# Using engaging pedagogy to develop entrepreneurial creativity of STEM students: reflections from the Ideate project

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This paper is based on project contributions from partners in, Lithuania, Slovenia, Finland and the UK. The members from partner countries are as follows:

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| Lithuania | Vilnius Business College | Dr. D. Rimkuniiene |
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| UK | Staffordshire University | R Borup |

Abstract

This paper will make recommendations for how STEM educators could incorporate engaging pedagogic approaches from the Ideate project (Ideate.me, 2014) into their own teaching. It encourages educators from different disciplines from within and outside STEM subjects to work together to promote students’ cross disciplinary entrepreneurial thinking and creativity.

STEM Lecturers often don't see themselves as entrepreneurial - "I haven't had my own business so how can I teach entrepreneurship?" Entrepreneurship is wider than just creating businesses, it’s about fostering creativity that promotes idea generation and helps entrepreneurs use this creativity to solve problems and deal with uncertainty. The European Commission recognise the value of educating entrepreneurial creativity (EU 2008, 2010). Entrepreneurial mindsets and skills incorporate EC and are also important “for ‘intrapreneurs’ who fulfil the role of entrepreneurs, leaders, and innovators within a group or organisation”. (EU, 2020)

So how can educators help STEM students develop their entrepreneurial creativity, and in turn their employability? Taking the Ideate module (Ideate.me, 2014) as a case study, this paper presents details of the module and offers suggestions which could be used successfully by STEM educators.

Qualitative feedback from the first cohort of students suggests the experiential learning pedagogy motivated them to develop communication skills including presenting, pitching, negotiation and working with people from other disciplines. One student commented “I feel more confident pitching and presenting ideas. It has opened my mind to show how creative solutions can be used to solve problems. It has improved my business knowledge”. An evaluation of the feedback received from the students will be presented to confirms the module’s success.

Keywords: entrepreneurial creativity, entrepreneurial interdisciplinary

## Introduction

Entrepreneurship education has traditionally focused on business aspects and as such has been seen through the “lens” of marketing, human resource management, management control and strategy, etc. (Gibb, 2011). There is a need to extend the teaching of entrepreneurism beyond the boundaries of Business (Capitalism and commercialisation), to add value to the employability of all students. How can we successfully engage students from other disciplines to develop their entrepreneurial mindset (described as a “key competence for all” EU, 2008)? In particular, how can we sell it to STEM students?

Details of the Ideate project will be presented in this introduction to give context. The paper presents the theoretical background related to the module, evaluation of students’ qualititive feedback, to validate the approaches used, and a reflection of the module content with reference to how the elements could be used by STEM educators.

The paper aims to encourage STEM educators to incorporate the pedagogy used within their own teaching and to consider interdisciplinary collaborations to broaden the students’ experience.

### Ideate Background

The Ideate module is part of a European funded project which aims to deliver entrepreneurship education to learners from diverse disciplines, and from the different partner institutions, using innovative approaches; this is manifest in the Ideate module.

Objectives of the Ideate module were to:

- Improve entrepreneurial knowledge, skills and attitude

- Use a pedagogy of student engagement

- Be interdisciplinary

- Be intercultural

In order to investigate the potential of a multi-disciplinary (and multi-cultural) approach to entrepreneurship education, four students were recruited from each of the 4 institutions involved in the project, ensuring a range of different disciplines and levels of study:

* University of Turku in Finland – Biomedical students (Masters)
* University of Nova Gorica in Slovenia – Creative Arts students (Masters and Undergraduates L6)
* Vilnius Business College in Lithuania – Business students (Undergraduates)
* Staffordshire University in UK – Computing, Law and Film students (Undergraduates, Levels 5 and 6)

During the 2014-2015 academic year, two week long mobilities were organised, one in Manchester, UK and the other, three weeks later, in Nova Gorica, Slovenia. Experiential learning was employed as the pedagogy to teach ideas generation and business modelling to solve a business problem related to the question, “What if there were better access to quality food?” Four Mentors plus an entrepreneur were present at each mobility to facilitate the learning of the students. The emphasis was on student engagement in group activities such as brainstorming, persona identification, idea pitching, customer journey, business canvas modelling, etc. Four Groups were initially formed, having a range of cultures and disciplines present in each. Competition was incorporated, with the best two group ideas being put forward for further investigation in the second mobility. The final two ideas were pitched to mentors and entrepreneurs and the best idea was declared the winner.

