RESEARCH & SCHOLARLY ACTIVITIES

2018/2019 SHOWCASE

University Centre Somerset
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WELCOME

Welcome to our seventh publication showcasing the scholarly activity and research undertaken by College staff during 2018/2019.

I am delighted to see such a wide range of activities that our academic and business support staff have been involved in. Engagement in research and scholarship contributes immensely towards enhancing the student experience, developing a vibrant and stimulating curriculum and preparing students for employment. It is also essential to our success at the University Centre Somerset as we continuously strive to expand our Higher Education offer.

Reading all the articles and seeing the accompanying evidence, I am amazed by the diversity of the projects that have been undertaken, from live briefs and partnership-working with employers and industry, to involving students as partners in research. As a world-class College engaged in research and scholarship, we are well placed to contribute towards social and economic growth and promote more sustainable development for the future.

Staff are committed to cementing their professionalism by becoming members of professional organisations and fellows of Advance HE. Such continuous enhancement of our professional practice demonstrates our passion for improving teaching and learning and preparing students for their chosen careers.

It has been over a year since the launch of the national Scholarship Framework, aimed at supporting the growth of a distinct scholarship culture in College-Based Higher Education. All our staff are now able to access the Framework's resources that can help them continuously enhance their professional practice and support their engagement in research and scholarship.

I would like to extend my congratulations to all those involved and thank them for their contribution to the growing ethos of research and scholarship at the College.

ANDY BERRY
Principal and Chief Executive
Bridgwater & Taunton College

Editorial team:

Editor – Jolanta Peters
With thanks to the library team for proof-reading support

Contents

ANDI SMART
Distance Learning

What benefits to an older person's health and wellbeing might accrue from a later retirement, and what barriers need to be addressed if implementation is to be successful?

Historically, retirement has been viewed as the last life course shift; two steps into 'fully-fledged' *old age*, with no return. Previous research has paid little attention to exploring retirement processes (Gullette, 2010; Macnicol, 2010). As a consequence, the retired generation have been seen as disengaged from the political and social systems and practices that underpinned the fabric of (a working) society (Johnson, 2009). However, recent legislative shifts surrounding the compulsory retirement age, as well as an increase in longevity (Ready for Ageing Alliance, 2014), are altering the social and political employment landscape. Nonetheless, there is still a real disconnect between perception of ageing and the financial and political imperatives of a later retirement. This review looks at the benefits of a later retirement and the barriers to implementation, as well as ways to enable the ageing workforce.

Physical health benefits of a later retirement include a lower likelihood of stroke (McLaughlin and Neumark, 2018), cancers, high blood pressure (Leon, 2017), diabetes, lung disease, heart disease and arthritis (Bowling, Watson and Sinclair, 2011). This research, however, fails to acknowledge possible confounding variables which could impact on physical health, such as genetic predisposition, smoking or alcohol abuse. Kelly *et al.* (2014) highlight a reduced risk of dementia and later retirement. Bloemen, Hochguertel and Zweerink (2016) identify that work-based activities enhance physical health. However, this outcome is role dependant. A sedentary role, for example - in an office - could have the reverse effect.

D'Hombres *et al.* (2010) highlight the benefits of economic growth associated with later retirement. Nazroo (2017) discusses individual benefits of being financially better-off. This includes an enhanced standard of living and health and wellbeing. Further research is, however, needed around those who are at the bottom of the income ladder and how income 'inequality' impacts on the ageing and retirement process. Psychological health benefits include an increased 'wellbeing' (Allen, 2008), which includes sense of self (Johnson, 2009) and sense of identity (Levy, 2001). Jang (2009, p. 44) recognises better mental health and / or wellbeing, linked to '…having a purpose in life and maintaining routine and structure'. This is because, as Atchley's (1999, p. 45) Continuity Theory suggests:

> Older adults persist with the activities, behaviours, opinions, beliefs, preferences, and relationships that characterized them in earlier stages of their lives, and that doing so is an adaptive strategy for managing changes in their physical, social, and mental status and the life events associated with growing older.

A strength of Atchley's (1999) theory is that ageing is explored from a life course and functionalist perspective, where the individual and society focus on obtaining a state of equilibrium. Jang's (2009) sample, however, had a limited age range (between 65 and 72 years old). This is not representative or generalisable. Jang's (2009) survey was simplistic, with only 5 questions 'assessing' wellbeing. This creates a limited data set. Staats and Pierfelice (2003) discuss how later life employment provides access to social participation. This equates to a decreased likelihood of loneliness and isolation through work-based connections. The positives of later retirement are, however, not always linear or chronologically sequential. Some positives will exist initially, others will be constant, and some will rise and fall throughout an individual's working life.

