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Thayaparan Gajendran  
*The University of Newcastle*

Anthony Williams  
*The University of Newcastle*

Debbie Booth  
*The University of Newcastle*


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Inducting Students Into Academic Integrity: Conceptual Design of an Online Learning Module

Thayaparan Gajendran, Anthony Williams and Debbie Booth
Faculty of Engineering and Built Environment
The University of Newcastle, Australia

ABSTRACT
Academic Integrity (AI) is one of the central facets of student learning and can impact significantly on students’ post-education life. Educational institutions have a central responsibility for developing a positive academic culture through policies and mechanisms that address and foster AI in their institutions. However, in practice, even where institutions have adopted formal AI mechanisms, some students still develop a poor understanding of the essential facets of AI, leading to unintentional AI breaches. Moreover, some students find it hard to contextualise the university-wide AI policies as part of their discipline. In addressing this issue, some universities have developed online, discipline-specific AI modules to enhance students’ AI understanding. This paper discusses a discipline-specific online Academic Integrity Module (AIM) developed for built environment students at the University of Newcastle (UoN). The module was designed within the Blackboard environment to provide an online and interactive form of AI learning. Whilst the AIM draws heavily on AI policies at UoN, it contextualises this information as part of the built environment discipline and enables students to engage in self-paced AI learning and self-assessment.

KEYWORDS
Blackboard, academic integrity, online module, induction and university policy

INTRODUCTION
Academic Integrity (AI) is a central facet of higher education and potentially impacts on students’ post-educational life as an employee, employer and citizen (Nonis & Swift 2001). Educational institutions therefore take a central responsibility in nurturing a positive learning environment and culture of AI (Duggan, 2006; Park, 2004). From the substantial body of academic literature on AI (McCabe, Trevino, and Butterfield, 1999; Hendershott, Drinan, and Cross, 2000; Park 2003; McCabe and Pavela 2004; Murdoch University 2005; Scanlan, 2006), several aspects can be identified that are key to embedding AI in educational institutions, including:
- fostering a genuine understanding of AI concepts among students;
- assisting students with support mechanisms that enable students to identify AI breaches; and,
- developing AI policies that discourage/penalise AI breaches.

Most often, universities focus on the latter aspect, developing university-wide AI policies that are then formalised within program curriculum. However, recent studies of AI have noted that even where formal AI policies are adopted, some students continue to demonstrate poor understanding of the essential facets of AI, leading to unintentional AI breaches (Manson, 2006; Ellery 2008; East 2005; Hayes and Introna 2005; Marshall and Garry 2006).

Due to the complexities of teaching AI, some studies suggest that educating students about AI via generic AI learning modules can be ineffective (Macdonald and Carroll, 2006). Indeed, AI policies often focus on generic value areas such as honesty, fairness, trust, responsibility and respect (see UoN, 2008a), which can be potentially difficult to translate into academic practice, particularly as part of certain disciplines and for those from diverse cultural backgrounds (Leask, 2006). Moreover, generic discussion of AI may not adequately develop students’ understandings of the discipline-specific situations that can give rise to academic fraud. For example, construction students may:

- use copyrighted project drawings from work without appropriate permission in their university coursework;
- use the outputs of their paid consulting work without client’s permissions
- use established formulas in structural/geotechnical/estimating calculations without recognition of the source
- self plagiarise by reusing the part of the assignments submitted previously in other assignments
- unconsciously collude in doing a estimating or measurement (calculation) assignments, where the boundaries of collaboration and collation are difficult to draw.

It is argued in this paper that education of AI is best contextualised within a specific disciplinary context (McGowan & Lightbody, 2008; Macdonald and Carroll, 2006). This paper identifies the AI issues faced by the built environment students at the School of Architecture and Built Environment (SABE) at the University of Newcastle and reports on an initiative that developed a discipline-specific online AI module to address AI issues.
AI ISSUES AND CHALLENGES

The SABE delivers an undergraduate Bachelor of Construction Management (BCM) program through both on-campus and online, distance-learning modules (Williams, Sher and Brewer 2008). The SABE has consistently paid attention to embedding information literacy and AI into its curricula. However, with the restructuring of its programs in 2006, AI concepts were introduced as a component of a first year, semester one course. AI concepts were delivered to on-campus students through face-to-face classroom lectures, and via lectopia, mp3 audio files, and PowerPoint presentations for distance learners (see Sher and Gajendran, 2008). Moreover the concepts were supplemented by a university-level web-based resource developed by the university library (see UoN 2004).