The Ideate module is called Interdisciplinary Entrepreneurship and was validated at Levels 5 and 6. Module descriptors for Staffordshire University are presented in Appendix 1 to allow STEM educators to adapt as required. The module was also validated separately at each institution.

## Theoretical Background

One of the criticisms forwarded by entrepreneurial education scholars has been that entrepreneurship courses don’t sufficiently emphasize right-brain activity (responsible for creativity and intuition) (Kirby, 2004; Gibb, 2011). Entrepreneurial creativity (EC) was defined by Amabile (1997, p.20) as “the generation and implementation of novel, appropriate ideas to establish a new business or new program to deliver products or services” and extends the traditional view of entrepreneurial education which focusses on business aspects. EC is distinct from general creativity in that it has an entrepreneurial context; it does not just focus on opportunity discovery, but also on opportunity exploitation and resource construction ((Lin & Svetina Nabergoj, 2014). The Ideate module uses techniques such as brainstorming, persona identification, etc. to encourage the students to fully understand the problem by investigating it from different perspectives before developing a business idea. Techniques such as Customer Journey and Business Model Canvas are then used to refine the idea further.

Henneke & Lüthje (2007) call for greater interdisciplinary work among students to broaden understanding of different knowledge domains. Their research suggests a positive relationship between the educational heterogeneity of the project teams investigated to the level of strategic planning openness and this openness is positively related to product innovativeness. It could be suggested, therefore, that STEM students would benefit from working with peers from other disciplines, both within and outside STEM. The Ideate module feedback from students will later show the benefit they found when working with students from different disciplines. Interdisciplinary working might be problematic to organise outside the boundaries of the specific School or Faculty, but should be easier to facilitate within STEM subjects if they are clustered within one department.

The Ideate module, therefore, develops the students’ EC through an engaging experiential process (aligned with Kolb’s learning cycle), within an interdisciplinary context, using social constructivist theory (Vygotsky). It develops metacognition to enhance flexible strategic thinking. The following section gives details of how it achieves this.

### Student Feedback

Fiet (2001) states the importance of gaining approval from students regarding the teaching approach used in order to gain their commitment. This section hopes to validate the teaching approach by using evidence of qualitative, and mainly anonymous, feedback from questionnaire evaluation following each mobility, a feedback gathering session at the end of the second mobility, completed reflections as part of their assessment and videos which were recorded at the second mobility (which can be accessed from www.ideate.me). Extracts of this evidence are submitted to support the fact that the Ideate concepts were beneficial to student learning.

After the first mobility students’ general comments were:

*“Fast-paced workshop and learning techniques kept us motivated and on the edge. Great experience.”*

*“Learning methods were very good. Getting people doing practical work with post-it notes was fun and very useful.”*

*“Presentations were great. At first I felt stressed having to give presentations about a task that was not complete – in time, I learned to relax more and understood it’s more about the progress itself than getting ready. Gained confidence, which makes me happy.”*

*“Keynotes were relevant and supported learning.”*

When asked which skills and knowledge were gained or upgraded significantly, many students commented about their team-working and communication skills. Empathy, confidence, coping with stress, tolerance for imperfectness were also mentioned. These skills are part of the entrepreneurial mindset the EU is trying to promote (EU 2008). Key entrepreneurial competencies can be separated into 3 categories; attitude, skills and knowledge (EU, 2012). Attitude can be seen in a person’s ability to take responsibility for their own learning, their sense of initiative, their self-efficacy and their perseverance under pressure; these are attitudes developed during ideate. Skills such as creativity, analysis, motivation, networking and adaptability are also fundamental in the module.

*“The module exceeded my expectations as all groups did great work and came to such results in a number of days. Instead of feeling tired after such an intense course, I was reinvigorated and full of ideas, creativity and positive energy”*

*“I didn’t really know what to expect. I thought it was going to be more entrepreneurial. The first meeting got me a bit worried whether I’d ever make it through, as I’m not a creative person. But working in a team learning environment, “creativity” is easier, as you’ll have others throwing ideas in too”*

Comments from the second mobility were less positive, which is a reflection of some conflict which developed within the groups when the groups became larger, however, this was perceived by many as a benefit of the module as they had to listen, compromise and negotiate to achieve a positive outcome. Perry-Smith & Coff (2011) describe four mood states for groupwork; “activated-pleasant (cheerful enthusiasm), activated-unpleasant (distressed irritability), unactivated-pleasant (calm peace) and unactivated-unpleasant)” They found that activated pleasant moods increased the number of ideas generated whereas unactivated pleasant moods encouraged selection of more novel entrepreneurial ideas. It is therefore important that different mood states are stimulated when considering the teaching approach.

