecture notes prior to lectures, many other facets of the student responses invited us to review our practice. Only half of the students expressed satisfaction with overall web-based learning experience, and only 40% of the students wished that more units were delivered in a similar format (please see Table 1 for details). These results strongly suggested that in
our enthusiasm for wanting to incorporate ICT into our teaching, we had cut the students adrift in cyberspace.

In its 1999 applications, most of the unit parameters and online delivery mode were replicated, except that face to face tutorials were now offered on a fortnightly and voluntary bases for the internally enrolled students. A significant jump in the student satisfaction was noted as determined by the unit evaluations containing the same questions as the previous year (see Table 1, italics). The increase in students' satisfaction with the unit was attributed to restoration of the availability (as opposed to the compulsory attendance) of face-to-face tutorials.

<table>
<thead>
<tr>
<th></th>
<th>ECH 320, 1998 N=115</th>
<th></th>
<th>ECH 320, 1999 n=108</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SA+A</td>
<td>D+SD</td>
<td>Mean</td>
<td>SA+A</td>
</tr>
<tr>
<td>1.</td>
<td>I was able to find my way easily around the web site</td>
<td>74%</td>
<td>10%</td>
<td>3.8</td>
</tr>
<tr>
<td>2.</td>
<td>Links to course materials are always in working order.</td>
<td>63%</td>
<td>16%</td>
<td>3.6</td>
</tr>
<tr>
<td>3.</td>
<td>Training offered on campus for the web site was sufficient.</td>
<td>58%</td>
<td>4%</td>
<td>3.6</td>
</tr>
<tr>
<td>4.</td>
<td>My computer skills were good enough for web-based learning.</td>
<td>79%</td>
<td>9%</td>
<td>3.9</td>
</tr>
<tr>
<td>5.</td>
<td>Face-to-face, telephone and computer communications met my needs for staff assistance.</td>
<td>39%</td>
<td>29%</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Compared to traditional tutorials, I was better able to interact through the web.</td>
<td>28%</td>
<td>30%</td>
<td>2.9</td>
</tr>
<tr>
<td>7.</td>
<td>Accessing lecture notes prior to the lecture was helpful.</td>
<td>83%</td>
<td>2%</td>
<td>4.4</td>
</tr>
<tr>
<td>8.</td>
<td>How would you rate the contents and quality of web materials (excellent-v. poor)</td>
<td>84%</td>
<td>6%</td>
<td>4.1</td>
</tr>
<tr>
<td>9.</td>
<td>How would you rate the overall web-based learning experience in this unit?</td>
<td>51%</td>
<td>21%</td>
<td>3.4</td>
</tr>
<tr>
<td>10.</td>
<td>I would like to see more units delivered on a web-supported format.</td>
<td>40%</td>
<td>33%</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 1: Pooled student positive responses (Strongly agree and Agree; SA+A) versus negative responses (Disagree and Strongly disagree; D+SD), and the value mean, where 5 = Strongly agree, 4 = Agree, 3 = Neutral, 2 = Disagree and 1 = Strongly disagree for ECH 320 in 1998 and 1999.

Towards uncovering the impact of ICT as an independent variable on teaching learning outcomes, the first phase of flexible/online delivery and its evaluations made a few basics abundantly clear:
- online learning was here to stay as its benefits by far outweighed the traditional teaching modes, particularly for distance students;
- traditional face-to-face tutorial teaching needed to be available, at least as an option, to maximise the benefits of online learning experiences internal students;

Thus we tend to think of Phase I as a liberating experience, in that having accepted these issues, we were now at liberty to focus in on teaching learning outcomes that are related to content, and not just form. In other words, our debate was not whether online learning
facilitated learning or not; rather, we focussed in on evaluating every element of the course content and curricula, and treated online learning as yet another variable in learning which had to be fine tuned.

**Phase Two: curriculum re-design for constructive alignment**

These insights were brought to bear in the re-designing of the second undergraduate unit in 2000, ECH 120 Teachers as Researchers, which was also fully online. This unit had to integrate into its context the acquisition of generic ITC skills and literacies, as the showcase of Macquarie University Targetted Flagship Grant in Generic Skills through a collaborative project between the IEC and the Library.

The delivery format of the unit was weekly two-hour lectures and one hour face-to-face tutorial over 11 teaching weeks, as well as fully online presentation with all its content (lectures, tutorials, resource materials) and communications (bulletin board and e-mail); the decision had already been made that traditional and online modes of delivery were to complement one another based on our experience with ECH 320.

