ABSTRACT

Research into student engagement provides the basis for a novel method for mapping teaching methods to develop entrepreneurship courses that optimise student engagement. The entrepreneurship education literature identifies a very wide range of "desirable" teaching methods and activities, but does not provide practical guidelines for selecting the ones that are appropriate for particular teaching contexts. This paper describes a pilot project to help educators assess potential teaching methods against available student engagement data in order to select and then develop methods that are most likely to result in higher levels of student engagement, and hence in improved learning effectiveness, in their particular teaching context.

INTRODUCTION

The aim of this paper is to contribute toward the development of entrepreneurship course content and delivery methods that achieve a high level of student engagement. The entrepreneurship education literature identifies many aspects that are considered to be desirable for inclusion in entrepreneurship courses at the university level. It is, however, difficult to know which aspects are the most effective for engaging students in the education process in particular teaching context with the aim of improving their understanding of entrepreneurship, and hopefully, developing entrepreneurial intentions and encouraging entrepreneurial activity. This paper describes a pilot project that implemented a purposeful process to identify and carry out preliminary evaluation of three specific activities to improve student engagement in two undergraduate entrepreneurship elective courses. These included Team Based Learning, using a single business idea for each class, presenting major reports as posters, and surveying students to engage them in entrepreneurship theory and application.

The context of this paper

Entrepreneurship has been demonstrated to be linked to regional economic development (OECD 2003, many GEM reports). As a result, governments in many countries have encouraged the development and delivery of education programs to support and encourage individuals for self-employment. Entrepreneurship, therefore, is a growth area internationally, at all levels of education. For example, enterprise education has been introduced as a compulsory component of the curriculum in Scotland, starting at the primary school level (Jones, B & Iredale 2010), and the role of universities in technology transfer and innovation has become the focus in a number of countries, with a corresponding growth in the number of chairs entrepreneurship (Gibb 2002), and proliferation of entrepreneurship courses.

Entrepreneurship education is typically defined as "about developing attitudes, behaviours and capacities at the individual level. It is also about the application of those skills and attitudes that can take many forms during an individual's career" (Wilson 2008, p. 127). A number of authors distinguish between entrepreneurship education and enterprise education. For example, Jones and Ireland (2010) reflect the views held by Gibb (2002, p. 235), and describe entrepreneurship education as being focused closely on the mechanics of starting up a new venture, with the aim of self employment, and distinguish this from enterprise education with its broader view of the development of “the person as an enterprising individual – in the community, at home, in the workplace or as an entrepreneur” (Jones, B & Iredale 2010, p. 11).
Different aims of entrepreneurial education can be distinguished. For example, Jamieson (1984) divided entrepreneurial education into three purposes or categories; education about, education for, and education in enterprise. Each purpose has a strong influence on teaching methods and content. For example, education about can be described as giving students an understanding of the nature of entrepreneurship and the entrepreneurial process, while education for can be described as preparing students to start their own business, and education in can be described as hands-on training for entrepreneurs in their own business (Taatila 2010, p. 51).

The lines between these three perspectives are often crossed in the entrepreneurship literature, especially as a very commonly-shared view is that "it is important not to think of universities solely as breeding grounds for new entrepreneurs, but rather as a place where entrepreneurial competencies are developed" (Hoffman et al. 2008, p. 141). In other words, many writers assume that the task facing entrepreneurship educators is to prepare students for a career in self-employment, and their performance measure is then the proportion of graduates of entrepreneurship courses who intend to start their own business ventures (Taatila 2010, p. 52).

In addition, different approaches are identified for delivering entrepreneurship education; a "focused approach", where entrepreneurial programs are targeted exclusively to business or management students, and a "unified approach" where students are drawn from across all fields of study. The latter approach has been described as falling into two categories. The first is the "radiant model", where individual faculties or divisions offer entrepreneurship courses tailored to their requirements (as at Cornell University). The second is the "magnet model" where entrepreneurship courses are offered by one part of the University, but draws students from all parts of the University (Hoffman et al. 2008, p. 142). The "unified magnet" approach is the one adopted in most universities.

Drawing on the above, the teaching context in this situation is that of entrepreneurship education (rather than enterprise education) in elective courses for undergraduates, applying a "unified magnet" approach that draws students from across all fields of study in the university. As the large majority of students in these courses are simply curious about entrepreneurship, the focus is on teaching about entrepreneurship, and they are given an understanding of the entrepreneurial process, and some competencies that are needed to be productive and supportive members of entrepreneurial teams. A few students (perhaps two to five in each class of 30 to 100 students) state at the commencement of a class that they intend to start a new venture, so a component of teaching for entrepreneurship is included, by including aspects, such as intellectual property protection and risk management, that will help students to identify and perhaps avoid major problems and equip them for a good start with their venture.

