The ‘assessment for learning’ pedagogical approach in an Academic Integrity online course development

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Abstract. The online academic integrity course development at the University of Auckland has confirmed recent studies on the practice and impacts of an ‘assessment for learning’ approach in higher education (Gikandi, Morrow & Davis, 2011; McDowell, Sambell & Montgomery, 2013). While assessment is commonly given subsequent to and independent of learning, an ‘assessment for learning’ approach can be defined as “any assessment for which the first priority in its design and practice is to serve the purpose of promoting students’ learning” (Black et al, 2003, p. 10). This article demonstrates how the ‘assessment for learning’ approach was constructively applied in an Academic Integrity online course development.

The University of Auckland’s compulsory Academic Integrity course consists of five modules. Each module has formative assessment activities and a set of summative assessment online tests. Usability testing results and students’ feedback informed the course design throughout its development. Five rounds of usability testing were conducted. The findings showed that students responded positively to a combination of multi-media interactive formative assessment activities and online summative tests. This includes real life problem-based scenarios, self-assessment quizzes and fill-in-the-gaps storylines.

Each summative assessment question was linked back to a relevant section of the online module. Students were asked to find and read specific information in a course module (e.g. view video, read scenario, complete an activity) and then select the correct answer. A question bank consisting of over 250 multi-choice, scenario-based questions was created, and every student was given a completely new set of six randomly selected questions for each of the five modules in order to prevent repetition and the sharing of answers.

This project is significant because it effectively applies the ‘assessment for learning’ approach. By creating combined formative and summative assessments in an online learning environment and applying informed learning design, the University of Auckland’s Academic Integrity online course was successfully developed and well received by students and staff during its pilot in 2012 and faculty-based implementation in 2013.

Key outcomes:

1. An ‘assessment for learning’ approach was effectively applied to the Academic Integrity online course development, enhancing the understanding of the University’s academic integrity policy, guidelines and procedures.
2. Implementation of formative and summative assessments in virtual learning environments effectively engaged students and enhanced learning processes.

Discussion questions:

1. How can the ‘assessment for learning’ approach be applied in virtual learning environments as a framework for the design of student-centred and self-reflective interactive activities?
2. How can usability testing inform the design of different types of assessments in an academic integrity online course?

Keywords: academic integrity, formative assessment, summative assessment, ‘assessment for learning’ pedagogy, usability testing, online course design

Background

An Academic Integrity online course was developed at The University of Auckland (UoA) during 2011-2012. The project was led by the University of Auckland Library and more than ninety University staff members contributed to its development. The Academic Integrity course was made available to students in January 2013. Since then, more than 10,000 new undergraduate, postgraduate and doctoral students have enrolled. From 2014, the course will be compulsory for all new students at the University, including undergraduates, postgraduates and doctoral students.

The University of Auckland Academic Integrity online course consists of five modules:

Module 1: Academic integrity at the University
- 1.1 What is academic integrity?
- 1.2 Understanding the academic environment
- 1.3 The University of Auckland Graduate Profiles

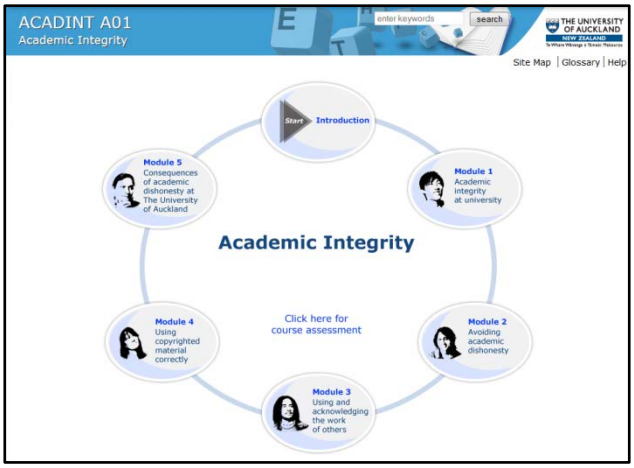
Module 2: Avoiding academic dishonesty
- 2.1 Examples of academic dishonesty
- 2.2 When working in groups…
- 2.3 When getting and giving help…