From 2007, the student numbers in the BCM program expanded exponentially, due to an increase in regular intake and the introduction of mid-year enrolments. This increase included more students commencing their studies with advanced standing (i.e. TAFE qualifications, international articulations etc). An unconscious assumption was made by the SABE academics that students commencing their studies with advanced standing would have adequate exposure to AI concepts from their previous education, and therefore not be disadvantaged by missing the first year course on AI. Moreover, it was assumed that the AI concepts and policies embedded in the course outline, documents and resources would reinforce students’ AI understanding and familiarity with university AI policy. Yet, it rapidly became clear that these assumptions were misleading and that many students were not equipped with appropriate AI understanding, with increasing cases of what can be described as ‘unintentional’ AI breaches. The official position that these students should have studied the available AI resources on the university website offered little support or guidance to students and was of significant concern to staff.

The fading distinction between ‘unintentional’ and ‘intentional’ plagiarism in AI policies generally (i.e. all treated as plagiarism), encouraged the BCM discipline to take a pastoral care role in preventing students from unintentional AI breaches through effective AI education. Prevention of unintentional AI breaches could save significant amounts of time spent by academics, administrative staff and students in dealing with AI breaches. The SABE’s response was to develop an approach that engages students in active learning about AI to address these gaps in student knowledge.

ANALYSIS OF AI ISSUES

To develop an informed approach to these AI issues, the SABE undertook an analysis of the AI situation across the school; exploring three particular AI aspects (see Table 1). Published documents, including the course outlines and website materials were used to analyse the gap in AI learning.
Table 1 – Status analysis of AI key concepts in the context of UoN

<table>
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<tr>
<th>No</th>
<th>Aspect</th>
<th>Status</th>
<th>Observations</th>
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| 1  | Students’ understanding of AI | AI skills are taught in first year, first semester. If students enrolled in advanced courses (with credit), it was their responsibility to familiarise themselves with AI material. However, the level of understanding of AI concepts was generally poor as commencing students lacked the initiative to educate themselves on AI. | - There is a need to improve AI understanding, particularly for students with advanced standing  
- An interactive tool for students to engage with AI would be beneficial during their studies |
| 2  | Student support mechanisms | A range of AI support mechanisms were available to students at the time, including academic and technical support mechanisms: Academic Support;  
- Student Academic Conduct Officers (SACO) to assist students with regard to AI queries and disciplinary actions  
- Program Conveners and Lecturers to advise students on AI Matters (via both face-to-face and electronic mediums)  
- Faculty Librarian to assist with resource handing and referencing Technical Support;  
- Availability of electronic text-matching software to identify plagiarism  
- Referencing management software for appropriate referencing | - The available support mechanisms provide some assistance to both on-campus and distance students  
- However, it was evident that most students avoided seeking academic support unless found to be in breach of AI policy  
- While students regularly used the technical support mechanisms (i.e. text-matching software), they did not review the originality reports of the software, thereby overlooking important AI learning opportunities  
- There is a need for more interactive and engaging learning and support mechanisms to build students’ understanding and knowledge of AI |
| 3  | The policies and procedures | AI issues are covered by two key university level policies as follows:  
- Student AI Policy (UoN 2008b) – aims to reinforce the importance of integrity and honesty in an academic environment  
- Student AI Procedure (UoN 2008c) - aims to support the implementation of the Student AI Policy. This policy establishes the roles of staff and SACO in relation AI breaches. It also stipulates the processes to be followed when an AI breach is suspected. | - The policy documents define a number of key concepts relating to AI and stipulate the processes to be followed when a case of academic dishonesty is suspected  
- The policy neither stipulates how AI concepts should be taught to students nor the required level of learning. |
The analysis of relevant AI materials, mechanisms and procedures suggested that the primary issue contributing to AI breaches by students is a general lack of understanding of AI concepts (see also Allan et al. 2005; Emerson et al. 2005). This paper reports on the design and development of an AI Module, that intends to actively engage students in AI learning. This module can address the AI knowledge gap, among commencing students, particularly those students with advanced standing.