The paper proceeds as follows. Firstly, we examine the literature of entrepreneurship education to identify content and teaching approaches that are specifically recommended to achieve student engagement, and the bases for these recommendations. Secondly, we discuss student engagement in learning and its importance. Thirdly, we demonstrate a mapping approach to show how measures of student engagement in business disciplines can be used to identify possible innovations in content and teaching approaches that best appear to meet the requirements for effective student engagement in this teaching context. Finally, we discuss the specific activities and approaches resulting from this mapping method; we describe the initial outcomes of this mapping method and discuss further research directions.

**THEORETICAL FOUNDATIONS**

A common starting point in the literature is that entrepreneurship courses should aim to develop the particular skills, capabilities, or attributes that are identified as characteristics of successful entrepreneurs. For example, Schumpeter (1934) stated that successful entrepreneurs should be innovative, creative and risk-taking and be prepared to engage in "creative destruction" to build new ventures that would displace existing industries. Kirzner (1979) proposed that opportunity identification in a changing business environment was the critical element in entrepreneurship, and so opportunity recognition was an important requirement for success. Research into entrepreneurial practice has identified numerous other elements that are considered to be characteristic of the entrepreneurial process, and that should be included in entrepreneurship courses.
These elements need to fit within a conceptual framework, as argued by Gibb (2002, p. 239), who observed that many courses or programs appear to be simply "no more than groupings of areas or topics without conceptual foundation". Gibb identified a number of entrepreneurial capacities that he argued should provide the focus for curriculum development (p. 247), and suggested a list of behaviours, attributes and skills (p. 254). These provide the basis for a framework consisting of "key tasks" that make up six stages of new business development from idea through to survival of the new venture (p. 267), and that can be summarised as:

- Business idea discovery/generation
- Business idea evaluation and protection
- Operation and financial feasibility evaluation
- Business plan development and negotiation of resources
- Establishment of the new venture
- Development and growth of the venture

Other conceptual frameworks have been proposed to explain the entrepreneurship process, and these are used to support the teaching of entrepreneurship. The most widely used appears to be the "Timmons model" (Timmons et al. 2011, p. 109), but others include the "generic conceptual model of entrepreneurial process" (Hindle, K 2009, p. 11), and the "enterprise diamond" (Luczkiw 2008, p. 89).

Regardless of the framework that is adopted, specific activities and teaching approaches need to be performed. For example, Gibb (2002, p. 255) provided a wide range of suggested activities under each of the major stages in the development of the new venture, as well as a large number of teaching methods (including lectures, cases, discussion groups, projects, simulations, games, and investigations) to support the development of entrepreneurial behaviours and skills (p. 269).

The use of a very varied and wide range of teaching methods was identified in a recent study of colleges and universities in the United States (Solomon 2008, p. 104), and these included case studies, business plan writing, lectures by entrepreneurs, computer simulations, on-site visits, and in class exercises. Overall, it has been identified that most entrepreneurship courses and programs focus on the development of business plans, and that this is used as a major "learning-by-doing" component (Tan & Ng 2006, p. 408).

This aspect of "learning-by-doing" has been explicitly addressed by many writers in the field, who draw on Kolb’s Experiential Learning Cycle and Styles (Kolb 1984), or variations on this model adapted for entrepreneurship education, such as “Intotalo’s framework” (Luczkiw 2008, p. 82), and in particular the active experimentation and experience components of these models. Experiential learning in the case of entrepreneurship courses is generally interpreted to mean that students should be exposed to, and engaged in, the process of entrepreneurship for them to fully understand this process. In the classroom, this is generally understood to mean that the student does things that are related to this process; in particular to identify and evaluate a business idea, and to develop a business plan. The purpose appears to be to help students understand how to deal with the very complex entrepreneurship process, where they are required to make assumptions in a situation where they have imperfect knowledge, to assess risks, and to make judgements about what to include and not to include in a report such as a business plan.

For example, Jones (2007) described in detail the design and introduction of a new set of entrepreneurship courses at the University of Tasmania. This paper, like many others in the field, draws on the literature addressing the skills and knowledge required by entrepreneurs, as well as their behavioural characteristics. The teaching philosophy was to "teach students to think like entrepreneurs by designing a teaching strategy based on the entrepreneurial process itself", and using the resource-based view of the firm as a teaching strategy framework (p. 409). Using this approach, the author identified two major objectives in the form of personal development (thinking like an entrepreneur), and enterprise development (acting as an entrepreneur), and these provided the starting point for course development. The content was based on an assessment of the steps in the entrepreneurial process of identifying a business idea, and evaluating and developing it into the basis for new business venture through the business planning process.

The delivery method was designed to give students "a great deal of autonomy over how they learn, when they learn and where they learn", and in particular the objective was "to create an environment in which students would be encouraged to engage actively with the entrepreneurial process rather than
simply read about" (Jones, C 2007, p. 409). In particular, the learning process included games, case study discussion, workshop presentations, and reflective diary writing.