Barriers to implementation of a later retirement are evident. The ageing workforce experience disproportionately higher levels of ageism, through stigma, prejudice and discrimination (Squire, 2002; Department of Health, 2005; Aosved, Long, and Voller, 2009). Stigma is defined as 'the disapproval of, or discrimination against, a person based on perceivable social characteristics that serve to distinguish them from other members of a society' (Goffman, 2009, p. 25). Ageism is defined as 'an ideology that justifies prejudice or discrimination based on age that limits people's lives in many ways, both subtle and direct' (Butler, 2005, p. 26). Ageism is ubiquitous; evident in differing cultures and timeframes (Allen, 2008) and embedded in Western culture (Butler, 2008). This suggests that negative dominant discourses and attitudes towards age are rooted in global history (Cole, 1992). There are clear challenges around language and defining 'old age' and ageism (Johnson, 2009). A lack of clear definitions and stigmatising discourses (Aosved, Long, and Voller, 2009) means that social and employment policies are not being effectively developed around this heterogeneous group's needs (Burchett, 2005, cited in Palmore, 2010). This issue is exasperated by a poor political response to older adults' employment needs and vulnerabilities (Blackburn, 2006). The media feeds into unrepresentative stereotypes, which stigmatises and elicits self-inflicted prejudice (Levy, 2001). These top level social and political barriers seep down to ground level, impacting on what is available to the ageing population, structurally – at an individual level (Komp-Leukkunen, 2019). There are, for example, limited flexible working patterns (Dunn, 2018), inadequate infrastructures (Achenbaum, 2013), and a lack of reasonable adjustment, as buildings were not designed with an ageing population and workforce in mind (McLaughlin and Neumark, 2018). Fatalistic attitudes within employment policy (Grundy *et al.* 2007) and management hierarchies (Komp-Leukkunen, 2019), as well as widespread gendered role beliefs, create biased assumptions around redundancies and availability of 'age-friendly' Continued Professional Development (Dunn, 2018).

However, there are ways to enable age-friendly working environments. A shift in cultural and societal employee and employer attitudes are needed (McGuire, Klein and Chen, 2008), with a focus on increasing overall wellbeing (Nazroo, 2017). Legislation that protects the older workforce, such as The Equality Act (2010), needs enforcing (Wandner, Balducchi and O'Leary, 2018). Employers should be made aware that it is unlawful to discriminate on the grounds of age, and this legality should underpin further policy and training implementation (Grundy *et al.*, 2007). Enabling a positive ageing working environment involves promoting a work place, structurally (McLaughlin and Neumark, 2018) and culturally (Dunn, 2018), that does not tolerate discrimination on the grounds of age, and that accommodates for this group's heterogeneous needs. Employees should be advised around how the Act can enable better working conditions through, for example, reasonable adjustments or a tribunal to challenge unfair treatment (Wandner, Balducchi and O'Leary, 2018). This involves employers promoting awareness, which will enable better understanding around how the Act can enforce the rights of the ageing workforce. However, this process does need simplifying. Enforcing this Act has been challenging, and the effectiveness of the Act has been questioned by Partington (2018). Further protection, therefore, could come from The Equality and Human Rights Commission (EHRC), who have powers to support the ageing workforce. This could be underpinned by prejudice and stigma reduction. Allport (1954) discusses prejudice reduction, and how this would challenge bias and misunderstanding around ageing. Knox-Vydmanov and Galvani (2016) suggest bringing older and younger employees and employers together to explore experiences around ageing (Levy, 2001). This would create intergenerational connections (Bloemen, Hochguertel and Zweerink, 2016), which have been proven to destabilise ageism (Bowling *et al.*, 2011). Structurally, buildings that are 'ageing population friendly' should be designed by developers (Butler, 2008) and training should be available for those who are unsure as to how to incorporate the ageing population's needs within the physical environment (McLaughlin and Neumark, 2018). Buildings that are not

'ageing population friendly' (Achenbaum, 2013) should be reviewed. This will allow for reasonable adjustments to be made. For example, more seating, accessible toilets, easier room layouts and clear signs and information boards (Bloemen, Hochguertel and Zweerink, 2016).

The research is clear: later retirement equates to better overall physical and mental health and wellbeing. However, culturally engrained barriers (ageism), and a lack of structurally ageing workforce friendly environments create barriers to successful application. There are, however, Acts in place to protect and support, for example The Equality Act 2010, although enforcing this legislation is challenging. There is a need, therefore, to explore the requirements of the ageing population, through intergenerational conversations, which have proven to be beneficial. This process should be embedded within policy and training, to allow for the diverse and varied needs of this workforce to be met.

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BECKY WORTHINGTON
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Go to Bed with a Book - raising awareness of the benefits of reading at Bridgwater and Cannington Campuses

Poster supporting Go to Bed with a Book campaign

Go to Bed with a Book library display

The Benefits of Book Club library poster

The benefits of reading are clear, for both our students and staff. Reading has a positive effect on many elements of a person's wellbeing, such as improved sleep. The National Health Service (2019) website recommends reading before bed as it '…relaxes the mind by distracting it'. According to research published in the Neurology journal online, 'more frequent cognitive activity across the life span has an association with slower late-life cognitive decline' (Wilson *et al.*, 2013, p.314). The author of the study, Robert S. Wilson of the Rush University Medical Center in Chicago, has said in a statement that 'based on this, we shouldn't underestimate the effects of everyday activities, such as reading and writing, on our children, ourselves and our parents or grandparents' (Schocker, 2017).

So reading is good for you, and as a library service, we are keen to actively promote reading for pleasure as well as for academic improvement.

We have had a number of initiatives over the years and maybe most memorable is the Go to Bed with a Book campaign, which encouraged students and staff to switch off their devices and read a few pages of a book before bed, to help get a better night's sleep. Library staff made an eye-catching display consisting of a replica bed, bedside cabinets and wallpapered walls, with accompanying information supporting the value of reading before bed.

After the library services merged, the idea of running a book club at Bridgwater campus was suggested. This was seen as a continuation of our commitment to promote reading wherever possible. Taunton campus had been running a successful monthly book club for a few years and being able to exchange ideas and follow an established model made the setting up of the first gathering much less daunting.