DEVELOPING AN AI MODULE

In order to guide the development of an AI program, the SABE identified six key aims of such a program in conjunction with the literature (see Park, 2003; Macdonald and Carroll 2006), to:

- enable students, irrespective of entry into the program, to learn about AI concepts;
- provide consistent AI learning experiences to on-campus and off-campus students;
- allow students access to a collection of discipline-specific AI material at any time during their course of study;
- facilitate student learning, self assessment and evaluation of students’ level of understanding of AI concepts through the provision of appropriate feedback;
- enable a record of students’ level of accomplishment as a summative assessment, which aids in the determination of possible AI breaches; and,
- provide contextually relevant AI learning experiences for all students.

To address these aims effectively, the SABE proposed and developed an online AI module (AIM). The module includes a self-assessment capability and is accessible to all students in the school though Blackboard (BB) (an online educational portal). It is argued in this paper that the module presents an effective means of bridging the gap between the policies and practices of AI in universities.

THE PEDAGOGICAL UNDERPINNING

The AIM proposed by the SABE was informed by pedagogical design and underpinned by “Contextualised Personalised Integrated Learning (CPIL)” (McGowan & Lightbody, 2008). CPIL is characterised by:

- personalised, self-paced and just-in-time learning, (Vonderwell, Liang, and Alderman, 2007);
- contextualised integrated learning environment (integrated AI policy, resources, program and graduate attributes) (Singh, 2003); and,
• contextualised student self-evaluation and learning through diagnostic-summative assessment with formative feedback (Gaytan and McEwen, 2007).

To support this pedagogical design, the AIM employs an online diagnostic/summative assessment strategy, incorporating extensive formative feedback. Diagnostic assessment encourages students to complete the module enabling self-diagnosis of their level of understanding of AI concepts. This module also serves as a summative assessment due to its inclusion of milestones—this means that students need to pass the module with a score of 100% to graduate. To actively achieve this, students are provided with unlimited attempts to pass the module, working through the formative online text-based feedback provided on completion of each attempt. Students can obtain additional formative feedback, if required, though academic support networks within the university (e.g. SACO, library, program conveners, course coordinator etc). Through this approach, the module also serves as an induction for students to develop their independent learning ability.

This type of personalised learning experience provides the flexibility for students to effectively engage with AI concepts. Moreover, the unlimited availability of the module throughout a student’s entire study program enables ongoing support and development of AI learning. The objective of the pedagogical design is to provide students with appropriately contextualised and formally integrated AI knowledge, skills and resources. Moreover, the AIM contributes to the learning experiences that help to create a scholarly student and graduate culture. Indeed, this particular AIM was designed to align with the SABE course and program objectives and the Graduate Attributes Policy of the UoN (UoN 2009). The ability of students to enhance an AI culture will contribute enormously to their academic performance and prepare them to develop scholarship and community when they graduate (two listed graduate attributes in UoN policy). It is argued that the contextualisation, design and implementation of this module provide a novel approach to creating a positive AI culture.

THE DESIGN OF AN AIM

In designing the AIM, BB was proposed as a viable platform due to its stability and already established use at the university. Indeed, the SABE had significant in-house skills/capabilities in the development, maintenance and modification of BB, which provided an effective and easy to use framework for an online AIM. Moreover, BB is the University’s primary online learning system so extending the use of BB builds students knowledge of the platform.

Two key aspects formed the basis of the module’s design: (a) technical design (including identification of appropriate BB tools for delivery); and, (b) content design.
Technical design

The use of BB to design and access the AIM enables the use of various BB tools for delivery of the module. Three primary tools – Test Manager, Gradebook and Survey Manager – are used to aid the design and delivery of the module. The Test Manager enables construct threads that incorporate discrete content, associated assessment questions and feedback. This enables delivery of one concept at a time and then assessment of the level of understanding of each concept. Moreover, undertaking revisions to the content and questions within Test Manager is straightforward.

The Gradebook tool provides details of completion rates for assessments, with specific details for each student about the number of attempts for each question and the time taken to complete the module. This enables easy identification of issues relating to question format or student engagement, as well as providing a record of milestone activity for each student. Both Gradebook and Test Manager offer progress monitoring of student engagement and record of achievement.

The Survey Manager tool provides a process for obtaining student feedback about the module. The key difference between the Test Manager and Survey Manager is that the latter offers anonymity for the respondents providing feedback. The premise is that when anonymity is offered, respondents will provide more open and honest feedback. Together, the three tools provide a useful monitoring, assessment and feedback system for the AIM.

