



Building Resilient Learning Communities: Using Evidence to Support Student Success

#ETConf20



Stand up and Stand out...

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Abstract

Graduates of the future are individuals with entrepreneurial mind-sets, drawn to innovative opportunities and new value creation. They need advanced skills of critical thinking, problem solving and the ability to working beyond traditional discipline boundaries. Soft skills such as creativity, leadership potential, resilience, communication skills and the ability to work in uncertainty are listed as top prerequisites pursued by the commercial sector.

This case study presents a blueprint for developing these sought-after attributes. The Creative Connection at Staffordshire University is a unique learning environment which brings together student, industry and educator. Its aim is to develop and deliver innovative teaching and learning practices to increase student learning, build sustainable networks and develop employability skills for the next generation. It brings students together from different disciplines to co-create and generate new knowledge, ensuring students leave with a backpack of skills. Using a range of techniques we have ensured that our students developed creative confidence to “Stand up and Stand out“, being competitive and subsequently better prepared for commercial, interdisciplinary working and real-world thinking.

Keywords: entrepreneurial, interdisciplinary, future graduates

Introduction

There has been a dramatic transformation within higher education during the last 10 year and it is reasonable to assume in the current climate that this is going to continue into the fourth industrial revolution and beyond. Technology drivers and globalisation are challenging traditional educational discipline boundaries and demands are being placed on the higher education sector to prepare graduates for jobs that don't yet exist (EDUCAUSE, 2020). Graduates of the future require a complex set of skills and attributes to ensure they are not only equipped for the current commercial sector but have built the resilience, aspirations and drive to sustain them though many changes in their career (Senior et al., 2018; Mckie, 2019; Power, 2018b). It is reported that on average individuals change careers 5-7 times during their working life (CCS, 2019) and therefore it is essential that skills to succeed are developed and nurtured throughout their higher education learning journey.

The World Economic Forum (2018) ascertained that four human characteristics are key for those wishing to keep pace with this dynamic ever changing environment (Dixon and Jordan, 2018). And as such we as educators need to embed opportunities within the learning experience to enable students to not only develop a rich fusion of skills, attributes and knowledge, but to sustain them during the multiple facets of their careers. Creativity, problem-

solving, critical thinking, leadership and people management, are the foundation blocks for graduates of the future, along with the ability to work beyond traditional discipline boundaries (Dixon and Jordan, 2018; Mckie, 2019). It is widely accepted in literature that innovative/sustainable solutions for complex global-challenges reach far beyond a single discipline boundary or methodological approach (McLeish & Strang, 2014; Power, 2018) and as such the practical argument for embedding interdisciplinary collaborations into higher education is strong and supported by policy makers, funding councils and professional bodies (QAA 2012; RAE 2012; DC 2015). It recognises that in a capitalised society graduates contribute significantly to production, distribution, and wealth exchange; whilst also placing value on the fundamental role of universities as institutions for the creation and dissemination of knowledge, producing graduates who have a genuine commitment to society and to be effective citizens (Power, 2018; Senior, et al., 2018). In society as a whole we are faced with many complex challenges such as: food security, ageing population, disaster management, environmental sustainability which require new discipline collaborations. Universities of the future are likely to be co-located with industry to work on projects that solve real-world problems. Therefore, interdisciplinary challenge-led learning is presented as a blueprint for transforming skills and attributes for the betterment of society. The challenges focus on building intellectual capacity through creating sustainable networks to co-create knowledge and develop learning communities to equip graduates to deal with and provide solutions to complex challenges of the future.

The fourth industrial revolution by its very definition is interdisciplinary in nature, crossing fields and transcending traditional academic disciplines. Universities of the future must equip students with the skills and attributes required for an ever-changing commercial landscape (Power, 2018b). Higher education cannot exist in a vacuum, it will be shaped and formed by the world surrounding it. Graduates of the future must be endowed with the necessary discipline knowledge combined with technical, problem solving, critical thinking, creativity, leadership and social integration skills to work in a constant landscape of uncertainty.