Our first book club meeting was in December 2017. A student chose *Thirteen Reasons Why* (Asher, 2007) to read, a book that had recently been made into a Netflix TV series, as the student was interested in discussing the differences between the book and the TV show. The show caused some controversy on release, due to the portrayal of teenage suicide and bullying. We found that the book was much more sensitive towards the emotional and distressing subject matter than the TV show, and the discussions that we had around the topics such as mental health, gave the group a starting point to talk about wider issues surrounding the book.

Another successful title chosen by the Bridgwater group was *The Book Thief* (Zusak, 2005), a historical novel set in Germany during the Second World War, following the journey of Liesel, as she discovers the joys of reading and the effects of the Nazi regime on her adopted family and friends. Many attendees had strong emotional responses to this book and conversations around it moved outside of the meeting. This passionate response to the book was highlighted by Trudy Gabell, Head of Learning Resources, who was stopped in the College corridors by members of the book club wanting to discuss the book.

Although the group started successfully, one of the main difficulties we have faced over time has been keeping both students and staff engaged with the meetings. We expected numbers to fluctuate as the academic year went on due to student and staff workload, and this has proved to be the case. We have reflected on how we can improve attendance and have tried to address this issue in several ways.

Firstly, LRC staff thought it would be beneficial to raise awareness of what happens at book clubs and the benefits of attending one, as this is something our main demographic of FE students may not have encountered before. We began to raise awareness by creating a series of bright and bold posters, each with the tag line of 'The benefits of book club No.X:' The aim was to spread the collection of posters around the College in popular student areas, to attract maximum attention. We also made sure posters were displayed in the A-Level study room and we have found the back of toilet doors particularly effective advertising spaces. This was combined with an increase in social media posts about upcoming book club meets, using hashtags and mentioning the relevant authors and the college social media accounts wherever possible to pick up the attention of students who may be interested in attending. The idea of moving the location of the meeting from the LRC gallery space to the coffee shop was trialled. The intention was to create a more informal and visible setting for discussion to take place. The coffee shop has a comfortable and friendly atmosphere and is popular with students, whereas the gallery space is normally reserved for A-Level study and may be intimidating to a student who has not been there before. The coffee shop is also a physically accessible place for all students, and this trial has led to stronger links with the Foundation student groups in supporting their reading journey.

Alongside College-wide email promotion of the book club and face-to-face conversations with users who are borrowing fiction from the library, the library staff are continually trying to create an awareness of the campus book club. Library Co-ordinators include information in the student induction presentations at the start of the academic year. This re-enforces the idea that a book club is a regular part of College enrichment.

The book club idea has now spread to our Cannington campus, where the library team there are encouraging students to view reading as a positive addition to their College lives. We hope the increased energy and awareness surrounding the Bridgwater, Taunton and Cannington campus book clubs will translate into more staff and students attending throughout the year and encourage a lifelong appreciation for reading.

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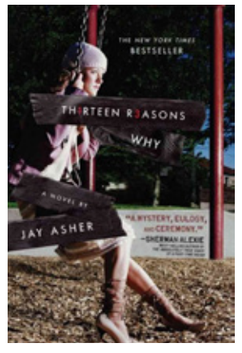

Thirteen Reasons Why book cover

The Book Thief book cover

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The impact of the building's thermal performance on occupant comfort – a case study of the Technology Centre Building

Abstract

In the emerging market of the 21st century, the building industry is among the sectors that is experiencing a rapid increase in the consumption of energy. The use of thermal parameters, obtained from on-site measurement, is of vital importance during modelling because it helps to link the performance gap between the measured and the projected energy demand in the built environment. The impact of the building's thermal performance on occupant comfort in the Higher Education (HE) building has the potential to contribute to HE energy policy development. In the long run this will act as a commitment towards significant energy reduction and achieving 80% CO2 emissions reduction by 2050. This research aimed to assesss the impact of thermal performance of one of the HE buildings in the Taunton Campus. To achieve this, the thermal energy performance of the building needs to be determined. The Technology Centre Building will be used as the case study for this research. The study's methodology involves a quasi-experiment (a measurement of the building's thermal perfomance) and an occupants' comfort evaluation survey as quantitative techniques. The targeted participants are the staff who occupy the building both for office work and for teaching. Also, students who undertake lectures in the building will be approached to get involved in this study. The participating researchers will collect and analyse experimental data on the thermal performance of the case study building. The researchers will also evaluate the building thermal performance in-use, human comfort requirements, and the ecological sustainability of the case-building.

Figure 1: Technology Centre - Side Elevation

Introduction

Studies have shown that buildings contribute a high proportion of the world's energy consumption and associated CO2 emissions. For example, the building sector contributes approximately 39% and 40% of the energy consumption and 38% and 36% of the CO2 emissions in the U.S. and Europe respectively (Becerik-Gerber *et al.*, 2014; Amasyali and El-Gohary, 2018; Mafimisebi *et al.*, 2018). The use of energy that is produced from fossil fuels contributes to CO2 emissions and causes air pollution and global warming. Investigating and analysing building energy consumption is vital for improved decision making towards reducing energy consumption and CO2 emissions, because it can assist in evaluating di erent building design alternatives and building operation strategies (in terms of their energy e ciency) and improving demand and supply management. However, the analysis and projection of building energy usage remains a daunting task due to the variety of factors that a ect the consumption, such as the physical properties of the building, the energy-use behaviour of the building occupants, the external weather conditions, and the installed equipment (Kwok and Lee, 2011; Amasyali and El-Gohary, 2018).