Its conceptualisation and re-design were driven by principles of sound pedagogical practice such as constructive alignment (Briggs, 1999), collaborative and constructivist learning and teaching (Walker, 1995; Grabinger, 1996), contextualised and problem-based learning (Schank, Fano, Jona, & Bell, 1994; Herrington & Oliver, 1999) and integration of generic information and communication technology and literacy skills into the academic preparation of incoming university students (Bruce, 1998; Candy, 2000). The process of redesigning and implementing this unit in fact became a facilitated journey because of expected and unexpected collaborations and outcomes, which are explained in detail elsewhere (Talay-Öngan, Edmonds, Gosper and McNaught, 2002). These features are summarised below.

**Contextualisation of ICT literacy skills:** A central re-design feature of the unit was the integration and contextualisation of ICT skills within its scope. The ICT skills and competencies acquired were interwoven into unit objectives, online learning environment and the unit requirements and assignments, ensuring a meaningful context of application of these skills and their generalisation.

**Learning about research while researching one's learning:** Students had to work in collaborative teams to produce a research project as a part of their assessment. The student research projects systematically analysed an aspect of the processes involved in constructing their knowledge and skills in this unit. This initiative allowed the students to learn by doing.

**Collaborative learning and teaching:** Collaborative learning was integrated to the student assessment through the generation of a hands-on research project. In a process of multi-layered collaborative teaching and learning, a community of learners evolved, in which both the teachers and the learners were valued for their learning and jointly
constructed the ‘researcher’ identities (Wenger, 1998). These multi-level collaborations included online collaborations through the bulletin board, virtual, as well as face-to-face tutorials, and students in collaborative research teams. In general, collaborative teams were reported to pose more difficulties for distance education students; although online communication was a great facilitator, distance and lack of adequate meeting opportunities hampered efforts in obtaining optimal outcomes.

**Skill development in being consumers as well as producers of research:** The unit design integrated the two perspectives stated in the unit objectives: teachers as consumers of research with a strong understanding of rigorous research methodology and critical evaluation skills, as well as teachers as producers of research in their professional practice. As consumers of research, students needed considerable content and an understanding of more traditional research paradigms, whereas as producers of research, they needed an appreciation of more recent perspectives in teacher education and practice, where reflective practice, documentation and action research are highly valued.

**Ongoing saga: Evaluations, reflections and revisions**

Below are some of the findings from student evaluations over consecutive years. As per the above, the acquisition and application of ICT skills to online unit access and communications, and electronic research skills and their contextualised manifestations in assessment tasks were in the foreground.

**Student evaluations: Year 2000**

In 2000, students in ECH120 rated the following as being important for their learning experience (in descending order):

- Access to lecture notes prior to the lectures (90.7%),
- direct online access to the Library (89.8%),
- flexibility of access to unit materials (87.3%),
- online communication with fellow students and staff (75.9%),
- opportunities for collaborative work (73.4%),
- online bulletin board postings and discussions (70.8%),
- weekly application and reflection exercises (56.9%),
- parity between external and internal learning/teaching (43.4%),
- digitally recorded online lectures (25.3%),
- digital visual images of staff and fellow students (18.9%),
- online submission of assignments (17.7%).

98% of the students rated the overall IT-supported experience in ECH120 as being satisfactory or better and only 9.2% responded that they would disagree or strongly disagree with the statement ‘Compared to traditional University teaching, I prefer the ECH120 approach offering a combination of online and face-to-face meetings.’

Students felt that the following were the best aspects of the unit in 2000:
Online learning: unit web site, bulletin board, speed of response to queries by staff, feeling a part of the unit community, availability of lecture notes prior to lectures, and ICT library training.

Course content and delivery: Tutors and teachers (support, personality and enthusiasm), staff experiences in research, relevance of subject content to further study, group work, being able to practice what was learned, and tutorials.

Although these results were quite encouraging, we also had to pay attention to those attributes of the unit that students felt could be improved. Content analysis of the open-ended questions revealed the following responses as being common problematic themes:

- Computer access, dissatisfaction with the textbook, easy access to a glossary;
- More comprehensive, clearer and better organized unit outline;
- Too demanding for 100-level students and not commensurate with a 3 credit point unit;
- Difficulties with collaboration, an additional on-campus day, and more face-to-face time, which had been compromised by allotting some tutorial times to ICT training.