Module 3: Using and acknowledging the work of others
- 3.1 Quoting, paraphrasing and summarising
- 3.2 Citing and referencing
- 3.3 Avoid plagiarism

Module 4: Using copyrighted material correctly
- 4.1 What is copyright?
- 4.2 How to use copyrighted material?
- 4.3 What is Creative Commons?
  Intellectual property (IP)

Module 5: Consequences of academic dishonesty at university
- 5.1 What happens if someone is academically dishonest?
- 5.2 What happens if someone cheats during an exam?
- 5.3 Equip yourself

Tests (access page to compulsory online test – one set of questions for each module)



Introduction & Literature Review

Recent studies into the practice and impacts of 'assessment for learning' pedagogy in higher education show that the application of formative and summative assessment in a virtual environment can effectively engage students and enhance learning processes (Gikandi, Morrow & Davis, 2011; McDowell, Sambell & Montgomery, 2013; Black et al., 2003). The use of continuous assessment is recognised as a powerful practice which supports high-quality learning and provides students with timely feedback to facilitate the self-reflective process. Taras (2009) demonstrated the importance of the combined application of formative and summative assessments in teaching and learning, as well as the use of summative assessment to support formative learning objectives.

Research by Black and Wiliam (1998a & 1998b) is considered a milestone in the development of 'assessment for learning' pedagogy (Gardner, 2006). The work of Black and Wiliam has been disseminated by the Assessment Reform Group (Black et al, 2003) which promotes formative assessment techniques to enhance student engagement and positive learning outcomes. The Assessment Reform Group employs the following 'assessment for learning' practices:

- Self-assessment activities
- Immediate and continuous feedback/response on the progress of student learning
- Peer assessment
- Enhancing the intrinsic 'motivation to learn' by enhancing student engagement and promoting students' own responsibility for their learning
- Communicating clear criteria against which the progress of student learning will be assessed.

'Assessment for learning' is a pedagogical approach focussed on enhancing student learning through assessment. It is defined as "any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning" rather than serving the "purposes of accountability and certifying competence"

(Black et al, 2003, p. 10). The design principle guiding this pedagogy is that assessment forms an organic part of the learning process (Hattie, 2007 & 2009). Wiliam (2011) highlights the importance of differentiating 'formative assessment' from 'assessment for learning' pedagogy. Though the two terms have commonly been used as synonyms, Wiliam argues that restricting the use of term 'assessment for learning' to formative types of assessment only is limiting.

Several studies on academic integrity online activities and tutorials focus on the design and analysis of the effectiveness of e-learning activities and tools (Owens & White, 2013; Kellum, Mark & Riley-Huff, 2011; Belter & du Pre, 2009; Jimenez, O'Neill-Carrillo & Rodriguez, 2009; Arko, McAllister & Goss, 2005; Whitley Jr. & Keith-Spiegel, 2001). Some key e-learning design principles are addressed in these studies, such as the significance of a student-centred pedagogical approach, the creation of interactive tools and multimedia (use of videos, graphics, images), self-assessment quizzes, reflective exercises and practical examples with a question-and-click response (Arko et al., 2005). Another common feature favoured by these studies is the use of links to existing e-learning objects, tools and activities created at other universities. Kellum, Mark & Riley-Huff (2011) describe the design of summative assessment (multiple choice online quiz embedded in the academic course curriculum) as a key feature of the academic integrity online tutorial. While these projects all successfully use a student-centred instructional approach, none explicitly apply an 'assessment for learning' constructivist design.

This paper will discuss how the 'assessment for learning' pedagogy has been applied in the UoA Academic Integrity online course development and the effectiveness of this approach.

Assessment for Learning: Formative Assessment

The University of Auckland's *Assessment of Student Learning Policy* (2011) defines the main objective of formative assessment as: "to provide regular feedback in order to stimulate learning and to provide students with information which will enable them to judge the effectiveness of their learning strategies and to make progress." (p. 2). Gikandi, Morrow and Davis (2011) also define formative assessment as 'assessment for learning' "that occurs during the course of instruction with the aim to support learning" (p. 2336). Following the principles of activity theory and cognitive flexibility theory (Jonassen & Rohrer-Murphy, 1999), the Academic Integrity online course has been designed as a complex learning environment that provides multiple perspectives and representations of academic integrity practices, issues and policies. Based on their review of literature, Gikandi, Morrow and Davis (2011) find that the validity of online formative assessment is related to the following characteristics:

- Authenticity of assessment activities
- Effective formative feedback
- Multidimensional perspectives of the intended and achieved curriculum
- Learner support.