The thermal performance of a building explains the process of modelling the energy transfer between a building and the surroundings. Establishing the thermal performance of buildings is necessary to calculate the cooling load, and this helps to estimate the capacity, size and the selection of an air conditioning apparatus. For an unconditioned building, it calculates the temperature variation within a building. These are very crucial and allow us to determine the effectiveness of the design of the building (Nayak, 2001; Joseph *et al.*, 2015; Amasyali and El-Gohary, 2018). The design load is based on inside and outside design conditions. It is based on the estimation of the steady state approach of various building elements such as wall, roof, door, etc. and the estimation of the overall heat transfer rate (Lowe *et al.*, 2007; Bonte *et al.*, 2014).

Unfortunately, estimates of thermal comfort tend to ignore the impact of different types of building use and issues associated wth managing energy efficiency in a building. They are different depending on the activity style they perform inside. In residential buildings, for instance, disparities in indoor temperature are more acceptable than is the case in hotels or hospitals (Bonte *et al.*, 2014; Joseph *et al.*, 2015; Amasyali and El-Gohary, 2018). This research is seeking to assess the impact of thermal performance in the Technology Centre Building. The main factors affecting thermal comfort will be discussed. In the near future, a comparative analysis of the effect of the building's function on thermal comfort within residential buildings, office buildings and health care buildings will be investigated. As far as environmental aspects affecting thermal comfort are concerned, air temperature is hypothesised to be one of the most significant. It is also hypothesised that different types of buildings have a noticeable effect on the comfort of the occupants. This research aims to comprehend the absolute impact of building thermal performances on occupant comfort using the Technology Centre as a case study.

Methods

The study will involve an extensive literature review to identify a range of variables that contribute to human comfort and the thermal performance of buildings. This study uses the Technology Centre Building (see Figures 1, 2 and 3) as a case-study in achieving the objective of this research. This building was selected because it is one of the newly constructed buildings in the Taunton Campus, and it is imperative to investigate and recommend the best possible practice for thermal energy efficiency. Both qualitative and quantitative methods of research will be used in the collection and analysis of data. The research enquiry involves fieldwork and quasi-experiments in collecting environmental data of the building and its thermal energy use. The environmental data which will be measured will include the air temperature, radiant temperature, air velocity and relative humidity. This will subsequently lead to the calculation of the U-values of the building. In order to account for the state of conservation for the building, the measured thermal properties derived from this experiment will be used to characterize the thermal performance.

Figures 2 and 3: Technology Centre - Front Elevations

Correspondingly, a self-administered online questionnaire will be used to gather data on the specific human comfort parameters and to determine the level of thermal comfort of the Technology Centre Building. Also, the researchers will collect the buildings' energy consumption data from the Bridgwater & Taunton College (BTC) Facilities Management department. The data collected will be analysed with IBM SPSS and the AMOS software. This study will use Exploratory Factor Analysis for examining the consistency, reliability and validity of the collected data on variables, and the structural equation modelling technique for examining the relationship between the thermal performance parameter and the level of human comfort in the Technology Centre Building. The proposed participants are students and staff that uses the building for their daily activities either for lectures or for officework.

Results, Discussion and Conclusion

The research will investigate the impacts of thermal performance on occupant comfort using the Technology Centre as a case-study.

This study's contributions to the body of knowledge are:

- This study will investigate and understand the knowledge and experience of the occupants' comfortability.
- This study will evaluate the impacts of the thermal performance of the Technology Centre Building.
- The outcome of the study might help BTC Facilities department in understanding how the college building uses energy and to recommend the best possible practice in terms of the thermal performances of a college building.
- The research will serve as a contribution of BTC towards climate change action and scholarship research.
- The College could use the research findings to seek external funding for the application in other areas of climate change and sustainability.

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The development of the 'Changing Minds' project

Background

Further Education (FE) Colleges, such as Bridgwater & Taunton College, are the preparation ground to enable access to Higher Education (HE) for all learners in a step-by-step fashion. The Government would like to improve access to HE for certain groups who are less likely to achieve due to barriers in learning, created through disadvantage (Office for Students, 2018). Breaking down these barriers is a primary goal of FE colleges to enable the facilitation of the advancement through education of learners who fall into these groups. To support this outcome, Government policy ensures that all 16-year olds continue to progress their English and maths to the age of 18-years, until they have attained a Grade 4 or above. Without the attainment of English and maths at a Grade 4, advancement to HE cannot be achieved, creating a gap in entry rates at HE institutions that the Government is keen to address.

Due to negative experiences and a sense of failure in learners who have previously failed at maths, many learners are now attending FE colleges with a negative attitude and a lack of belief in their own ability to achieve. This attitude has impacted on achievement rates for GCSE results at FE colleges, including Bridgwater & Taunton College. In turn, this limits the ability of many learners with barriers to learning English and maths to progress from FE into HE.

In 2015/16, one of the applicants, Tinkerbell Dyer, undertook personal research using findings provided by Neuroscience, with a group of students with learning disability. By teaching these students 'brain training' and adopting a 'growth mindset' attitude to teaching and reviewing all teaching methodology to reflect this new attitude, the students all passed a Level 1 functional skills exam, which they had been trying to achieve over a three-year period. This indicated the benefits of applying the Science of Neuropsychology to teaching learners with barriers.