A similar search for student engagement is described by Biggs (2003), who outlined the value of what he described as "constructive alignment" in a teaching programme, based on the proposition that good learning is deep learning, and that this is supported by a common understanding of learning objectives, student motivation, student freedom to focus on the task (rather than on the assessment), and interaction between fellow students as well as with teachers (Biggs 2003, p. 13). The focus is on designing the curriculum so that each of these aspects is aligned in a constructive manner. In particular, "the curriculum as stated in the form of clear objectives, which state the level of understanding required rather than simply a list of topics to be covered. Teaching methods are chosen that are likely to realise those objectives; you get students to do the things that the objectives nominate. ... all components ... address the same agenda and support each other. The students are 'entrapped' in this web of consistency, optimising the likelihood that they will engage in the appropriate learning activities" (Biggs 2003, p. 26).

Similarly, Hindle (2007) argued that it was most important to incorporate creativity, imagination and risk-taking in teaching, that the course should also have the objective of engaging staff and students in learning together, and that the business plan should be the integrating unit of study. This reflects Fiet’s (2000) view that students need to develop a set of entrepreneurial competencies, and that this should be done by implementing a range of experiential activities where the focus is on what the student does. Fiet proposed that the teacher should develop a range of activities, but did not offer a means for developing or selecting them, other than stating that methods should be "theory-based", and that they should be varied so that students do not become too used to them. This view is also supported by Zahra and Welter, who argued that "entrepreneurial skills learned in a variety of ways and methods. Some are best learned by doing and observing others. Lecture-based education has its place in the curriculum, but the training of future entrepreneurs should also include interactive and action oriented methods" (Zahra & Welter 2008, p. 188).

There appears therefore, to be general agreement that "enterprise education focuses on the process" and that teaching requires experimentation, creative problem solving, and "learning by doing", and that "the enterprise educational pedagogical approach advocates action, experiential learning styles" (Jones, B & Iredale 2010, p. 12).

The challenge for entrepreneurial educators is, however, to identify specific teaching methods that are likely to achieve the levels of student engagement that are considered to be desirable, especially when they are working in a particular teaching context (such as dealing with large numbers, and where time and resources are limited). Educators appear to have the choice between selecting from a very large menu of activities and methods (Gibb 2002), or to try to draw inspiration from suggestions such as drawing on "established methods of action and experiential learning", and perhaps developing partnerships between education and business to "make education more relevant to life and work" (Jones, B & Iredale 2010, p. 9). In addition, research into the level of entrepreneurship of AACSB-accredited business schools in the United States (Hazeldine & Miles 2007) showed that one of the more important items supporting an entrepreneurial approach was that schools “favour new initiatives that create unique value propositions for our students and stakeholder groups” (p. 237), and concluded that “delivering high-quality programs is one way to remain competitive, increase enrolments, and maintain student retention” (p. 238).

This search for new initiatives has produced some interesting results. For example, Tan and Ng (2006) implemented a problem based learning where students simulated entrepreneurial situations using problems focusing on specific cases, such as the analysis of the business environment and business team composition. The objective was to give students "a broad understanding and feel of what it takes to develop the business, rather than to "make" entrepreneurs out of the students" (p. 423). Evaluation of the pilot program showed that students were engaged by the problems, but preferred to write a business plan, rather than follow step-by-step problem-solving exercises.

Another experiment was to investigate how student group work might be aligned more closely to the workings of an entrepreneurial team. A study of student group work in one entrepreneurship course of 58 students showed that “group performance correlates positively with members’ perception of
positive outcomes from the group work, particularly where the group assessment task involves greater interaction among group members” (Kotey 2007, p. 648).

Other experiments include the development of a hybrid face-to-face and online entrepreneurship course to engage large numbers of students, particularly non-business students, with limited staff resources (Burshtein, Gow & Katzenstein 2007). Evaluation of this form of delivery (traditional online methods for delivering content, combined with small group face-to-face workshops) indicated that “students overwhelmingly found the content of the course to be highly engaging” (p. 10).

In summary, the entrepreneurship and enterprise education literature proposes that courses should focus strongly on "experiential", or "learning-by-doing" teaching methods, and suggests a very wide range of activities and teaching methods. The challenge facing educators is that there do not appear to be guidelines for selecting which of the many activities and methods might be the most appropriate or useful in a particular teaching context. One response has been to experiment with novel approaches, as described above. A practical way, however, of addressing this challenge, is to draw on the significant body of literature and research addressing student engagement in learning.

**Student Engagement in Learning**

Student engagement has been described as the degree to which students make a psychological investment in the learning process, and participate in these processes to promote higher-level thinking. In particular, engagement, "defined as students' involvement with activities and conditions likely to generate high-quality learning, is increasingly understood to be important for high-quality education" (ACER 2009, p. 3).

There have been attempts in Australia to identify the components of university experience that students identified as most engaging them in productive learning. For example, Scott (2005) analysed over 160,000 open-ended comments made by more than 94,000 graduates of 14 Australian universities between 2001 and 2004, and found that “it is students’ total experience of university – not just what happens in the traditional classroom – that shapes their judgements of quality, promotes retention and engages them in productive learning” (Scott 2005p. vii). In particular, the analysis showed that “practice-oriented and interactive, face-to-face learning methods” were the most frequently mentioned as being highly favourable.