Business knowledge wasn’t introduced until the second mobility and one student commented, “I had zero knowledge about business, I didn’t even want to hear about it. I thought it is all about numbers and statistics. I see it different now.” Entrepreneurial knowledge was also evident as another student commented “I have learned to express my ideas to an international group of students who may not understand the same level of English as I do, and respect when the group might not be willing to take my idea on board. I also learned how important criticism can be in making an idea more solid to a potential investor.”

Students were asked what they learned from working with students from other countries and disciplines. With regard to interdisciplinary working in particular, they appreciated that their ideas were influenced by the different discipline knowledge of the team; that different skill sets contributed to the team dynamics and that they were forced to make compromises based upon different knowledge sets.

Some final comments on the module are presented below as a testament to the learning effectiveness:

*“I can see now how to approach any problem, not just business.”*

*“Entrepreneurial skills and knowledge, this is not so scary anymore. I would not start up a business on my own. I realise there’s still a lot I don’t know and I need more time to learn as much as I can, but with the right team in the right timing, I could see myself as one of the founders in a company in my field.”*

These are just a selection of some of the positive comments made at the end of the module. Working in an interdisciplinary way will provide challenges to universities, but the outcomes can be beneficial to the entrepreneurial mindset of students who participate in a module delivered in the Ideate way.

## Reflection about the module, relevance to future delivery and STEM teaching

The schedule of delivery for the module can be found in Appendix 2. Each of the five stages will now be analysed, from the perspective of a mentor on the module and based on student feedback, to suggesting improvements which could be made to future iterations of the module, but also to offer ideas to STEM educators.

#### Stage 1 - Preparation

A Moodle (Virtual Learning Environment) module was used to present material needed for the module. This worked well to bring students in different countries together. The bio-profiles that the students produced ensured that students could get to know each other before the face to face meeting. This is highly recommended if the students do not know each other before they begin the module.

The challenge was *"What if there was an easier access to quality food?”*This is presented as an example, there are a wide range of subject areas which could be the basis of the problem to solve. The problem should be considered in the wider context of the discipline of the students on the module.

Students were asked to research some pre-prepared material and submit their ideas to a Moodle discussion board to enable four ideas to be selected by the mentors, around which the four teams of four would be formed. Mentors contributed to the discussions and engagement by the students was good. It was quite difficult to extract the ideas as many students just discussed the topic, but four broad ideas were eventually selected. The initial instructions need to be clear to avoid over discussion and more concentration on ideas.

#### Stage 2 – Intensive Learning 1 (Manchester mobility)

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Teams were formed around interests in each of the four ideas and the study discipline of the students rather than just having one student from each of the institutions in each team. It was considered that an interest in the idea was very important to encourage motivation, but the interdisciplinary nature was also important to the project. It would be interesting to test how it would work with five or six students, although, as will be seen later, eight was too many.

The initial ‘get to know you’ session did not work well as it focused on discussion and was quite formal. Fun team building exercises will be used in future which will allow the students to get to know each other in a more informal way.

The format of the delivery of this mobility was based on short Keynote presentations which introduced the activity followed by the students working together (supported by the mentors), students presenting what they had done and mentors giving feedback. This approach was appreciated by the students, with the majority saying that the Keynotes, in general, added to their understanding. Activities used brainstorming techniques with Post-It notes to refine ideas, persona analysis to understand the customer and visualization of the idea for communication. Customer research was expected to be carried out during the next Stage, so research techniques were covered briefly and students had the opportunity to outline questions and gain feedback from other groups. As the students were not only from different disciplines, but were also at different levels of study, there was a lot of opportunity for them to learn from each other. This is something which should be encouraged as it enriched the experience.

Mentors were initially unsure of their role; the balance between interfering and helping the teams was quite difficult to achieve, especially as there were so many mentors in the room. This is something which needs to be considered before delivery as some students felt that they needed more time to be left to discuss issues independently.

The module used a game-based approach, with competition between the four teams. At the end of the first mobility, the two best ideas were selected from the four by the mentors. Each mentor used their own subjective judgement and allocated scores independently, with brief justifying comments, to each team using Post It notes. The Post It notes were immediately attached to the relevant groups on a flip chart, marks were added to find the winners. Students were able to see the comments and move forward based on the feedback. This was an interesting process as mentors came from different disciplines and were obviously looking at different aspects when allocating the marks, so there were a range of differing opinions expressed. The fact that a common assessment structure was not used was effective in this instance as there was no summative aspect to the mark.