The experience of teaching this practice to students has anecdotally shown a shift in attitude, and a reduction of barriers to learning. Students started with an attitude of, 'I am rubbish at maths, and I can't do it', and ultimately developed a positive attitude of, 'I'm good at maths and I can do it'. The process of teaching 'brain training' and adopting a 'growth mindset' attitude, in turn, promoted inclusive teaching practice, individualised learning, a positive change in behaviour, a positive change in the self-belief of the students, and built resilience in the learners. This suggests that further research is merited.

Dweck, in 2014, has surmised that in teaching 'growth mindset', 'students believe that their most basic abilities can be developed through dedication and hard work - brains and talent are just a start point. This view creates a love of learning and a resilience that is essential for great accomplishment'.

Maths and English teaching are notoriously fraught, with many students having a barrier to learning the subjects. This barrier may limit students' ability to progress through the educational system, to reach their full potential, and advance into HE education.

Working with students to break down learning barriers will improve the experience for students, turning previously difficult learning experiences into positive learning experiences; changing their view of the subject; increasing resilience; and advancing their development in learning the subject. The impact of developing evidence-based techniques to changed attitudes will be seen in improved achievement rates, widened participation in education and expand the prospects of progression into HE for a set of disadvantaged learners

It is hoped that there will be many benefits to students, lecturers and educational institutions in adopting evidence-based educational practices that enable and facilitate more learners with barriers to learning to break down these barriers and achieve their full potential, taking them into HE and the workplace with a new level of confidence and skills.

Why we are carrying out the research?

Our previous research in the academic year 2017-18 (funded by UCS (BTC) Scholarly Activity, 2017/18) initially resulted in positive feedback from lecturers taking part in the pilot study; they also suggested that these strategies could make a real difference to the experience of their learners and potentially their learning outcomes.

The pilot study provided qualitative evidence from lecturers and Learning Support Assistants (LSAs) that their students were benefiting from the adoption of growth mindset in the classroom. It was felt that by teaching and adopting the Changing Minds Project at the start of the academic year as part of their induction to College, and particularly their introduction to maths and English classes, an impact could be made on the growth mindset of the learners.

After presenting findings at the Association of Colleges (AoC) South West Conference at the end of the academic year 2018, Tinkerbell Dyer became Project Lead for the Mental Health Exchange 2019 looking at the use of manipulatives in maths to improve outcomes.

Academic year 2018/19

Scholarly Activity September 2018

We have developed training and resources (Changing Minds Project) for Lecturers currently teaching maths and English. We held workshops where we presented the Changing Minds Project, the attending Lecturers learnt 'brain gain,' a set of strategies encompassing knowledge of brain learning, in line with growth mindset (Dweck, 2005). The training enabled lecturers to understand and adopt 'growth mindset' language and teaching within their classrooms and to teach 'brain training' to their learner cohorts. We provided resources to the lecturers so that they could disseminate knowledge and information about how the brain works to their own students.

The resources include:

- PowerPoint presentation slides of initial Changing Minds workshop
- PowerPoint presentation slides for the teaching of 'Brain Knowledge'
- 'Brain Gain' Score Sheet
- Maths Attitude and Mindset Scale
- PPT slides of Tips and Tricks for Maths GCSE

Lecturers were given a complete set of resources including PowerPoint presentations for use in class, and the resources to enable the lecturers to continue to use growth mindset techniques alongside the students' normal in-class study. We delivered the workshops and the resources to staff and students on all sites, as part of the learner Induction Week.

Scholarly Activity from April 2019

Following the teaching of 'growth mindset' through the 'Changing Minds' project at the beginning of the academic year, we will measure change in attitude of a number of students on two levels: firstly, their attitude to learning and secondly, their attitude of self-belief in the subject area. We will look for students' presence in the classroom. Presence was first coined by Carl Rogers in his work considering desired characteristics of effective therapists. In a learner, presence may be related to a measure of how much the learner pays attention in a particular way in the classroom; and their desire to learn from process and feedback as encouraged through teaching in a growth mindset model (Rogers, 1961).

We will develop and pilot test a measure of presence in the classroom to ensure that there is some validity in the measure. We will use the measure on a number of learners to explore if there is any relationship between the attitude or 'presence' at the end of the academic year and the final outcome at GCSE / progress checks taken through the academic year.

For example, Bugental (1987) defined presence by highlighting three components, 'an availability and openness to all aspects of the client's experience, openness to one's own experience in being with the client, and the capacity to respond to the client from this experience'. This definition of presence could be applied to learners in education. The ability to develop this openness in our learners may be the key that allows them to consider a much brighter future and set their ambitions on Higher Education and a more advanced career.

Future Work:

1 Carry out a literature review of effective interventions to widen the participation of disadvantaged groups

2 Set up a steering group to develop the strategy for widening participation

3 Decide on the scope of the study

4 Development of a robust Theory of Change (ToC) map

5 Continued work in collaboration with Association of Colleges, feeding in to ToC strategies for College

6 Develop and test interventions

7 Qualitative and quantitative evaluation of research against ToC map, indicating which outcomes have been impacted

8 Implementation of effective new evidence-based practice

9 Dissemination into the wider FE and HE Community

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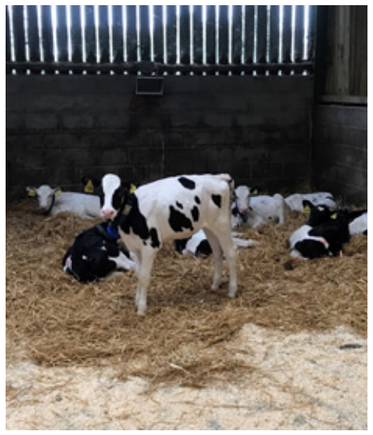
IAN TREMAIN
Agriculture Innovation Manager

Reducing antibiotics in agriculture

As the world population increases, the demand to provide safe, affordable, nutritious food has never been more important. The College has been teaching best practice in agriculture since 1921. While the world of food consumption looks incredibly different today than 100 years ago, the basics in good stockmanship and husbandry have remained unchanged. As we look forward towards the next century in agriculture and food production, it will be important to produce food, which is more sustainably produced than ever before. Therefore, we will need to embrace technology and techniques from anywhere that can help to feed a growing world population.