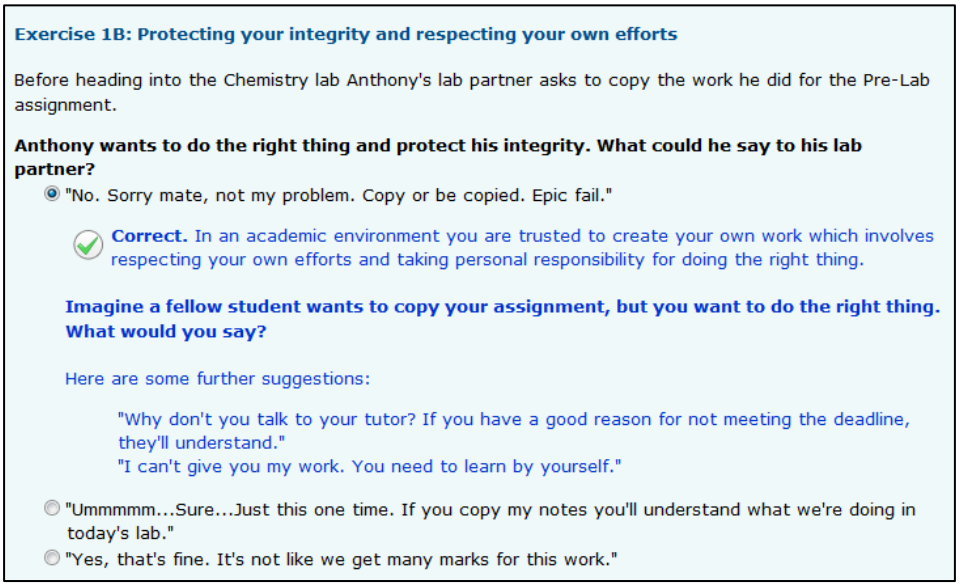
Recent studies highlight the effectiveness and significance of immediate and ongoing feedback provided through formative and summative online assessments. Gikandi et al. (2011) confirm the benefits of formative feedback in fostering student engagement, improved achievement and enhanced intrinsic motivation. Based on the results of his research, Hattie (2009) found that students used formative feedback to identify own errors and gaps in their knowledge and sought thorough, detailed and explanatory comments. Hattie and Timperley (2007) define the key characteristics of effective feedback as "clear, purposeful, meaningful, and compatible with students' prior knowledge…" (p.107). Gibbs and Simpson (2004) also place importance on feedback provided through assessment. Black and Wiliam (2006) point out the relevance of Vygotsky's notion of the Zone of Proximal Development (ZPD) in the process of providing and receiving formative feedback. ZPD is defined by Vygotsky as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky,1978, p.86).
Understanding new information, new ideas and phenomena, being able to respond and select the correct answer while completing e-learning activities, are all challenges which act as effective drivers for the creation of new knowledge and occurrence of ZPD during the learning process.

The 'assessment for learning' approach was applied in the University of Auckland Academic Integrity online course development as the result of usability testing. The first testing round revealed a desire among students for feedback on exercises enabling them to reflect on their learning. Participants commented that too much text was off-putting and that the rich media interactive elements should be simpler to navigate and preferably provide comprehensive feedback based on the selections students made in each activity. The second and third rounds of usability testing resulted in greater clarity between the content, interactive e-learning objects and functionalities. The analysis of the gathered results revealed the following students' preferences and learning needs:

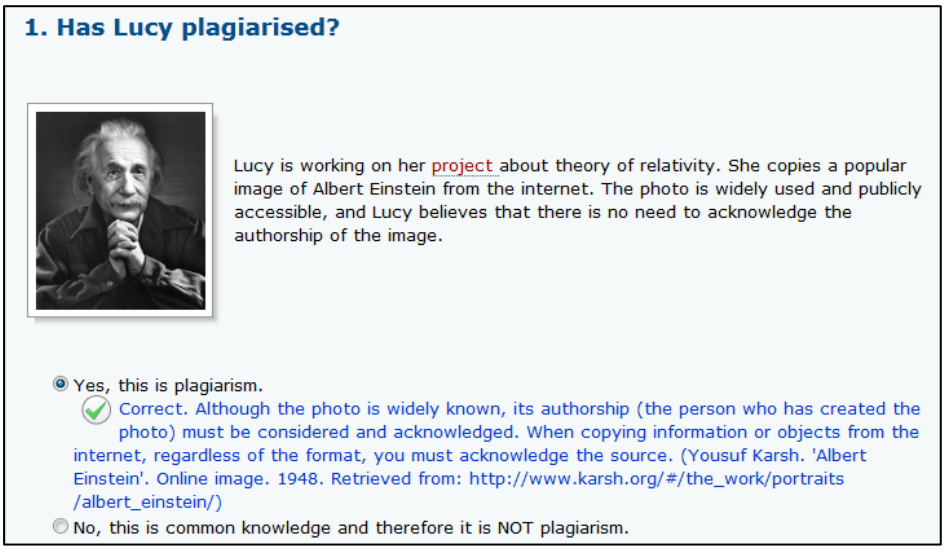
- The interactive activities should provide clear feedback/results.
- A preference for multiple and frequent true/false questioning with instant and clear feedback.
- A preference for shorter sections of text, interrupted by interactive components and self- testing.
- The need for frequent problem-based and discovery opportunities.
- A preference towards assessment activities focused on clear and explicit learning outcomes.
- An expectation that any section of the course site leads to some type of self-test and reflective event or action.
- The need for continuous feedback to show how students were progressing through the course including multiple and comprehensive feedback statements.

In order to accommodate these findings and students' learning needs, formative assessment e-learning activities were integrated throughout all five modules in the form of real-life scenarios, case-based scenarios, narrative scenarios and fill-in-the-gaps storylines. In these formative e-learning exercises, immediate feedback is provided for both correct and incorrect answers. Feedback is formulated to build on students' existing knowledge and expand their learning by either recommending positive action/s or convenient ways to obtain further information. This is where Vygotsky's Zone of Proximal Development can be seen as students are guided from the space of familiarity towards developing an understanding of new information, policies and concepts. Here are some examples of formative assessment e-learning exercises, including immediate feedback samples.

1. **Scenario-based questions**. Students are asked to:
   - Decide which point of view/position to defend, e.g., "Should he/she do this? Why or why not?"
   - Take a role, e.g., "What would you do if you were this person/ in this situation?"



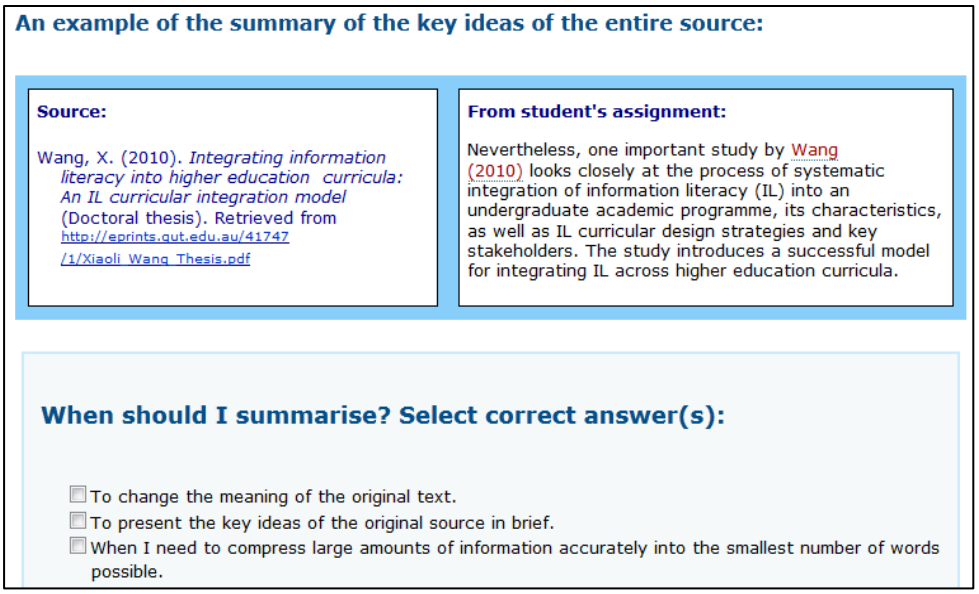
- Think about how the problem could have been avoided, e.g., "What went wrong here?"