The two winning teams then needed to recruit new members. This was done by one of the mentors facilitating discussions between all the students. There was an element of each team needing a range of skills specific to the idea, but there was also a desire by some students to work with people with whom they had formed friendships. It was important to put people together who were all committed to the relevant idea. This was a problem for some, having just had their idea rejected and presented challenges in the final mobility.

#### Stage 3 - Incubation

Having formed two new teams immediately prior to requiring students to work virtually together in this Stage caused issues. Some students were not so committed to the idea and focused more on their taught modules, making small or no contributions to the project. Whether this was due to poor time management, a dislike of virtual working or just lack of commitment to the idea, it caused bad feeling when the teams met again for the second mobility. Student feedback suggested that the time between mobilities was too long. The module will be repeated in the 2015-16 academic year with mobilities in Turku, Finland and Vilnius, Lithuania. Feedback has been taken into consideration and partners have agreed to reduce the inter-mobility gap to two weeks, but feel that the break is required for students to undertake research.

#### Stage 4 – Intensive Learning 2 (N. Goriza mobility)

The focus of this mobility was to move the students to the evaluation stage of their idea by using Customer Journey and Business Canvas Model exercises to focus on risks and opportunities. Students were allowed to work, within their groups, more independently as the mentors began to change the way they scaffolded learning. In Manchester, feedback was given more readily, while in N Goriza, students were given time to work things out within their group. Fiet (2000) refers to the problem for educators associated with loss of control and predictability, which can feel threatening, but the evidence from this module suggests that learning can be very effective when students are allowed to work things out for themselves. Keynotes were used, but to a lesser extent. Pitching practice with feedback from mentors was extensive.

As previously mentioned, groups did not have the same team spirit in the second mobility. Groups of eight were considered too large as they allowed some students to avoid engagement which others found difficult to manage. New members of the group brought new conflicting ideas, which had to be negotiated, and resulted in an unactivated-unpleasant mood. This could be viewed as good as it put the students in unfamiliar situations and forced them to look critically at the way they operated as a group.

On reflection, the lack of bonding time after forming the two groups and the fact that adopted students were unlikely to be as committed to the idea when theirs had been rejected, means that it has been decided by the partners that, in future, the four groups will be continued to the end of the module. This is something which needs to be considered carefully if using the more competitive approach of four groups reducing to two – it provided opportunities but also presented problems already mentioned. Feedback from the students suggested the students didn’t enjoy the second mobility as much as the first, although it might have been different had the two groups of eight had time to bond more effectively.

#### Stage 5 – Post-Stage

The post stage comprised of students submitting a reflective report regarding their learning for assessment purposes. The assessment set out on the original module specification (see appendix 1) was difficult to use as the students worked in groups and not all students presented in the final pitch, the specification, therefore, has been changed for 2015-16 to include a learning diary and a reflection. These will be used to assess the original learning outcomes.

#### Relevance to STEM teaching

Having read the previous section, it should be apparent that there are many ideas which could be used within STEM teaching to engage students and improve their entrepreneurial mindset. This section discusses some of the ideas further.

The framework and toolkit (to be produced as part of the Ideate project which will be available from www.ideate.me), will provide the basis for an interdisciplinary module either within STEM subjects or across wider disciplines. It could work as mobilities set up within a single University or could be used across different Universities. The easiest approach would be for a module to be set up in a Faculty which spans different STEM subjects as this would facilitate the management and delivery. However, the concepts could be applied just within a single module as is the case at Staffordshire University, where a Level 4 module has been developed to raise students’ entrepreneurial awareness by challenging them to undertake a group project to help a charity. Student engagement has been excellent as ideas have been refined. The activity is not interdisciplinary, but it is developing entrepreneurial creativity and employability skills and has required little preparation in terms of delivery, which is a significant factor to sell the idea. The idea could be extended across subject areas.

The lecturers involved in the Ideate project found the teaching experience enjoyable and rewarding because the student engagement was highly evident and learning progress was easy to identify. Many of the resources needed will be available in the toolkit which will reduce the amount of preparation time needed. Keynote information and techniques used in the practical sessions will be accessible and can be adapted based upon the knowledge of the lecturers. The business aspects are easy to learn for lecturers from STEM disciplines; there would not be a need to employ specialist business teachers. Timings could be adapted as required, with mobilities being shortened if necessary, but it is considered that time is needed between the two mobilities for student reflection and research and the opportunity to experience working in a virtual team. Taking students from their normal working environment would be beneficial, but this isn’t considered essential.