Calves at Rodway Farm

We have been supplying Tesco with liquid milk for the last 10 years, and now each year we supply over 3 million litres of milk which is all processed and bottled at the nearby Müller milk factory at North Petherton, which has supplied two supermarkets in the Southwest of England.

As a member of the Tesco Research and Development (R&D) Committee, we have been sharing best practice with other sectors within agriculture who also supply Tesco, and it is clear that focusing on water quality has made significant advances within the pig and poultry supply chain. Therefore, over the past 15 months we have been working in partnership with calf rearing specialist Volac, and a water treatment company who focus on human and sports nutrition, to enhance the gut health and physical performance of livestock.

During this time, we have also reduced the reliance on antibiotics used in the entire food chain. Like many dairy producers, we have water supplied from a borehole, which is a fabulous resource just below our feet. However, unlike mains water, there can be changes and inconsistencies in this supply, which can have a negative effect on the gut health of young calves. This long-term project will follow the lifetime effects of filtering and treating water which is consumed by baby calves. We will be able to monitor and measure how to manage livestock in a way which is consistent with welfare requirements and the environment. Early signs would suggest enhanced growth rates and health in those animals which have had access to the treated water. However, as a dairy animal is two years old before she produces any milk at all, and may well live another five or six productive years, it could be some time before we have strong evidence about the effectiveness of this particular method of treating water, and the lifetime effect on health.

We are all too aware of concerns of a growing resistance to antibiotics in the human population, and anything we can do to reduce the use of them across all of society will be a positive contribution. What doctors prescribed to humans, what vets prescribe to our pets, and what farmers use on livestock all make a difference. While the dairy sector uses far lower amounts of antibiotics than intensive pig and poultry production, we can all strive to reduce what is used in the production of food. The College and the farm management team have been implementing strategies to reduce treatments with a range of management techniques. This focus on water quality will give us more information and enable us and the wider industry to make better choices in the future.

Working in partnership with Volac, the calf rearing specialist

Bird’s eye view of Rodway Farm

INDREL DONEY
Lecturer
Distance Learning

Effective gamification features to inform e-learning design

Introduction

Game-based learning is one of main trends currently in e-learning (Beetham, 2013), and while opinion is still divided on its merits, a number of studies have been published which highlight its benefits in enhancing learning and increasing motivation.

Forty-one case studies of serious games, game-based learning and gamification in learning (based on work with adult learners) were reviewed in order to identify the elements that contributed to their success. From this analysis a list of suggested features was produced which may be of use to those wishing to embed gamification elements when designing e-learning activities.

Suggestions for implementing game-based learning and gamification features into e-learning activities

The creation of a set of heuristics requirements to inform educational game design was initially proposed by Malone (1980). Several different classifications of specific game attributes in relation to learning have been suggested, including Garris *et al.* (2002), who outlined what they consider to be the key gaming features required for learning: fantasy, rules/goals, sensory stimuli, challenge, mystery and control. These were expanded further by Carenys *et al.* (2017), who included additional categories such as competition, telling stories, engagement, multimedia representation, feedback and transfer of skills. The case studies were reviewed and analysed using key categories selected from various sources.

Challenge:
Challenge relates to the level of difficulty of activities (Garris et al., 2002); these should stretch the user but be achievable in order to avoid frustration (Carenys et al., 2017). The importance of having an appropriate challenge level for the audience was emphasised in a number of the studies. This can be achieved through having varying levels of difficulty; these could be increased throughout the game to allow learners to build on existing knowledge, or learners could be allowed to choose their own level.

In general challenges should be engaging and interesting, should stretch the learner but be achievable.

Competition:
Competition is common in games and can take different forms; players can compete against themselves, the game or with other users (Carenys et al., 2017). Success is often recognised with rewards such as points or feedback messages (Wang and Sun, 2011). Evidence in this area is less clear-cut with advantages and disadvantages of different approaches being covered across the studies. In general, however, it is useful to have a mechanism which will provide some sort of recognition of individual achievement and effort; learners can be encouraged to practise and improve by being able to redo activities to better previous scores/performance. Opportunities to compete against others can be motivating for some but may not suit everyone. A compromise may be to provide a leader board (or similar) with the option to opt out of having scores published to allow a more flexible arrangement to meet individual needs. Competition can also be against the computer/game; this could be included through activities which allow learners to apply knowledge by transforming the game environment or the use of scenarios which allow them to see the results of their choices/actions.

Control:
Control can refer to the ability of players to manipulate (Bedwell et al., 2012) or influence/control elements in a game (Wilson et al., 2009). Building in the opportunity for learners to have a degree of control within the game needs to be considered when designing the game environment/ representation and deciding how learners will interact with the game.