Furthermore, the UoN provides a link between BB and the student enrolment system – NUSTAR. Once enrolled, a student will be provided with personalised access to the BB platform which then provides an ongoing record of each student’s achievement and engagement in courses. For students enrolling in SABE, the AIM is immediately available in BB, along with other course materials. This existing link with the enrolment system facilitates the delivery of the module and then provides an ongoing record of each student’s engagement with the AIM.

Content design

The key issue that dominated the content design of the AIM was how to teach and assess fundamental AI values expressed in UoN AI policy, such as honesty, fairness, trust, responsibility and respect (UoN 2008b; Clemson University 2010). As previously discussed in this paper, AI values are notoriously difficult to teach—but perhaps even harder is the assessments of students’ understanding of AI values. The UoN AI policy for students (see UoN 2008a) attempts to provide a more detailed definition to guide assessment of AI via notions of ‘academic fraud’ and ‘plagiarism’. Academic fraud is defined as “a form of academic dishonesty that involves making a false representation to gain an unjust advantage” (UoN 2008b), that can include:
• falsification of data;
• using a substitute person to undertake, in full or part, an examination or other assessment item;
• reusing one’s own work, or part thereof, that has been submitted previously and counted towards another course (without permission);
• making contact or colluding with another person, contrary to instructions, during an examination or other assessment item;
• bringing material or device(s) into an examination or other assessment item other than such as may be specified for that assessment item;
• making use of computer software or other material and device(s) during an examination or other assessment item other than such as may be specified for that assessment item; and,
• contract cheating or having another writer compete for tender to produce an essay or assignment and then submitting the work as one’s own.

Plagiarism is defined as “the presentation of the thoughts or works of another as one’s own” (UoN 2008b), and includes:
• copying or paraphrasing material from any source without due acknowledgment;
• using another person’s ideas without due acknowledgment; and,
• collusion or working with others without permission, and presenting the resulting work as though it was completed independently.

Although the university-wide policy provides a useful starting point and framework for AI learning, we argue that students develop a better understanding of academic misconduct through contextualising the above issues within their own discipline. Therefore the AIM developed for the SABE contextualised the above AI issues within the architecture and building disciplines.

Moreover, the design of AIM has undergone a number of revisions triggered by student and staff feedback. The module now consists of 18 questions organised into four key AI concepts linked to relevant resources to explain and provide examples of AI. These resources are sourced and linked to the university library’s InfoSkills Tutorial (see UoN 2004) which provides up-to-date AIM content and information on changes to university AI policy. Students are required to successfully complete all questions in order to pass the module, with unlimited attempts permitted. Using the adaptive release feature in BB, those students who need to revise incomplete or incorrect answers can now do so without revisiting the entire module, which saves time and focuses students’ engagement with the module. This design groups questions and resources into sections—with progress from one section to the next governed by the successful completion of the previous section.
Therefore, when students answer a question in a module incorrectly, they only need to repeat that section, rather than revising the entire module.

THE STRUCTURE OF AIM
The following provides a review of the AIM structure and how it appears on BB. Each of the four sections of the AIM are reviewed, providing details on the questions and examples of the BB layout, including the feedback form provided to students at the completion of each section.

Section 1: Academic integrity, plagiarism and academic dishonesty, finding and evaluation information
This section deals with the importance of AI concepts and University of Newcastle policies students are subject to during their candidature, and criteria for evaluating information for academic purposes. This section includes 3 questions, which are linked with relevant university policies and resources (see Figure 1). Questions focus on students developing understanding of what is academic dishonesty and judging themselves whether a particular course of action might result in being them accused of academic dishonesty. This provides a good start by signifying the need for developing good understanding of AI concepts, specifically the defense of lack of knowledge of AI concepts is not an excuse for breach of AI.

![Finding and evaluating information](image)

Figure 1 – Illustrated use of embedded links to University Library’s InfoSkills Module
Section 2: Referencing

This section deals with the importance of referencing academic work, when and how to reference, self-citations and common knowledge. The section includes 8 questions and again these are linked to relevant materials to help build student’s knowledge of referencing. The key focus of this section is educating students on appropriate referencing to avoid possible plagiarism: i.e. different approaches to referencing borrowed ideas and acknowledging them in an appropriate manner. The questions provide scenarios with both appropriate and inappropriate referencing practices for students to identify the right ones from the wrong ones.