Krause and Coates (2005) studied retention of first-year students in Australia, and identified seven dimensions of students’ engagement with the University study and learning. However, the results do not appear to be readily translatable into specific actions for improving student engagement at the individual course level.

The most substantial body of research in this field is The National Survey of Student Engagement (NSSE) in the United States that was launched in 2000. More than 350,000 students from 752 institutions participated in this study in 2009, and the results are used by colleges and universities in the US and Canada (Ewell 2010). This continuing study uses elements that have been found to engage students in productive learning, with the aim of measuring the dimensions at the institutional level that influence learning, as well as student retention.

The NSSE has been translated to the Australian environment by the Australian Council for Educational Research and implemented as the Australasian Survey of Student Engagement (AUSSE). This survey was designed to gather information on the time and effort that students devote to educationally purposeful activities as well as on their perceptions of the quality of other aspects of the university experience, and is reported in "Engaging Students for Success" (ACER 2009).

In 2008, more than 25,000 university students in Australia and New Zealand responded to this survey of student engagement. The instrument was based largely on the NSSE study, and includes six scales: academic challenge, active learning, student and staff interactions, enriching educational experiences, supportive learning environment, work integrated learning. The first five scales and their items are taken from the NSSE study, while the last “work integrated learning” scale was developed specifically for the Australasian study (ACER 2009, p. vii).
The scales used in this study have their foundation in empirically validated theories of student learning, as reported in Kuh, Pace and Vesper (1997), Kuh, Shuh and Whitt (1991), Kuh (2004, 2008), Pascarelly and Tenerzini (2001, 2005), Ewell and Jones (1996), Pace (1979, 1988, 1995), Tinto (1993), Astin (1985, 1990, 1993), and Coates (2006); all cited in ACER (2009, p. 6). It is claimed that these "measures of student engagement provide information about individuals' intrinsic involvement with their learning, and the extent to which they are making use of available educational opportunities. Such information enhances knowledge about learning processes. It is a reliable proxy for learning outcomes. It provides excellent diagnostic measures for learning enhancement activities" (ACER 2009, p. 4). It is the use of the detailed results for diagnostic purposes that forms the basis for the mapping method described in this paper.

RESEARCH METHOD

The results for the engagement items were obtained for the university, and for the business area as a whole, for the survey carried out in 2009. Individual quantitative results cannot be published on account of institutional confidentiality, but they were used to establish the order of importance of individual items. Although recent research suggests that there are eight factors of student engagement (LaNasa, Cabrera & Transgrud 2009), this analysis uses the six categories reported in ACER (2009).

The individual items used to measure student engagement are listed in summary form in Table 1 below; detailed descriptions can be found in the questionnaire (ACER 2009, pp. 58-61). The 47 items are grouped under the six categories. In each category, the items are listed in descending order of importance, as indicated by their ranking in the columns "University Rank", and "Business Area Rank". The "Top 20" column identifies (as shaded and numbered cells in the table) the top-ranked 27 items (allowing for items that were ranked equally), based on the "Business Area Rank", as most students taking these courses are from the business area. This ranking does not differ significantly from the University-wide ranking that is also shown. These "Top 20" items are subjectively assessed as being the most important for student engagement. The last right-hand column in the table identifies the items that were considered by the author and his colleague as being achievable in the particular teaching context. For example, "industry placement work experience" was not considered to be practically achievable in this context of a teaching relatively large numbers of undergraduates with up to 5 separate course deliveries per year. "Work on a research project" was similarly considered to be not achievable in this teaching context.

Four different teaching methods were then assessed against each of the engagement items that were considered to be achievable. These methods are detailed in Appendix 1, and included:

- "Team-based Learning", which is a structured approach for students to complete multiple-choice tests, firstly as individuals, and then in teams;
- "Single Business Idea", where every team in a class carries out their major project on the same business idea that is new to the local market
- "Poster Plan", which is the presentation of the major report in the form of a poster, rather than a lengthy report
- "Survey", which is a survey carried out of students in a class with the express aim of introducing them to the individual characteristics of an entrepreneur

Each of these teaching methods was firstly considered on the basis of the ability to integrate them to achieve overall course objectives. Each was then assessed against the individual engagement item to identify whether or not it could provide a vehicle for achieving that item, and hence achieving that particular engagement, in the particular teaching context described earlier (that is, undergraduate students, drawn from across a range of discipline areas, with a focus on teaching about entrepreneurship, using a "unified magnet" delivery arrangement). This was a subjective assessment carried out by the author, and was reviewed with a colleague who contributes to the delivery of these courses. This resulted in a consensus regarding the extent to which each activity "matched" the engagement items. The results of this assessment was to identify with a "Y" in the column for that method in Table 1, whether the particular method would support each particular engagement item.

For example, Team-based Learning as implemented in these two courses was designed to address the lower levels of Bloom’s taxonomy of learning (remembering and understanding), so was considered to address "analysing basic elements", and "making judgements about value of information", preparing for tests by "reading subject related assigned texts", and "preparing for class". However, it was not
considered to imply "significant time on academic work" or "applying theories and concepts". In this way, the judgement was made that only four areas of "Academic Challenge" were addressed by this particular teaching method. A similar analysis of each of the other engagement scale items was made for this method, and for the other three methods addressed in this paper.