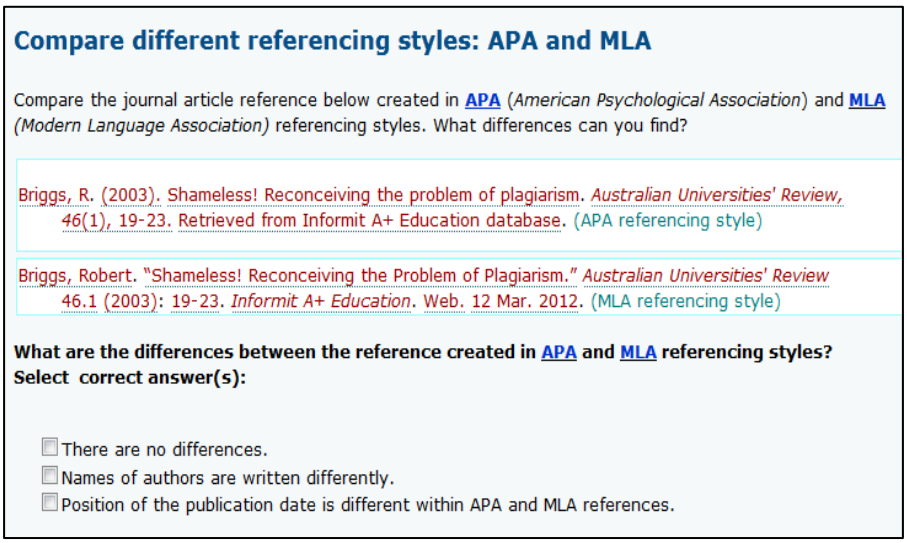
2. **Self-assessment quizzes:**

3. **Analysis of the text samples provided (original text vs paraphrase, summary or quote)**

These types of self-assessment activities are repeated two to three times within one module to enhance understanding of academic writing techniques (paraphrasing, quoting, summarising, citing and referencing). Two examples are:



- Analysis of a citation or reference provided (e.g., compare and identify similarities; select the accurate one; correct the mistake)



Assessment for Learning: Summative Assessment

According to the University of Auckland's *Assessment of Student Learning Policy,* the main purpose of summative assessment is to "measure a student's performance or level of achievement at the end of a unit or study" (2011, p. 2). Summative assessment in the University of Auckland Academic Integrity online course is designed according to the principles of 'assessment for learning' pedagogy as an e-learning activity, and so has a double function. It is intended to enable the creation of new knowledge, in addition to its primary purpose to assess levels of students' understanding of academic integrity principles and recommended scholarly practices in higher education.

Gikandi, Morrow and Davis (2011) point out that summative assessment may also serve a formative role to inform and enhance further learning. One of the key objectives of the Academic Integrity course's summative assessment is to initiate and enhance students' motivation to learn within the Zone of Proximal Development to a higher level of knowledge acquisition. The boundary between the two types of assessments appears ambiguous at times as many online summative test questions were developed from the original formative e-learning activities and self-test quizzes. There have been real challenges in designing the summative assessment to accommodate the following criteria at the University of Auckland, such as:

Diverse Student Criteria:

- An extremely large student group (over 10,000 newly enrolled students per year).
- Students at different stages of study (undergraduate, postgraduate and doctoral).
- Students with different levels of prior knowledge of academic integrity policies and practices.
- Students with different learning styles.

Assessment Criteria:

- The assessment must allow an indefinite number of attempts for students to complete the tasks, before achieving a final 100% score to pass.
- Each attempt must display new set of questions and tasks for students to answer and avoid the repetition of given questions.
- Assessment questions and tasks must be designed to prevent academic dishonesty among students who are completing the course in the same time period or same year.
- The assessment tasks must be designed to promote problem-solving skills, academic integrity and creativity.