The subject area under investigation is important, it should be neither too wide nor too narrow. There were many uncertainties as to what would be developed as a prototype in relation to “***What if there was an easier access to quality food?”***, in the end one group cooked larvae while the other group developed a mobile app interface. By using reflection as the method of assessment, the emphasis will be taken from the prototype (although this is still important in pitching the idea) and placed on the ‘learning by doing’ experience. The uncertainty of outcome could be challenging for lecturers, but it could also be enlightening.

It would be beneficial to pitch the final ideas to entrepreneurs as this then gives the process credibility, but if this isn’t possible then other lecturers could be judges. The game aspect of the module is motivating for the teams throughout the process as they see progress through the evolution of ideas by watching other students’ presentations. It is, therefore, advised that the final pitch also exploits the gaming experience.

## Conclusions

Details of the Ideate module have been presented to show how an experiential pedagogy could be used to develop entrepreneurial creativity. The feedback from the students shows that they have developed attitudes, skills and knowledge which are consistent with entrepreneurial competencies (EU, 2012). As several students commented, this module opened their eyes to what entrepreneurism is about and challenged their perceptions that it was strongly related to business and, therefore, not for them.

A Framework is being developed for the teaching of future Ideate-like modules, this incorporates elements which need to be included in the schedule. A toolkit is also being constructed to support tutors in delivery, further information can be found at [www.ideate.me](http://www.ideate.me).

Finally, this paper has been written to encourage lecturers within STEM subjects to consider an Ideate-like module to develop students’ entrepreneurial creativity (hopefully in an interdisciplinary way), by using the ideas and tools developed as part of the European funded Ideate project.

## References

Amabile, T. (1997). Entrepreneurial Creativity Through Motivational Synergy. *The Journal of Creative Behavior*, 31(1), pp.18-26.

EU (2008). Entrepreneurship in Higher Education. Brussels: European Commission Enterprise and Industry Directorate-General.

EU (2012). Effects and impacts of entrepreneurship programmes in higher education.

Brussels: Entrepreneurship Unit, Directorate-General for Enterprise and Industry, European Commission

EU (2015). The Entrepreneurship 2020 Action Plan. [Online] Available from: <http://ec.europa.eu/growth/smes/promoting-entrepreneurship/action-plan/index_en.htm> [Accessed: 29th October 2015]

Fiet, J.O. (2001). The pedagogical side of entrepreneurship theory. *Journal of Business Venturing*. 16 (2). p.pp. 101–117.

Ideate (2014) Ideate.[Online] Available from: <http://ideate.me/about/> [Accessed: 24th September 2015]

Ideate (2013). Interdisciplinary Entrepreneurial Application for Transforming Education in High Technologies. Lifelong Learning Programme, EU

Gibb, A. (2011). Concepts into practice: meeting the challenge of development of entrepreneurship educators around an innovative paradigm: The case of the International Entrepreneurship Educators’ Programme (IEEP) E. Ramsey (ed.). *International Journal of Entrepreneurial Behavior & Research*. 17 (2). p.pp. 146–165.

Henneke, D. & Lüthje, C. (2007). Interdisciplinary Heterogeneity as a Catalyst for Product Innovativeness of Entrepreneurial Teams. *Creativity & Innovation Management*. 16 (2). p.pp. 121–132.

Kirby, D.A. (2004). Entrepreneurship education: can business schools meet the challenge? *Education + Training*. 46 (8/9). p.pp. 510–519.

Lin, J. & Svetina Nabergoj, A. (2014). A Resource-Based View of Entrepreneurial Creativity and Its Implications to Entrepreneurship Education. *Economic and Business Review*. 16 (2). p.pp. 163–183.

Perry-Smith, J.E. & Coff, R.W. (2011). In the mood for entrepreneurial creativity? How optimal group affect differs for generating and selecting ideas for new ventures. *Strategic Entrepreneurship Journal*. 5 (3). p.pp. 247–268.