Feedback:
This is a vital component of learning experiences and was highlighted in many of the case studies. It should be clear and easy to understand and provide reasons to explain choices rather than just highlighting right and wrong ones. It is worth considering when to provide feedback: it could be in real-time or at the end of the activity depending on the format or level of difficulty. In addition to summative feedback, formative feedback and hints can allow learners to refine choices; delivering feedback through interaction with the game environment or characters can provide a more seamless experience. For more complex learning situations feedback could be provided by a facilitator or tutor which would allow for more individualised responses. As well as feedback on specific activities, learners should be able to track their overall progress.

Interaction:
Interaction may relate to human interaction (Bedwell et al., 2012) or interaction with equipment such as manipulating controls in a flight simulator game (Wilson et al., 2009). The ability to interact with others can encourage discussions and sharing through peer learning and allow for expert intervention. For learning delivered to a class or team within a specific setting, these opportunities may be easy to identify; however, in other situations this may be more difficult to achieve. The opportunity to engage with others can be provided through medium such as a chat facility or discussion board; however, thought needs to be given to how these will be moderated and managed. In addition to interaction with others, the use of role play with game characters can also be used as a way to provide information in a contextualised and engaging way. Explaining a topic to others requires learners to process their knowledge in a different way, and providing an opportunity within the game to 'teach' others (who could be real people or game characters) can help to reinforce longer term learning.

Representation:
Within e-learning activities there may be limits on how complex or realistic the game environment can be. The evidence from some of the case studies does show that this is not necessarily detrimental to learning; it is more important that scenarios, situations and results of learner actions should be believable. Providing information within an appropriate environment (even if simply rendered) can help to contextualise information. Where the opportunity exists, the use of visuals and graphics can be helpful in representing concepts, and providing information in multimedia formats can increase engagement. This should be balanced against not overloading the learner's cognitive processing.

Rules/goals:
According to Garris et al. (2002, p.448), games happen within a 'fixed space and time period with precise rules governing game play'. Games often have a main goal which is achieved through the completion of smaller goal-oriented tasks (Carenys et al., 2017). In order to be a meaningful and useful experience, clear goals and rules are required. Some of the studies show that focus on the game elements at the expense of the learning outcomes can have a negative impact, so it is useful to present the game as a learning experience and align goals and tasks within the game to the desired learning outcomes. To ensure learner engagement, instructions/rules should be clear and easy to follow, but care should be taken not to overload learners with unnecessary information.

Reflection:
Providing learners with the opportunity to reflect on their learning and the new knowledge obtained, and not just react to the situations within the game, can encourage deeper and longer-term learning. This could be incorporated by asking learners to provide reasons for their choices during game interactions (this needs to be carefully designed to ensure that this does not disrupt the game flow). It is also useful to ensure learners have sufficient time for reflection between activities and avoiding time limits and

lockout features. Discussion with others is a useful tool which encourages reflection and sharing, and this can be facilitated through a number of methods such as discussion boards.

The recommendations above have been rationalised and are outlined in the table in Appendix A. In order to simplify practical implementation these are shown in three sections: points to consider during the overall structure design, factors that could be considered in the design of individual activities and optional points that may be useful in some activities or situations.

Conclusion

In conclusion, the research appears to show that there are a number of gamification approaches which may be effective when designing e-learning activities for adult learners. The translation of these into an effective learning resource, however, relies on the 'key role of design beyond medium' (Clark *et al.*, 2015, p.116), on careful consideration of the audience's needs and on how to translate the learning outcomes to provide a meaningful learning experience rather than just on technical implementation.

The list of features developed from this research (as outlined in Appendix A) may be useful as a starting point for others who are considering including gamification or game-based learning features when designing e-learning activities or other learning experiences.

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		Category/ies
General guidelines for designing overall structure and features		
S1	Present activity as a learning experience and link goals to learning outcomes.	Rules/Goals
S2	Provide mechanism/s for recording learner history, progress and achievement.	Competition/ Feedback
S3	Provide methods (such as a chat facility or discussion board) for learners to communicate, discuss and share with others to enable interaction and reflection.	Interaction / Reflection
General guidelines for designing activities		
A1	Ensure instructions/rules are clear but do not overload learners with unnecessary information.	Rules/Goals
A2	Challenges should stretch the learner but be achievable. Provide increasing levels of difficulty that enable learners to build on existing knowledge and/or allow learners to choose different levels of difficulty.	Challenge / Rules/ Goals
A3	Provide goal-oriented tasks/activities for learners to achieve which are engaging and interesting.	Challenge / Rules/ Goals
A4	Feedback should be clear, easy to understand and provide reasons to explain choices.	Feedback
A5	Consider the best time to display feedback, this may be real-time or at the end of the activity depending on the format.	Feedback
A6	Provide recognition of individual achievement and effort. Where possible provide opportunities for individual to better previous scores/performance.	Competition
A7	Allow learners to access hints to help refine choices.	Feedback
A8	Allow sufficient time for reflection and avoid time limits and lockout features.	Reflection
A9	Consider how information can be presented within an appropriate environment to help contextualise information.	Interaction / Representation
A10	Use visuals and graphics to help represent concepts.	Representation
A11	Providing information in multimedia formats (visuals, audio, animation) can increase engagement; however, this should be balanced against not overloading the learner's cognitive processing.	Representation
Optional features		
O1	Opportunities to apply knowledge by transforming the game environment can help with contextualising knowledge.	Control
O2	Use scenarios to allow learners to test the results of their choices/actions, ensure the situations and the outcome of actions are believable.	Control / Representation
O3	Prompt learners to reflect on choices by selecting from a list of reasons, however ensure that this does not disrupt the game flow.	Reflection
O4	Use role play and interaction with game characters as a way to provide information and feedback in a contextualised and engaging way.	Interaction / Representation
O5	Consider the use of human intervention to provide individualised feedback for more complex games and scenarios.	Feedback / Interaction
O6	Where possible consider team playing and group competition to increase motivation and collaboration.	Competition / Interaction
O7	Provide a leaderboard (or similar method of displaying scores) where applicable but provide an opt-out option.	Competition
O8	Provide an opportunity within the game to 'teach' others to help reinforce longer term learning.	Interaction