To address these challenges, course tests were created according to the key characteristics of the formative assessment design, such as:

- Appropriate, relevant, effective and detailed feedback is provided for each online test response, including both correct and incorrect answers. Due to the current use of the test questions, we are unable to present them in this paper. Below are partial examples of feedback provided for a variety of scenario-based questions, including both correct and incorrect answers:
    - *Correct. According the Copyright Act of 1994 New Zealand citizens must respect the University's legal right to control the use and distribution of its creations including exam papers and course materials. Only staff and students can access Cecil, the Library databases and other resources held in the University's password-protected electronic environment.*
    - *Incorrect. The values of trust, honesty, fairness, responsibility, and respect underpin academic integrity. These values shape the academic environment defining what is acceptable and necessary to advance personal and public knowledge.*
    - *Incorrect. Ellipsis is sometimes used for quotations when words are omitted in the middle of the quotation but not when it is a direct quote with all words included. Quotation marks are generally required when quoting directly from a source. An in-text citation in the correct referencing style should also be included as well as the full reference in the reference list at the end of the assignment. See Referen©ite for more information on correct referencing practices.*
- The ability for students to attempt the compulsory online tests an unlimited number of times. Each attempt (a random group of questions) was designed as an opportunity for students to attain new knowledge and enhance their learning. Thus, a Question Bank was created consisting of over 250 different questions.
- The use of an 'assessment for learning' approach: each question is linked back to a relevant section of the online module. Students are asked to find and read specific information in course modules (e.g., view video, read scenario, complete an activity) and then select the correct answer. The necessity of such

approach was informed by the fourth round of usability testing, where the following types of behaviour were observed:

- ***Student 1*** *systematically worked her way through the five modules and at the end of each module completed compulsory summative set of questions specifically designed for that module.*
- ***Student 2*** *completely ignored course modules and went straight into the compulsory course assessment. If he was unable to understand and answer given questions/tasks, he accessed course modules and searched for information related to the specific assessment question.*
- ***Student 3*** *worked through all modules before doing the tests as he wanted a whole understanding of the course content.*

In order to accommodate ***Student 2*** behaviour, each summative question/task has been designed to enable the learning process to occur regardless of whether students complete the online course first or not. The 'add-on' information is provided in the form of feedback for each answer selected, as well as links to course modules and external information sources.

- The reduction of ambiguity in the question bank, and the correct level of difficulty. The results from the pilot usability study showed that some questions needed improvement. Initially, every question was designed based on one of the module learning outcomes and was mainly scenario based, providing a consistent level of difficulty. A total number of 1,657 students completed the online course during the pilot, and all the submitted answers were analysed after the pilot. We reviewed every question that could be ambiguous (50% of answers correct; 50% incorrect); then we reviewed every question that could be too difficult (over 80% incorrect answers); and lastly we reviewed every question that may be too easy (100% correct answers). Most of the ambiguous questions were redesigned and a few were removed based on the results of the analysis. Here is one example of a problematic question that was removed from the final assessment question pool:

As part of her Drama course assessment Laura needs to prepare and perform a dramatic monologue. She is allowed to use any text she wants. Laura decides to perform extracts from her grandmother's war time diaries. Is this cheating? (Refer to Module 2.1).		
Outcome	*Total no of responses*	%
Yes	6	50.00%
No	6	50.00%
Not answered	0	0.00%
Total	12	

A few problematic questions were also identified through students' descriptive responses to a post-pilot online survey distributed to all participants. Here are some comments from the survey which indicate that questions need review:

- *Some of the questions are ambiguous. For instance, the question about Kris buying a book: "Kris believes that since he paid for the book and owns a copy, he is entitled to..." Kris might believe any number of erroneous things. The question should be factual – "Since Kris has bought the book, he is entitled to..."*
- *In the test for Module 3 there was a question about Kris buying a book and then asking what Kris believes he is entitled to do. This question makes it unclear what the correct answer should be as knowing what Kris believes is impossible because it's his belief and he could believe he is entitled to plagiarise, we don't know him.*
- *Make it slightly more challenging, otherwise, this test was very easy but I did learn something.*
- *I was surprised to see that Module 1 test only had 3 questions whereas Module 2 test had 9. Perhaps balance some questions.*
- *Maybe include a process to answer this particular question: "I am aware of someone who has/is cheating - what do I do?"*
- *I enjoyed the downer test more than this one as it was interactive and interesting. I would suggest having a clip where someone reads you the questions and then you answer. Makes it more interesting and less time consuming.*

Student Feedback on the 'Assessment for Learning' Approach

Students' feedback on the Academic Integrity course was very positive, and showed the value of an 'assessment for learning' pedagogical approach. Below are some examples of student feedback from our online survey, focus group studies, pilot and faculty based implementation in 2012 and 2013.