Background

The Creative Connection at Staffordshire University was established Sep 2019 and is funded by the Royal Academy of Engineering Visiting Professor Scheme. Its aim and fundamental purpose is to develop and deliver innovative teaching practices, increase learning opportunities within a world of uncertainty, build sustainable networks to ensure participants are best placed for life after study, and to cultivate employability skills that will be required for graduates of the future. Grant (RAE, 2012) acknowledged that “the UK remains home to some of the very best designers and engineers in the world, but an incomplete understanding or application of innovation processes means that many of their good ideas will go no further than the drawing board or computer skills.” It is argued that engineering and design graduates need to be well-educated but also exposed to stimulating environments that promote creativity, problem solving and critical thinking, leading to novel idea generation, and also have opportunities to build sustainable networks and connections to bring them to fruition. The Creative Connection uses a mixed pedagogical framework (offering extra-curricular lectures/masterclasses, guest workshops, 24-hour challenges and design sprints) providing 8 annual touchpoints to connect engineers and designers with other disciplines across the university opening up opportunities to develop skills and attributes to prepare for complex real-world challenges.

The activity within The Creative Connection is facilitated by our visiting Professor of Innovation Andrew Lawrence (Elmwood) along with other external stakeholders. It is designed to take students outside their comfort zones by bringing them together with others from different disciplines to co-create and generate new knowledge, leaving with a backpack of skills to work

within an interdisciplinary context. Using a range of techniques we have ensured that our students develop creative confidence to “Stand up and Stand out“, being competitive and subsequently better prepared for successful careers irrespective of the discipline.

A case study derived at the mid-year point from the first year of a three-year project is presented. This case study is formed from the reflections of students who participated across a range of activities from Sep 2019 to Feb 2020. A key focus within this study is the 2020 24-hour community challenge “can I make a sustainable difference”? This brought together students from different university programs, Staffordshire County Council, academics from various disciplines and the Executive Creative Director from Elmwood (a leading global brand consultancy). A rich fusion of skills, attributes and knowledge cumulated in a set of innovative proposals for future consideration. Teams of students collaborated to provide solutions to the challenge “how can the residents of Staffordshire make a contribution to the governments sustainable challenge?” The teams of students went head-to-head in Staffordshire County Council’s main chamber. They presented to Civic Leaders and experts in the fields of branding and renewable energy who formed the judging panel. The winning interdisciplinary team was given the opportunity to share their ideas/concepts with members of Staffordshire County Council. This has paved the way for new relationships and networks to be formed between the four stakeholders.

The impact of the Creative Connection has been analysed using two methods. Firstly the Entrecomp competences have been used to assess individual impact on skill development for the sustainability challenge. Secondly a questionnaire was developed with seven individual categories which was used across all activity. The categories: were what the participants liked, skills/knowledge gained, progress in developing/advancing employability and commercial awareness, networking and building connections, developing creative flair, operational feedback and areas for development/improvement. The combined analysis from the 8 touchpoints will be used to develop the next phase of the project which will inform a wider framework for innovative pedagogy. Thus, developing a legacy for learning to increase ambition, drive and success through developing confidence to work within an interdisciplinary context.

The project sits within the School of Creative Art and Engineering outside the formal curriculum to maximise opportunities to engage other disciplines.

Case study: Sustainable Me

Sustainable Me was a 24-hour challenge (10th and 11th Feb) which involved a number of stakeholders including Staffordshire County Council, Andrew Lawrence (Elmwood) and Staffordshire University staff and students. It is recognised that tackling global warming and sustainability is a strategic priority for all nations. The UK like most developed countries is committed to the 17 EU sustainable development goals (United Nations, 2015). Staffordshire County Council has ambitious plans to engage citizens locally to take small steps leading to a collective substantial impact. The challenge focused around providing solutions in regards to raising community awareness of personal environmental impact and empower individuals to reduce their carbon footprint. Teams of students explored a range of options/solutions including: highway, waterways and domestic improvements to empowering individuals to modifying their behaviour to contribute to a more sustainable Staffordshire. The challenge was designed to be wicked, so the boundaries were open for exploration in the widest sense. The participants first needed to research the EU sustainable development goals (United Nations 2015) in context to the local community (both urban and rural), exploring the different stakeholders viewpoints, before realising a solution.