Appendix 1 – Module Descriptor for Interdisciplinary Entrepreneurship, Level 5 and Level 6

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| |  |  |  |  | | --- | --- | --- | --- | | http://www.staffs.ac.uk/images/logo.gif | |  | | --- | | **Module Descriptor** | | 23/09/2015 |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **Code:** | COWB50390 | **Version:** | - | **Approval Status:** | | N/A | | | **Title:** | INTERDISCIPLINARY ENTREPRENEURSHIP | | | | |  |  | | **Section:** | Faculty of Computing, Engineering and Sciences | | |  |  | **Level:** | 5 |  |  |  |  | | --- | --- | --- | | **Contact** | **E-mail Address** | **VLE** | | Stella Mills | [S.F.Mills@staffs.ac.uk](mailto:S.F.Mills@staffs.ac.uk) | - |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Pattern Of Delivery** | | | | | | |  | | --- | | **Credits** | | 15 | |  | |  |  |  | | --- | --- | --- | | **Contact Hours** | **Independent Study Hours** | **Total Learning Hours** | | 70 | 80 | 150 | |  | |  | | --- | | **Description of Pattern of Delivery** | | Occurrence A, Stafford Campus, UG Semester 2 | | Occurrence A, Stafford Campus, UG Semester 2 | |  |  | | --- | | **Site** | | Stafford Campus |  |  |  | | --- | --- | | **Registration Conditions** | **Module Version Condition Text** | | None |  |  |  |  | | --- | --- | | **Module Details** | | | ADDITIONAL ASSESSMENT DETAILS | Presentation (20%):  Students to present their work as a group video as a medium for advertising entrepreneurial success.  (Assesses Learning Outcomes 1,2)   Coursework (60%):  Development portfolio (60%) Documentation of the activities undertaken, planning and proposals, meetings and correspondents alongside pictures, video, audio recordings etc. which outline the work undertaken in achieving the outcomes set out in the proposal.  (Assesses Learning Outcomes 1, 2,3)   Evaluation (20%):  Individual reflection upon the qualities and skills needed for working as an entrepreneur within a multidisciplinary team; the reflection can be in any form of a permanent medium.  (Assesses Learning Outcome 4)   Key Information Set Data: 20:80  100% Coursework | | INDICATIVE CONTENT | You will undertake a substantial entrepreneurial activity, which will be group based with students from at least three other disciplines, who also may be from another country. During two weeks of intensive learning, possibly taking place within a country beyond the UK, you will gain entrepreneurial skills through the solving of a problem proposed by entrepreneurial practitioners. These skills and knowledge include innovative business practice, including project management, financial awareness and marketing knowledge. In addition, leadership and communication skills will be developed through client-centred awareness and networking. In the first intensive learning week, students will work in teams of four, each student representing a different discipline, while in the second week, a ‘maxi-group’ of students will produce a group solution to a practical problem. You may be required to undertake data collection through interviews and other methods. | | LEARNING STRATEGIES | 24 hours per week for two weeks’ intensive group learning in various places, which may include locations outside Staffordshire University. Also, independent study for underpinning theoretical development.  Contact time: 50 hours in total  Key Information Set Data:  30% Scheduled Learning and Teaching Activity  70% Guided Independent Study | | PROSPECTUS INFORMATION | The world of work is ever changing and requires students to be equipped with an ever increasing skills base which includes innovative and entrepreneurial problem solving abilities. This module will assist students in developing their skills as entrepreneurs through being part of an interdisciplinary and cross-cultural group, while solving real-world problems proposed by entrepreneurial practitioners. It may require free travel to another country. | | RESOURCES | MS Project or equivalent; video and audio editing software.  Web-based toolkit containing underpinning of core skills with links to other relevant websites and recorded advice from entrepreneurial practitioners from across the EU. | | TEXTS | Borch, Odd Jarl, 2012, Entrepreneurship Research in Europe : evolving concepts and processes, Cheltenham: Edward Elgar.  Carland, JoAnn c and Carland, James W Jnr, 2012, Entrepreneurial Marketing, Whitney Press.  Goodman, Malcolm and Dingli, Sandrs, 2013, Creativity and Strategic Innovation Management, London: Routledge.  Mellor, Robert, 2009, Entrepreneurship for everyone: a student textbook, London: Sage.  Storey, David, J and Greene, Francis J, 2010, Small Business and Entrepreneurship, London: Pearson. |  |  |  | | --- | --- | | **Learning Outcome** | | | 1. DEMONSTRATE A KNOWLEDGE OF ENTREPRENEURIAL BEHAVIOUR IN A GIVEN CONTEXT BY APPLYING CONCEPTS AND PRINCIPLES FROM A DIFFERENT CONTEXT. | Application | | Enquiry | | 2. DEMONSTRATE KNOWLEDGE OF TRANS-DISCIPLINARY COLLABORATION SKILLS RELEVANT TO ENTREPRENEURSHIP BY COMMUNICATING THE KEY TECHNIQUES EFFECTIVELY. | Communication | | Knowledge & Understanding | | 3. EVALUATE CRITICALLY APPROPRIATE APPROACHES TO ENTREPRENEURIAL ACTIVITIES AND DEMONSTRATE NEW COMPETENCIES FOR SIGNIFICANT RESPONSIBILITY WITHIN AN ORGANISATION. | Problem Solving | | Reflection | | 4. REFLECT ON PERSONAL PERFORMANCE IN TERMS OF EXISTING SKILLS AND THEIR DEVELOPMENT, INCLUDING DECISION MAKING AND PERSONAL RESPONSIBILITY, WITHIN ENTREPRENUERIAL ACTIVITY. | Knowledge & Understanding | | Reflection |  |  | | --- | |  | |