Figure 2 – The contact delivery screen with in BB system

Section 3: Common elements of reference list

This section deals with APA Referencing Style and looks at common elements included in reference list entries for books, book chapters, journal articles and internet resources. The APA Referencing Style is discussed and relevant materials are linked to this section via InfoSkills. This section includes 5 questions. Figure 3 illustrates how questions assessing student understanding of AI concepts are contextualized in discipline specific scenarios. The past students’ assignments are used as example for assessing students’ ability to identify referencing list elements. Therefore the scenarios and questions are contextualized within the building built environment context.
Section 4: Working with others, group work and collusion, and breaches of academic integrity

This section includes 6 questions. This section in part deals with the issues associated to group work practices. Educating the students about the fine line between the group work/collaboration and collusion is often challenging. This section also deals with tools used for plagiarism detection and prevention. Use of Turnitin to check plagiarism and interpreting the originality reports are also discussed in this section. Finally the penalties and actions relating to breaches of academic integrity are presented. Figure 4 provides an illustration of how students are exposed to penalties of AI breaches.
Feedback: student results and additional information

On completion of each section, students are given feedback on how they performed as a means of providing formative assessment. If they do not achieve 100% for a section, they need to redo the section until they get the full score to proceed to the next section, with unlimited attempts provided for each section—thereby assuming a mastery learning approach. At the completion of the final section students are also provided with further assistance on AI matters, which they may choose to pursue if they perceive the need (see Figure 5).

<table>
<thead>
<tr>
<th>Common reasons students give for plagiarism</th>
<th>Where to find help ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t understand what I’m expected to do to avoid plagiarism</td>
<td>Check: the University’s Student Academic Integrity Policy. InfoSkills Module 4 - Writing and Plagiarism.</td>
</tr>
<tr>
<td>I didn’t know that I couldn’t re-use my own work!</td>
<td>The policy defines self-plagiarism as ‘using one’s own work that has been submitted previously, and counted towards another course (without permission).’ See also: InfoSkills - Reusing work ...</td>
</tr>
<tr>
<td>I can’t work out what is and isn’t, “common knowledge!”</td>
<td>The concept of common knowledge can be a little tricky - take a look at: InfoSkills - Using common knowledge. And, remember, if you are unsure about whether something is regarded as common knowledge, it’s best to reference the source. Material on the Internet may not be copyright free or available in the ‘public domain’. See: Copyright and the Internet.</td>
</tr>
</tbody>
</table>

Figure 5 – Example of additional assistance to external sources of information included in AIM

CONCLUSION

The AI issues faced by universities are complex and not always effectively addressed solely by devising formal AI policies. Students often continue to misunderstand the concepts and practices of AI despite the institutionalisation of AI policies. In this paper, it is argued that discipline-specific AI learning modules may present an additional way of delivering AI concepts to students that is engaging and easy to learn. The SABE at UoN found that the development of a discipline-specific online academic integrity module provided an effective solution to deal with AI issues in their school—one that addressed the lack of understanding of AI common to commencing students, particularly advanced standing students. The AIM was delivered and monitored through the Blackboard online platform, using tools that not only aided in the delivery of content, but also enabled self-assessment and feedback. While the contents of the AIM closely followed the university-wide AI policy and other relevant institutional resources, the questions were
contextualised within the architecture and built environment disciplines. This approach allowed AI learning to be formally embedded in the assessment process and actively integrated into student learning.

REFERENCES


Vonderwell, S., Liang, X. and Alderman, K. (2007) Asynchronous discussions and


\[\text{Two of the three Graduate Attributes as stipulated by Policy- 000836}\]

- **Community responsiveness**: an attitude or stance towards society- Graduates will be enabled to play effective and responsible roles as members of local, national and global communities. They will have a capacity for perspective forming and an appreciation of the philosophical and social contexts of their disciplines. They will have the ability to engage in constructive public discourse to sustain communities.

- **Scholarship**: an attitude or stance towards knowledge and learning- Graduates of the university will have a scholarly attitude towards knowledge and learning, demonstrated in a commitment to the expansion of knowledge and a respect for intellectual integrity and the ethics of scholarship. As scholars with an international perspective, they will be enabled to apply logical, critical and creative thinking to the advancement of knowledge and understanding through a capacity for rational enquiry and self-directed learning. They will be able to communicate their knowledge effectively.