When this process had been completed, a simple count of the number of "Y" notations was made in the appropriate column, and this shows that almost every engagement item that was assessed as being achievable was addressed by the combination of these four teaching methods. In particular, every one of the "Top 20" items was addressed, with the exception of "relationships with administrative personnel and services", which was regarded as not being achievable in this teaching context.
### Table 1: Teaching Methods Mapped onto AUSSE Engagement Scale Categories and Items

<table>
<thead>
<tr>
<th>AUSSE Engagement scale categories and items</th>
<th>&quot;Top 20&quot;</th>
<th>University Rank</th>
<th>Business Area Rank</th>
<th>Team Based Learning</th>
<th>Single Business Idea</th>
<th>Poster Plan</th>
<th>Survey</th>
<th>Count of &quot;Y&quot;</th>
<th>Achievable?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACAD EM IC CHALLENGE</strong></td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Analysing basic elements</td>
<td>1</td>
<td>2</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Applying theories or concepts</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>Y</td>
<td>Y</td>
<td>2</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spending significant time on academic work</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Making judgements about value of information</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synthesising and organising ideas</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading subject related assigned texts</td>
<td>6</td>
<td>16</td>
<td>15</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worked harder than you thought you could</td>
<td>7</td>
<td>15</td>
<td>15</td>
<td></td>
<td>Y</td>
<td>2</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignments between 1,000 and 5,000 words</td>
<td>8</td>
<td>22</td>
<td>19</td>
<td></td>
<td></td>
<td>Y</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparing for class</td>
<td>9</td>
<td>21</td>
<td>20</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Assignments fewer than 1,000 words</td>
<td></td>
<td>25</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>0</td>
</tr>
<tr>
<td>Assignments more than 5,000 words</td>
<td></td>
<td>37</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
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<tr>
<td><strong>ACTIVE LEARNING</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asked questions</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worked with students outside class</td>
<td>11</td>
<td>12</td>
<td>12</td>
<td></td>
<td>Y</td>
<td>2</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worked with students during class</td>
<td>12</td>
<td>11</td>
<td>14</td>
<td>Y</td>
<td>Y</td>
<td>3</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussed ideas from your classes with others</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>Y</td>
<td>Y</td>
<td>2</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Made presentation</td>
<td>14</td>
<td>17</td>
<td>19</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tutored other students</td>
<td>15</td>
<td>36</td>
<td>30</td>
<td></td>
<td></td>
<td>1</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participated in community-based project</td>
<td>16</td>
<td>34</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>ENRICHING EDUCATION EXPERIENCES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversations with students of different ethnic group</td>
<td>15</td>
<td>10</td>
<td>11</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversations with students who are very different</td>
<td>16</td>
<td>13</td>
<td>13</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouraging contact with people of different backgrounds</td>
<td>17</td>
<td>18</td>
<td>16</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used an electronic medium for assignment</td>
<td>18</td>
<td>19</td>
<td>17</td>
<td></td>
<td>Y</td>
<td>1</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning community/study group</td>
<td>19</td>
<td>27</td>
<td>24</td>
<td></td>
<td></td>
<td>Y</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign language</td>
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<td>32</td>
<td>26</td>
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<tr>
<td>Community service</td>
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<td>31</td>
<td>28</td>
<td></td>
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<tr>
<td>Participating in extracurricular activities</td>
<td>22</td>
<td>33</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Study abroad or student exchange</td>
<td>23</td>
<td>37</td>
<td>31</td>
<td></td>
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<tr>
<td>Practicum/internship</td>
<td>24</td>
<td>31</td>
<td>34</td>
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<tr>
<td>Independent study</td>
<td>25</td>
<td>38</td>
<td>35</td>
<td></td>
<td></td>
<td>Y</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Culminating final-year experience</td>
<td>26</td>
<td>40</td>
<td>38</td>
<td></td>
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<tr>
<td><strong>STUDENT AND STAFF INTERACTIONS</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Received feedback on academic performance</td>
<td>19</td>
<td>15</td>
<td>13</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussed grades with teaching staff</td>
<td>20</td>
<td>23</td>
<td>21</td>
<td></td>
<td>Y</td>
<td>1</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussed ideas from your classes with</td>
<td>21</td>
<td>28</td>
<td>25</td>
<td>Y</td>
<td>Y</td>
<td>3</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talked about career plans</td>
<td>22</td>
<td>30</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Worked with teaching staff on other activities</td>
<td>23</td>
<td>35</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Work on a research project</td>
<td>24</td>
<td>39</td>
<td>37</td>
<td></td>
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<td><strong>SUPPORTIVE LEARNING ENVIRONMENT</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships with other students</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships with teaching staff</td>
<td>21</td>
<td>4</td>
<td>4</td>
<td></td>
<td>Y</td>
<td>1</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships with administrative personnel and services</td>
<td>22</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Providing support to succeed academically</td>
<td>23</td>
<td>8</td>
<td>8</td>
<td></td>
<td>Y</td>
<td>2</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing support to socialise</td>
<td>24</td>
<td>24</td>
<td>22</td>
<td></td>
<td></td>
<td>Y</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helping to cope with non-academic</td>
<td>25</td>
<td>26</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
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<tr>
<td><strong>WORK INTEGRATED LEARNING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquiring job-related or work-related knowledge and skills</td>
<td>24</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td>Y</td>
<td>Y</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Improved knowledge and skills that will contribute to employability</td>
<td>25</td>
<td>9</td>
<td>9</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explored how to apply your learning in the workforce</td>
<td>26</td>
<td>14</td>
<td>15</td>
<td></td>
<td></td>
<td>Y</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blended academic learning with workplace experience</td>
<td>27</td>
<td>20</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Industry placement or work experience</td>
<td>28</td>
<td>29</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
The next stage was to implement these activities and methods in two different undergraduate entrepreneurship courses. The first was an entrepreneurial foundations course that requires students in teams to complete a feasibility plan for a nominated business idea that is new to the local market. The second was an entrepreneurial commercialisation course that focuses on the marketing challenges faced by a new venture, and students in teams complete a marketing plan for a nominated business idea that is new to the local market.