In Year 2001

Clearly, 2001 was to be a re-design opportunity for the unit in efforts of calibrating it for better learning teaching outcomes. The following were done in response to the feedback from the previous year:

- Collaborative experiences were valued highly and remain pivotal in this unit as a Collaborative Research Project (CRP) which spans the semester, culminating in a hands-on research project produced and delivered by student teams.
- The unit outline has been re-written with much more attention to detail to assessment tasks, which have also been scaffolded and staged.
- An online ‘academic writing and critical thinking skills’ module has been incorporated into the unit as a series of tutorial and an assessment tasks;
- The ICT training sessions have been allocated the first week of tutorials to enable students to access and navigate their unit web site and communication facilities. LIBSOL (Libraries On Line), encompassing electronic data base research skills through citations, abstracts and journal articles have now been modularized in an online component which is available for students from week 1, complete with a built-in assessment task (quiz; 5%). The final component of the ICT skills, ‘accessing the internet for scholarly materials’ has been incorporated into a hands-on lecture hour demonstration. These applications resulted in an increase in the weekly face-to-face tutorials.
- In 2001 external students were provided with an on-campus day in week 1 in which they acquired their online unit access and navigation training as well as the formation of their collaborative research teams, replete with their research questions before they go home. The online tutorials and communications as well as the feedback on their stage 1 of their project enabled them to complete and present their collaborative research project on on-campus day 2 in week 10.
• The final examination (40%), a requirement for core units, was designed to have a 'problem-based approach' where the students will be asked to solve problems likely to be encountered in professional life.
• The textbook has been changed as recommended by the students.

The end of the semester student evaluations of ECH 120 in 2001 almost dovetailed the results presented above - 96% rated their overall web-supported learning experience positively, (satisfactory, 20%; good, 51%; and excellent, 25%), and 65% preferred the combination of online and traditional teaching methods. Nearly 87% felt that the online research and communication skills they had acquired in this unit were relevant for further study and professional development. When asked what aspects of the unit could be improved, students now indicated only three items: that the work load was too much for a 3 credit-point unit, that downloading the bulletin board took too long, and that external students had difficulty working collaboratively.

In Year 2002:

Our job of recalibrating the unit in 2002 became less arduous. Nevertheless, the unit outline was scrutinised by the team to enhance clarity, minor adjustments in assessment tasks were trialled (i.e., increasing the overall weight of CRP, and bringing the short essay writing task to Week 3 from Week 12), and online bulletin boards were constructed for smaller chunks of online communications which were cleared after 3-4 weeks. Additionally, a third on-campus meeting called the Collaboration Day was instituted specifically for distance students (but it was open to all), which was compulsory if they had not had a chance to work collaboratively with their peers yet.

Analyses of online communications

There were in excess of 3000 bits of communication on the unit website in 2002, many of which had the function of fulfilling the requirements of the unit by responding to set tasks. Other functions focused on information seeking or providing, and acknowledging and/or giving emotional support and motivation. The themes which became quite obvious, and functions which emerged in spontaneous messages over the weeks can be summarised as follows:

♦ A climate of high intellectual demand coupled with high emotional and communicative support: An emotional climate was created through online communications, where students were encouraged for perseverance in the challenges presented by the unit, recognised and supported for their affective states, and a collective spirit of humour and sharing of vulnerabilities were welcomed. A true spirit of community of learners in which students and teachers mutually contribute to the construction of knowledge in a safe environment was built. Additionally, students supported and scaffolded each other with their queries in a spirit of camaraderie. We found that attending to the emotional agenda, the underbelly of all human pursuits, had a facilitative effect as much for the students as for the teachers.
Student feelings of empowerment by completing the online modules and assignments:
Of the 227 posting to one tutor's bulletin board, 77 (i.e., 34%) voluntarily stated that they had learned x, y or z from the course which would then enable them to do a, b, or c, with particular reference to other units and their professional lives as contexts. Many third year students expressed their amazement at how they had survived without this knowledge thus far, and how helpful it would have been to their study had it been in their first year. Earlier messages emphasise empowerment through online and ICT skills, whereas those towards the end of the semester tend to reflect the value of research and critical thinking skills as an attitude.

Constructing the identity of self as researcher:
Over the weeks, it is evident that students become more enthusiastic and confident about their research projects and the value of doing the course as a whole. They also reflect on various research issues (reliability and ethics being the predominant ones) with appreciation and concern over and beyond their own projects. By the end of the unit, many students seem to have developed a cautiously confident image of the self as a researcher.