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| |  |  |  |  | | --- | --- | --- | --- | | http://www.staffs.ac.uk/images/logo.gif | |  | | --- | | **Module Descriptor** | | 23/09/2015 |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **Code:** | COWB61122 | **Version:** | - | **Approval Status:** | | N/A | | | **Title:** | INTERDISCIPLINARY ENTREPRENEURSHIP | | | | |  |  | | **Section:** | Faculty of Computing, Engineering and Sciences | | |  |  | **Level:** | 6 |  |  |  |  | | --- | --- | --- | | **Contact** | **E-mail Address** | **VLE** | | Stella Mills | [S.F.Mills@staffs.ac.uk](mailto:S.F.Mills@staffs.ac.uk) | - |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Pattern Of Delivery** | | | | | | |  | | --- | | **Credits** | | 15 | |  | |  |  |  | | --- | --- | --- | | **Contact Hours** | **Independent Study Hours** | **Total Learning Hours** | | 70 | 80 | 150 | |  | |  | | --- | | **Description of Pattern of Delivery** | | Occurrence A, Stafford Campus, UG Semester 2 | | Occurrence A, Stafford Campus, UG Semester 2 | | Occurrence B, Stoke Campus, UG Semester 2 | | Occurrence B, Stoke Campus, UG Semester 2 | |  |  | | --- | | **Site** | | Stafford Campus | | Stoke Campus |  |  |  | | --- | --- | | **Registration Conditions** | **Module Version Condition Text** | | None |  |  |  |  | | --- | --- | | **Module Details** | | | ADDITIONAL ASSESSMENT DETAILS | Presentation (20%):  Students to present their work as a group video as a medium for advertising entrepreneurial success.  (Assesses Learning Outcomes 1,2)   Coursework (60%):  Development portfolio (60%) Documentation of the activities undertaken, planning and proposals, meetings and correspondents alongside pictures, video, audio recordings etc. which outline the work undertaken in achieving the outcomes set out in the proposal.  (Assesses Learning Outcomes 1, 2,3)   Evaluation (20%):  Individual reflection upon the key qualities demonstrated while working as an entrepreneur within a multidisciplinary team; the reflection can be in any form of a permanent medium.  (Assesses Learning Outcome 4)   Key Information Set Data:  100% Coursework | | INDICATIVE CONTENT | You will undertake a substantial entrepreneurial activity, which will be group based with students from at least three other disciplines, who also may be from another country. During two weeks of intensive learning, possibly taking place within a country beyond the UK, you will gain entrepreneurial skills through the solving of a problem proposed by entrepreneurial practitioners. These skills and knowledge include innovative business practice, including project management, financial awareness and marketing knowledge. In addition, leadership and communication skills will be developed through client-centred awareness and networking. In the first intensive learning week, students will work in teams of four, each student representing a different discipline, while in the second week, a ‘maxi-group’ of students will produce a group solution to a practical problem. You may be required to undertake data collection through interviews and other methods. | | LEARNING STRATEGIES | 24 hours per week for two weeks’ intensive group learning in various places, which may include locations outside Staffordshire University. Also, independent study for underpinning theoretical development.  Contact time: 50 hours in total  Key Information Set Data:  30% Scheduled Learning and Teaching Activity  70% Guided Independent Study | | PROSPECTUS INFORMATION | The world of work is ever changing and requires students to be equipped with an ever increasing skills base which includes innovative and entrepreneurial problem solving abilities. This module will assist students in developing their skills as entrepreneurs through being part of an interdisciplinary and cross-cultural group, while solving real-world problems proposed by entrepreneurial practitioners. It may require free travel to another country. | | RESOURCES | MS Project or equivalent; video and audio editing software.  Web-based toolkit containing underpinning of core skills with links to other relevant websites and recorded advice from entrepreneurial practitioners from across the EU. | | TEXTS | Borch, Odd Jarl, 2012, Entrepreneurship Research in Europe : evolving concepts and processes, Cheltenham: Edward Elgar.  Carland, JoAnn c and Carland, James W Jnr, 2012, Entrepreneurial Marketing, Whitney Press.  Goodman, Malcolm and Dingli, Sandrs, 2013, Creativity and Strategic Innovation Management, London: Routledge.  Mellor, Robert, 2009, Entrepreneurship for everyone: a student textbook, London: Sage.  Storey, David, J and Greene, Francis J, 2010, Small Business and Entrepreneurship, London: Pearson. |  |  |  | | --- | --- | | **Learning Outcome** | | | 1. DEMONSTRATE ENTREPRENEURIAL BEHAVIOR BASED ON KEY TECHNIQUES WITHIN A GIVEN CONTEXT. | Application | | Enquiry | | 2. DEMONSTRATE TRANS-DISCIPLINARY COLLABORATION SKILLS RELEVANT TO ENTREPRENEURSHIP. | Communication | | Knowledge & Understanding | | 3. DEVELOP AND COMMUNICATE INNOVATIVE IDEAS INTO OPPORTUNITIES AND SET FEASIBLE STRATEGIES. | Problem Solving | | Reflection | | 4. REFLECT ON PERSONAL PERFORMANCE IN TERMS OF THEORETICAL UNDERPINNING OF ENTREPRENEURIAL CONCEPTS AND PROCESSES INCLUDING ETHICAL AND PROFESSIONAL STANDARDS. | HASH(0x29f60d8) | | Knowledge & Understanding | |