These courses were taught in intensive mode over four weeks. Six lecture/seminar sessions of between four and six hours were conducted on the Mondays, Wednesdays and Fridays in the first two weeks. Multiple-choice tests making up the Team-based Learning method represented 10% of marks, and were carried out at the start of each of the last five lecture/seminar sessions. Students completed a team project report and presented their work on the Friday of the third week, and this represented 40% of marks. A written exam (50% of marks) was carried out on the Friday of the fourth week.

These courses are electives that are offered to students across the University. They are taken by students in their second or later year of studies, as students need to have completed the equivalent of one year of full-time study as a pre-requisite for the entrepreneurial foundations course. The make-up of participants is summarised in Table 2. Students were allocated into teams of six members that were balanced, as far as possible, to take into account gender, field of study, and whether or not students were international or domestic.

Table 2: Students taking part in this pilot study

<table>
<thead>
<tr>
<th>Course</th>
<th>Entrepreneurial foundations course</th>
<th>Entrepreneurial commercialisation course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number completing the class</td>
<td>33</td>
<td>76</td>
</tr>
<tr>
<td>Gender (proportion of males)</td>
<td>64%</td>
<td>45%</td>
</tr>
<tr>
<td>Origin of students (proportion of International Students)</td>
<td>42%</td>
<td>63%</td>
</tr>
<tr>
<td>Major Fields of Study (proportion of students in nominated study programs)</td>
<td>Commerce/Finance = 45% Management = 15% Marketing = 15%</td>
<td>Commerce/Finance = 43% Management = 12% Marketing = 11%</td>
</tr>
<tr>
<td>Number of different study programs/fields of study</td>
<td>14</td>
<td>23</td>
</tr>
</tbody>
</table>

RESULTS

A "minute evaluation" was carried out at the end of each activity. Each student was given a blank piece of paper, and asked to give the activity numerical score between "0 = waste of time" through to "10 = superb", and to provide two reasons for their score, and two suggestions for improvements. This provided a very rich database of anonymous and un-prompted observations and suggestions from the whole class. Some of the comments are given below, and the author has subjectively mapped each of these to the “Top 20” engagement items in Table 1.

Student comments relating to Team-Based Learning:
- Team work = everyone achieves more (4, 12)
- I have learned how to work together as part of a team (25)
- Discussion on content is invaluable (20)
- Really liked the group part of the test as it allowed me to see how others thought about the questions (15, 16, 17)
- Great to meet new people (20)
- There are good outcomes from team discussions (12)
- (Good for) working with other people from different backgrounds (15, 16, 17)
- Learn how to improve the report (5)
- We manage to always work together and always share our ideas (20)
- The process of marking was very good and very quick (19)
- Very quick results, gives an ongoing idea of how we are going (19)
- Team feedback was good (19)
- Learned to cooperate with others (12)
• I made new friends (11)
• Gets you to read the content every day (1, 6)
• This alerts you on how much you know or have been studying (1, 6)
• I think it was good to learn material before then discuss the answer; made you learn better (9, 23)
• Discussions with team (was good for) sharing different knowledge (4)
• This test pushed students to work hard (7)
• This showed that people working as a team are always better than individuals (12)
• The multiple-choice test helped me to understand the theories (2)
• Class discussions are a great idea (10)

Student comments relating to the single business idea for the class:
• the idea is a great constraint which puts students' work into understandable statements that others can look at and compare (20)
• it is very easy to compare with other groups, and analyse for further discussion (4, 5)
• presenting the same idea allowed a clear understanding of what to look for in other reports, and how to understand each one of them (4, 5)