- *Needed to know whole module to answer questions.*
- *Multi-choice meant we could use prior knowledge a bit.*
- *Good thing we had the option of how we chose to do it (e.g., module then test, or side by side etc.).*
- *Saying why a Cecil question is wrong is good.*
- *Each module provides useful information students should know and then we can test our understanding after each module…. I can test myself with the tests after I have done each module. I read all 5 modules first, then I went to the tests. Then I went back to individual modules and tests again.*
- *The online assessment was a handy and convenient way for me to learn the rights and wrongs of academic integrity quickly.*
- *Hi Team at Academic Integrity, thanks for this little quiz. I found it really useful; both as in educational tool, and as a way to check what I had learnt whilst reading and doing the quizzes on each page.*

As some of the comments indicate, the need for students to have the course information available while sitting the tests was apparent. The ability to move back and forward between the two was seen by students as an effective way to complete the course. They appreciated meaningful feedback which enabled incorrect responses to become learning opportunities. They were keen to learn from their mistakes and looked to both the practice quizzes and quiz answers for assistance. Also of note was the potential for students to use prior knowledge in the assessments, this was supported by the inclusion of real life examples and scenarios.

There was also positive feedback from academic staff members supporting the 'assessment for learning' approach during the pilot in 2012 and implementation in 2013. Here are some examples:

- *The feedback after the questions was helpful.*
- *Exercises and module tests help to reinforce the content.*
- *Links to modules are very helpful; you only have to check out the ones you're unsure of!*
- *Most of the questions seemed pretty easy to understand (a couple of exceptions noted below) and a few were challenging enough to need more thought and reference back to the modules.*
- *It's good to see the feedback for both the correct and incorrect answers in the exercises.*
- *We would be keen to use just a few modules and imbed them into the online discussion forum in Cecil for students to complete and discuss online.*

Staff appreciated the role that assessment played throughout the modules in terms of reinforcement of learning. The ability to move easily between the tests and the content being tested was seen by staff as particularly beneficial in terms of supporting learning.

Next Step: Impact Study

An impact study is currently underway to examine the extent to which learning has taken place in greater detail. The aim of this study is to:

- Discover the course's impact on student attitudes, behaviour, knowledge and skills regarding academic integrity at The University of Auckland;
- Find out whether academic staff perceive changes in the quality of students' work with regard to academic integrity;
- Ascertain whether the course has had an impact on academic staff workloads in dealing with student academic misconduct.

It is expected that the results will be made available at the end of 2013.

Conclusions

The University of Auckland's Academic Integrity online course learning design team faced the following challenges while implementing the 'assessment for learning' pedagogy:

- There is no live (streamed) face to face interaction with an instructor.
- There is no student-tutor communication channel. Providing a centralised tutor communication channel for such a large number of students completing the online course at different times throughout the year is unfeasible.
- There are no resources to provide individual feedback on student coursework. Therefore, both summative and formative 'assessment for learning' activities have been designed to include a consistent, relevant and appropriate level of feedback, which circumvents the need for an external assessor.
- Relatively 'dry' and policy driven academic integrity curriculum must be transformed into engaging and inspiring interactive online learning activities.

These e-learning design challenges have been effectively addressed and overcome in this course development project. The significance and positive impact of the University of Auckland Academic Integrity online course is due to the unique application of the 'assessment for learning' approach. The usability testing, pilot study in 2012 and faculty based implementation in 2013 have demonstrated that the course was successfully designed to achieve its purpose: to be engaging and produce positive learning outcomes. Through the formative online activities and summative online tests, the course enables students to understand the academic environment, academic integrity and recommended practices. The course design process and its attention to constructivist student-centred pedagogy, 'assessment for learning' activities, alongside usability testing results and feedback can be applied to any other online learning environment development in future.

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