Appendix 2 – Schedule for the Ideate Module

**1. PRE-STAGE – PREPARATION (3-4 weeks - In House)**

**Aim:** to enhance awareness of entrepreneurial behaviour relevant skills, test collaborative capacities, initiate interdisciplinary information research, building a common challenge topic-based understanding.

**Focus on** independent work, guided reading, bio profile building, online networking, research and independent generation of novel business ideas.

**Supportive input**: support by local mentor/s.

**2. Intensive Learning 1 -– IDEATION (5 days - Mobility Visit: Manchester, UK)**

**Aim**: to foster interdisciplinary and international cooperation and communication skills, enhance critical and creative thinking.

**Focus on**: learning by doing, team based work. Students will be engaged in team work organisation, brainstorming & brainwriting, “out of the box” thinking, collaborative idea generation and innovative ideas’ viability testing.

**Supportive input**: keynote led workshops and discussions, support of a team of international mentors. At this stage teams will be assessed against their team project achievements.

**3. MID-STAGE – INCUBATION (4-6 weeks - In House)**

**Aim:** to build /enhance project management related competences and skills, including collaborative skills based on international team work practice, intercultural communication online competences, assembling and application of target-oriented information, and improving business writing skills.

**Focus on** learning by doing, team and project-based work. Students will concentrate on business idea development in order to transform it in business solution.

**Supportive input**: support of local mentors;

**4. Intensive Learning 2 - PROTOTYPING AND BUSINESS PLANNING (5 days - Mobility Visit: N.Goriza, Slovenia)**

**Aim**: to foster oral presentation, argumentation and negation skills; increase awareness of how business strategies are built, decision making process, business planning and product/service prototyping and pitching issues acting in a complex interdisciplinary and international environment.   
**Focus on**: learning by doing, ICT capacities, team and project-based collaborative achievements. At this stage students will be engaged in business modelling and prototyping, business solution pitching practices.

**Supportive input**: keynote led workshops and discussions, support of international mentors’ team. Teams will be assessed against their group project achievements.

**5. POST-STAGE (2-3 weeks - In House)**

**Aim:** to enhance personal performance reflective skills, promote benefits deriving from self- assessment in terms of entrepreneurial behaviour and competences.

**Focus on** entrepreneurship concepts, students’ critical thinking and self-expression terms of ethical and professional standards, as relevant for contemporary entrepreneurial trends.

At final stage students will write the reflective report and complete survey.