23 students participated in Sustainable ME which formed 5 teams of between 4-5 individuals, the first day was hosted at Staffordshire University. The schedule for the morning included a

brief introduction, inspiration/information from two members of the Staffordshire County Council’s sustainable committee, and instructions for idea’s setting from our Visiting Professor of Innovation (Figure 1a). Interdisciplinary teams where formed with students from different departments and at levels in their studies (Table 1 details the participant sample). The teams were given space to play and explore ideas (Figure 1b) with a drop-in session facilitated in the afternoon, when experts from across the university provided mentoring (Figure 1c). The second day was hosted by Staffordshire County Council. Students were loaned the council chamber for a morning (as a base) to make final amendments to their pitches (Figure 2a). The day cumulated in all of the interdisciplinary teams presenting to the judging panel in 5 minute pitches with opportunity for questions (Figure 2b). The winning team is featured in Figure 2c.

Table 1 – Participant sample

Discipline	Academic level of study				
	3	4	5	6	7
Engineering	2	4	5		1
Criminal Justice/Law		6	2	2	
Geography				1	
Total	2	10	7	3	1



Figures 1 a) inspiration setting, b) idea exploration, c) expert advisors



Figures 2 a) Council chamber, b) judging panel, c) winning team with judges

Competency analysis

The students were asked at the start of the event to map their skills against the 15 Entrecomp competencies using a simple scale (brilliant, not sure, need to work on) and then the opportunity to reflect on their individual development after the event. 52% of the participants completed both sections, 79 competences were marked as brilliant, 150 as not sure and 23 as need to work on. Each of the reflections was assessed against the Entrecomp framework competencies to determine areas of key impact. A summary of the reflection mapped into each competency is illustrated in Table 2. It was interesting that the three key competencies that were perceived to be developed significantly during the challenge (highlighted in green text) were: spotting opportunities, building and inspiring vision and ability to make the most out of strengths and weaknesses. There was an increased self-awareness when working in a spontaneous environment outside the participant’s core discipline. For example some participants commented that “I was able to see my strengths Vs the team and use everyone’s

for the benefit of the project” others commentated “...that it improved my visibility of strengths and weaknesses” and “it showed my weaknesses and where to grow” or “I feel I should have used my strengths more”. Five of the competency areas saw limited impact in the participant’s reflection (marked in red text): appreciating and understanding ideas, understanding the impact on the community, budgeting, inspiring/persuading others, and thriving in uncertainty. It is interesting that during the presentations the gaps in these areas were also the focus of the judging panel’s questions. In some presentations, the judging panel commented that an area to develop was, the understanding and exploration of communication strategies, for example: how you would get residence on board particularly if there were lifestyle changes to be amended? It was acknowledged that human behaviour is very difficult to change. There are also some similarities with an earlier Creative Connection challenges in terms of the areas for development. These will be considered at the next phase of the project and specific interventions will be planned within the challenges to ensure these competencies are developed.