Recognition and appreciation of emotional support:
Students posted messages which indicated their surprise and appreciation for the warmth and support they were given by their teachers with increasing frequency and intensity throughout the semester, and openly and communally expressed their thanks. Many saw their teachers as mentors and the unit as a journey, through which they had achieved heights they initially thought were unlikely.

A sample of online comments from the students is presented below.

It (the unit) extended my learning abilities: programming and time management of topic areas that spilled over into my other units and have now become a study habit. It pushed me into becoming a more knowledgeable of Library resource and electronic resource and sparked interest in seeking areas normally outside my referenced parameters of readings enclosed in study guides. Despite its intense and challenging format the unit is incredibly useful; a solid foundation to future studies.

OCS (days) were extremely helpful and nurturing, and step by step progression was great. Thank you for the support and scaffolding of the teaching team. Your enthusiasm and motivation have helped me through what initially seemed to be an overwhelming subject.

. I enjoyed the challenge and rose to meet it; it benchmarked the unit for me. I really enjoyed this unit and feel that not only will I benefit from the epistemology of the unit content, but also felt appreciated in the way I was treated, as a student, but also as an adult learner.

The way we did our assessments in small chunks was fantastic! Initially reading the unit outline, it seemed so overwhelming but as we did each small assessment we slowly climbed the mountain and now we have almost conquered it. Overall, it was a fantastic unit (I) thoroughly recommend it, skills I have gained are going to assist my further university studies so much.

Although I was at first put off about the online aspects of the unit, I gradually looked upon online learning as favourable and informative during my studies. The Bulletin Board is a good way of staying in touch and up to date with unit requirements. ECH 120 is step by step hands on learning which helps us make sense of the unit material in a meaningful way.
Constructive alignment across two units

In developing his views on constructive alignment, Biggs (1999, p. 25) cites Shuel (1986) who posits that for the students to learn the desired outcomes, teachers need to engage them in tasks that reflect those outcomes. We argue that engagement and deep learning is a community affair: all members of a course / unit community, the learners as well as their teachers, need to be immersed in a culture of mutual support, shared meanings, ongoing reflections and collective empowerment, and that online learning and communication facilities have become indispensable tools in achieving these outcomes. In their current applications, both ECH 120 and ECH 320, despite their content and level differences, contain dimensions which aim to achieve constructive alignment:

- Course objectives are clearly and carefully mapped onto assessment tasks. Assessment tasks are either frequent (five bi-weekly quizzes) or progressive (staged submission of reports with feedback on each submission) so as to maintain a constant level of student engagement.
- Course objectives are achieved by providing learning by doing opportunities. In Teachers as Researchers, students propose, design, conduct and write the report for a research project on an aspect of their learning experiences in the unit; in Developmental Difference and Disability, they seek out a family with a child with a disability, and undertake a multi-faceted Child and Family Report, which includes obtaining first hand information through a family interview, and planning for the child.
- Promoting interactive reflections and arguments among students towards constructing shared meanings is part of an assessment and takes place in weekly online postings, which are promptly responded to and mediated by the teachers.
- The traditional lectures have shifted to problem-based learning, during which content is derived from application of real-life scenarios, whether it be an ongoing research project, whose sections are undertaken in class (ECH 120), or case studies and vignettes of children and families (ECH 320).
- Building a sense of belongingness in multiple levels within each community of learners commences with a letter to the students from the course coordinator a month prior to classes. Both internal and external students are met with in the first week of classes, at which time their team engagements with their major project commences. Similarly, all students share with their community of learners the fruits of their labour in a Conference Day in the last few weeks, in classes or second on campus day.
- Continual emotional support as well as academic scaffolding for students are available in embedded circles, which include each student's collaborative peer team, their face-to-face tutorial groups, their larger online tutorial groups, and the larger class contexts.

Conclusions

Ongoing integration of innovation, revision and critical evaluation into our teaching practice may increase our workloads, but it also increases our job satisfaction immensely. We feel teaching is a quest of the mind and of the heart, perhaps in equal measures. Additionally, collaboration, emotional and academic support, and co-construction of
shared meanings between all members of a learning community are significant assets in obtaining the desired learning and teaching outcomes. Being passionate about our craft seems to inspire and motivate students, conquering challenges appears to empower students as well as teachers, and shared laughter and angst too, seem to lighten our loads. We maintain that both teaching and learning are emotionally driven.

References