Student comments relating to the poster plan:
• A new understanding of just how much time and effort goes into this (7)
• Very hard-working on the feasibility report (7)
• We organised the work efficiently and we respected out timelines set up at the beginning (7)
• Developing the feasibility report in such a short amount of time was difficult (7)
• Invaluable knowledge/opinions from others – adds to your own knowledge (13)
• Learned how to start researching a new venture (1)
• (Learned) to think with a broader view; to be realistic (4)
• Demonstrated how I might be able to apply some of the techniques immediately, and refine others for down the track (2)
• I really learnt a lot in such a short time; it made me think more deeply about what I'm really going to do if I want to start a business (26)
• the poster approach forces you to be much more precise
• content in lectures was strongly related and linked to the assignment, forcing you to put your knowledge and practice (26)
• the content is truly relevant and applicable to the real world/very useful (24, 25)
• I've done a lot of work on research for this course (11)

Student comments relating to the survey of entrepreneur characteristics:
• Entrepreneur study activity creates in-depth understanding of entrepreneurial behaviour (2)
• Explains the theory of planned behaviour well on a personal level (2)
• I could identify areas for further personal development (24, 25)
• Good because we were able to participate, so it made the results more interesting (20)
• Helped to understand what values an entrepreneur needs and what skills appear to be important (2)
• Interesting to find out about my attitudes, values towards entrepreneurial aspects, as I had never asked myself these questions (2, 25)
• Insightful and stimulating (25)
• It was interesting to see how my responses measured up against the class average (20)

Overall comments included:
• You have to be fully engaged/involved to be up to do well in this course; the workload is large but manageable but only if you immerse yourself in it
• I like the teamwork approach including the assessment. It helped us to learn together and strengthen our relationships. I've had a lot of fun in doing the course.
• The course was very engaging, due to constant participation
• I honestly believe this course to be as interactive as possible

In summary, student comments reflected their overall engagement in the course and with the specific teaching methods, and it was possible to identify some of their comments with specific items used in the AUSSE student engagement study.
DISCUSSION

This pilot study describes a structured method for identifying and assessing specific teaching methods that might better support student engagement in entrepreneurship courses in a particular teaching context. In particular, it draws on well-established scales for measuring student engagement, and uses a substantial data set that allows educators to identify priority areas that can be addressed at the individual course level.

In addition, one of the valuable aspects of this method is that it provides a framework for appraising teaching methods during and following course delivery to identify ways in which they can be further developed or fine-tuned in order to enhance student engagement.

One of the limitations of this pilot study is that it was not possible to identify a student comment that might be interpreted to correspond to each of the relevant engagement items in Table 1. This is due to the relatively small number of students included in these two classes, and particularly because these were unprompted comments. The student comments do, however, reflect the general positive responses to these teaching methods, and to the course as a whole.

A further limitation is that this pilot study relies on the use of student engagement measurement items that have been developed for application at the institutional level. In particular, the method described starts with a subjective interpretation of each of the institutional-level measurement items at the individual course level. Nevertheless, the mere use of this engagement data has value in sensitising the educator to specific aspects that might influence student engagement at the course level. The author has suggested to senior people in his institution that future measures of student engagement should be designed so that the results can be more readily applied at the individual course level.

The contribution of this paper is that it proposes a structured and systematic way for selecting and developing teaching activities and methods for entrepreneurship courses, using readily available data on student engagement. This is an alternative to the approach used in the literature which is based on attempting to replicate the entrepreneurial process, which is not necessarily appropriate in every teaching context.

At a broader level, this paper draws attention to the nature of student engagement data, and to the possibility of its use in an innovative manner in course design and development. It also provides the basis for more systematic and rigorous evaluation of student engagement at the individual course level in particular teaching context, using appropriate measures.

SUMMARY

The entrepreneurship and enterprise literature identifies a very large number of methods that are considered to be "desirable" for teaching in this very complex area. These methods are largely based on the results of research into the characteristics and capabilities of entrepreneurs. There is a strong emphasis on "learning-by-doing", and an awareness of the need to engage students in order for them to have a satisfactory and effective learning experience. There do not, however, appear to be useful guidelines on how an individual educator should select from a very wide range of methods to develop a course or a program that will be appropriate for their particular teaching context.

This paper proposes a method for mapping teaching methods onto established measures of student engagement, in such a way that results of engagement studies that are available to educators can be used to identify and select teaching methods appropriate for their particular teaching context.

Qualitative evaluation of the implementation of teaching methods selected in this manner suggests that the objective of achieving a high level of student engagement was reached. The results of this pilot study are limited by the small scale of implementation (two different courses with a total of 109 students), but this study provides a useful framework for further development of the teaching methods, and for more extensive evaluation encompassing an increased number of deliveries of these courses, including a much larger number of students.

Overall, this pilot study gives entrepreneurship educators a useful tool for improving the learning experience of students taking their courses.
APPENDIX 1: TEACHING ACTIVITIES AND METHODS

Team Based Learning (TBL)
Team Based Learning is an approach that was developed by Professor Larry Michaelsen (Michaelsen & Sweet 2008). This is a structured approach for collaborative learning, where students learn material in advance of a teaching session. At the start of the teaching session, students take a multiple-choice test on the prescribed content, then follow this by completing the same test as a team, using "scratch and win" cards to provide immediate feedback. This creates a motivational framework in which students build team interactions and their understanding of other team members, resulting in improved engagement and more productive team work. This approach also includes a process for allowing students to provide feedback to other team members to reinforce the aims of this teaching approach.