Table 2 – Reflections mapped to Entrecomp Competencies

Entrecomp Competencies	Reflections
How good are you at spotting opportunities?	One student commented initially that they were excellent at spotting opportunities, but on reflection, they noted that this was an area they needed to work on. Others commented that initially they were unsure but after the event they thought that they were "better" or they believed it had improved as they had participated, seeing the benefits and limitations.
How would you describe your skills of "creativity"?	Some students commented that whilst their creativity did not improve the challenge had helped them improve their research and engagement.
How good are you at building an inspiring vision that engages other?	Most of the reflections were related to improvements: there is a strong sense of mentoring coming through in the reflections for example: it has shown me that I can help build ideas of people to expand [them] and believe in [them] and I knew what people wanted, [I helped them] see their idea and helped and encouraged. My team showed the ability to accumulate and build ideas collaboratively, in other groups it led to friction when others followed my lead it upset another member of the group.
Are you good at understanding and appreciating ideas?	Comments were minimal, however, two were of interest: the appreciation of the conflict in the challenge and the realisation of the impact of the idea was greatly appreciated.
Are you good at recognising the impact of your choices and behaviours within the community and environment?	This was an area with very minimum reflection. A single comment which confirmed the impact was realised as well as improving the understanding of the idea.
How do you rate your ability to make the most of your strengths and weaknesses?	The main comments were split between those that confirmed that the challenge improved their ability to make the most of your strengths and weaknesses 1) I was able to see my strengths V the team and use everyone's for the benefit of the project, and it improved my visibility of strengths and weaknesses. And those that identified development areas 2) It showed my weaknesses and where to grow and I feel I should have used my strengths more.
Describe your motivation levels?	Reflections were split to two distinct camps – those that confirmed after the challenge they were always very motivated and those that commented that the activity had made motivation critically higher or that they were more motivated than they thought they would be.
How effective are you at finding and using resources?	Very mixed responses across all three scales: confirmation that they already could research so the project didn't really impact here. Some commented on the difficulties in a short time frame (and wanted more time), others shared the view that the interdisciplinary work showed them a wider perspective.
Would you say you are good at drawing up a budget for a project?	Only one comment was received to say that this had increased from an economical point of view.
How good are you at persuading, involving and inspiring others?	In the main irrespective of the initial score the majority of comments gave a neutral response, comments included individual styles worked well, through to, didn't really get time to consider.
How good are you at problem solving for communities?	Generally positive improvements: comments pinpointed: ability to calm situations down, breaking things into step-by-step approaches. Others commented on now being able to view from other angles which they hadn't previously seen. An interesting comment was related directly to improving problem solving for local area and the value of this.
Are you proficient at developing an action plan, which identify priorities and milestones to achieve goals?	Limited comments but one student specifically made reference to how the challenge had improved by identifying different and new unthought areas.
How do you thrive in situations that are uncertain, ambiguous and high risk?	No specific comments provided
How would you describe your team working skills?	Some interesting reflections: one student commented that at times they were over enthusiastic and perhaps this needed reigning in a little. Others commented on how the challenge improved team skills because they understand the value of others better.
Describe how well you reflect and judge your achievements and failures and learn from them.	Very limited comments given but the two that were evident were an appreciation of strengths and weaknesses, and they needed more opportunity within the day to achieve this.

Analysis

To date the extracurricular project has attracted 149 students across five touchpoints at the mid-year stage. In addition to the competency reflection for the interactive challenge-led activity, at all the five planned activities (masterclasses, lectures, workshops, challenges and sprints) a questionnaire was distributed. A total of 103 individual responses were recorded representing a response rate of 69%. The themes identified from the initial analysis demonstrate that the students across the board find this a new approach to education, rich and to be containing lot of energy and positivity. The challenges and interactive activity have clear themes connecting them, which are linked to interconnectivity. Our student's value opportunities to work with students who they wouldn't normally meet. For example, comments

included, what we liked about the challenge: “mix of people from all backgrounds working with each other's skill”, “the randomly selected teams, bring people from different disciplines together” and “socialising with other sectors of the university”. During the sustainability challenge there was a strong social theme of giving back expressed: “ [it] ...allowed us to attempt to make a difference, the potential is huge and the impact great”, “the interactivity and connectivity with the youth and universities, telling us we are the future, making us a part of the council responsibility”. In terms of skill development there was a single overarching theme for the challenge-based learning which was the development of presentation skills. This was followed by other attributes/skills being listed such as: leadership, communication, creativity, problem solving, teamwork and communication. All the skills that are sited to be key for graduates of the future. All participants discovered new networks in the challenge-based scenarios” ...we got to introduce ourselves and present ideas to local members of council, getting advice and support” and “yes, made friends who I hope to keep in contact”. Despite the wickedness of the challenge, organisation received positive comments for example “very well run, lovely good council members and Andrew was very helpful”.

Conclusion

The conclusions that can be drawn at the mid-year point are interesting, interdisciplinary challenge-led learning within extra-curricular learning, develops skills of resilience (to work outside discipline comfort zone) and networking which undoubtedly will better equips students to deal with a world influx. Embedding interdisciplinary learning develops self-awareness, criticality, problem solving, creativity and reflection leading to individuals who are prepared for complex real-world challenges. Early analysis shows several students attended multiple events, thus placing value on the activity and learning experience. During the final few months, we will be developing the next phase which contains a masterclass lecture for biomotive triggers and an interdisciplinary 5-day sprint working with University Hospital North Midlands. This will conclude the first year of The Creative Exchange and enable a fully analysis of student feedback to be conducted which will inform the development of a model to support Staffordshire “Graduates of the Future”.

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