Team Based Learning has demonstrated stimulation of out-of-class study, increased levels of in-class engagement, and improved teamwork between students in medical courses (Searle et al. 2003; Thompson et al. 2007), as well as increased content retention and improved critical thinking in physiology courses (McInerney & Fink 2003). This approach has been shown to improve student performance in summative assessments in pharmacy courses (Letassy et al. 2008). It has also been shown to improve problem-solving, interpersonal communication and organisational skills (Cestone, Levine & Lane 2008).

Team Based Learning has been implemented primarily in the United States, and appears to have been adopted most widely in the health sciences as an approach to problem-based learning. This appears to be the first implementation of the Team Based Learning approach in entrepreneurship courses in Australia. This particular implementation started with a "test run" of the process at the first lecture session. This allowed students to become familiar with the process and the materials. Each of the following five sessions started with a multiple-choice test that counted towards their assessment.

Single Business Idea for Each Class
The lecturer identified a single business idea for each class, and each team was required to address that particular idea (rather than identify and develop a business idea of their own, which is the traditional approach in these courses). The business ideas were new technology consumer products that were not available at that time in the local market. For example, the business ideas used in this pilot were a novel electric bicycle designed in New Zealand, and a combined bicycle and child carrier designed and manufactured in the Netherlands. The adoption of a single business idea for a class was based on Michaelsen and Sweet’s (2008, p. 20) proposition that group learning is enhanced when students all work on a problem that is significant to them (for example, the topic of their major assignment), and that they all address the same problem.

In particular, the lecturer used the single business idea as the basis for classroom exercises and discussions. This meant that the whole class was given a common vocabulary that allowed the lecturer to explore the application of entrepreneurship concepts and frameworks to a single practical application that was very meaningful to all students, as it was the topic of their major project. This also allowed students to learn from other students during the classroom exercises and associated discussions, thus exposing them to a range of interpretations of a single business idea.

Poster Plan
Previously, each of these courses adopted a traditional approach that required teams of 4 to 6 students to prepare a 4000-word project report that was submitted at the end of the course, with feedback provided by e-mail to individual students. This approach was replaced by a requirement for each student team to present their report as a “poster plan”, made up of two A3 pages. This approach is supported by Gibb (1996), as well as by other educators (Michaelsen & Sweet 2008, p. 12).

Students were shown an example of a completed plan during the lectures. They were provided with a Word document template in the appropriate format (two A3 pages in landscape orientation), together with detailed specifications regarding the content and presentation of the document to be submitted. The template was designed to simplify the process, so that students could successfully complete their projects within three weeks of the start of the course.

Students were required to attend a report discussion and review session. Team reports were displayed on the walls of the lecture theatre, and each team gave a short verbal presentation of their
distinguishing features of their report. Students then examined the work submitted by other teams, and formed opinions and developed questions about those reports. This allowed students to learn from the work that others had done and in particular to see that other teams had identified creative and different commercial developments of the same business idea. During the following discussion session, each team was required to direct questions to other teams about their work, and the session concluded with comments by the lecturer. Later that day each student was sent an individual e-mail summarising the comments and opinions of their peers, as well as of the lecturer, and the grade for their report. This implementation was aligned with Michaelsen and Sweet’s (2008, p. 20) proposition that group learning is enhanced when students have to apply the concepts and frameworks developed in the course to make specific choices about how to develop their report, and to report simultaneously on their work in such a way that all students in the class could see the work that others had submitted.

Survey of Entrepreneurial Characteristics
Students in each class were invited to complete an online survey before the second session in the lecture series. The surveys used published measures relating to constructs that were relevant for each of the two courses. For example, for the entrepreneurial foundation course, the questionnaire included measures for personal characteristics of entrepreneurs, including entrepreneurial values, entrepreneurial attitude orientation, entrepreneurial self-efficacy, entrepreneurial intentions and entrepreneurial experience, as well as measures for opportunities-recognition behaviour. For the entrepreneurial commercialisation course, the questionnaire included measures for the desire for unique consumer products, the ability to judge value, buying impulsiveness, price perceptions, scepticism towards advertising, and attitude towards direct marketing.

Each student was provided with a personalised benchmark report that showed their responses to the constructs measured, together with the average response for the class. The report also included the student's responses to each individual questionnaire item, together with the average and standard deviation for the class for each item. These reports were used as the basis for sessions that explored these constructs and their practical implications by explaining how the individual responses related to the responses for the whole class. The small number of students who did not complete the online questionnaires were provided with anonymous sample reports. The rationale for this approach was that a student is more likely to understand theoretical constructs and models when they are applied to themselves, and particularly when that student can see how their own responses relate to those of their peers.

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