For more details including further details of the research and the case studies analysed see https://journal.alt.ac.uk/index.php/rlt/article/view/2093

JIM ODAMS
Teaching, Learning and Assessment
Quality Developer

Project 'Be the Change' improving achievement of Construction, Automotive and Engineering (CAE) GCSE English Students

The issues surrounding student motivation and engagement with GCSE English

Teaching, Learning and Assessment of GCSE English in a vocational college demands an ever-changing approach to continue to successfully link relevance, knowledge and skills between vocational subjects and the GCSE curriculum to our 16-19 year old students. Engaging students to partake in all elements of their respective study programme can prove to be a challenge and often requires innovative methods to make English appealing and worthwhile.

These FE retake students have attempted and failed the GCSE English Language exam at least once, some trying again for the second or third time which leads to issues surrounding engagement, motivation and behaviour. However, the overriding focus for this project was to improve attendance and grades across the CAE department.

Somerset has lower than average GCSE English Language results and this translates to a high intake of students to sit a GCSE English Language exam; currently just under 800 students.

Data was collected surrounding student motivation to retake GCSE English before an English lesson had started. This was important, as we wanted to capture their thoughts before any relationship with their English tutor had been developed which may have influenced the findings.

In their first GCSE English lesson the students were given a questionnaire. One hundred and twenty two responses were collected with a split of 45 retaking for the first time and 55% having already taken GCSE English Language at college.

Anecdotal responses from students included:

- Did not enjoy English at school, with some relating this back to their experiences from primary education
- Did not get on with the teacher
- Had never been good at English
- Always struggled with English
- Did not like it because it was boring
- Find the lessons uninspiring
- I put a lot of effort in but get nothing out of it
- I struggle because of my dyslexia
- I did not give it 100%

Again, through discussions with students it was discovered that this relates to their low self-esteem of their skills and abilities, as 11 years of studying English through primary and secondary education resulted in a failure. Many stated that they had failed English long before they had got to the exam.

Student Questionnaire GCSE English Term 1

The GCSE English staff take your learning and our teaching very seriously indeed. One way we can work with you to gain better examination results is by listening to what you think about English. Please will you take a few minutes to reflect and answer the following questions?

Your Name: Harrison Morgan

Question 1. Have you taken GCSE English at BTC before?
YES (NO)

Question 2. Do you enjoy English lessons?
YES (NO)

Question 3. Do you think you are good at English?
YES (NO)

Question 4. Is having a good English grade important to you?
(YES) NO

Question 5. Which is more important to be successful in English? Effort or being intelligent?
(EFFORT) INTELLIGENT

Question 6. Do you know what you need to do to improve your English level?
YES (NO)

Please write some words, a paragraph or draw a picture on the topic: 'Me and English'

Many students stated that through their schooling English and maths was repeatedly reinforced as important to their futures and job prospects. They understood that GCSE English and maths were a gateway qualification to access opportunities in further education or employment. However, they could not see beyond the grade as to which skills would be important outside of having good spelling and punctuation.

Interestingly, 68% of students also knew that putting in effort was the key to their success. This was fundamental to the project's success as we wanted students to understand that success revolves around that ability, and performance is malleable and can be improved, if their mind-set was right.

Finally, we wanted an emotional response to the questionnaire in order to determine how the participants felt about taking their GCSE English Language. Overwhelmingly, the responses were negative with many being quite visceral. They ranged from many pictures having barriers put in the way, to students fighting with English, being killed by English, committing suicide and have many pictures of excrement.

Some examples of emotional response to the question 'me and English' taken from initial student survey

Project 'Be The Change'

The purpose of the project 'Be The Change' was to identify how we can improve GCSE English predictions and attendance from last year within the Construction, Automotive and Engineering department (CAE) at Bridgwater & Taunton College.

Resources were created and piloted to enhance the development of teaching, learning and assessment within the organisation, focusing on supporting vocational CAE staff to embed GCSE English skills within their sessions. The intended outcome was to improve the students' experience, resilience, attendance and robustness of predictions in GCSE English across the CAE area.

The specific objectives of the project were to create new, highly visible resources to enable a whole curriculum approach to support student awareness of linking English skills from vocational subjects to GCSE English lessons. This was to be achieved via a department-wide poster campaign and whiteboard 'key word cards' for main curriculum teachers to support the embedding of GCSE English within their aims and objectives.

The attributes for being a successful student in GCSE was categorised by reading, writing, technical accuracy skills

and resilience. After discussion with English tutors, these were narrowed down to 10 key words:

EFFORT, REFLECTION, AMBITIOUS, IDENTITY, SENSE, ORGANISATION, VOCABULARY, ANALYSE, EXPLAIN, ACCURATE.

Highly visible A3 posters and A5 whiteboard cards and tracking sheets were carefully designed that 'stood out' from the crowd using fonts from brands with positive associations for students, thus attempting to break down negative relationships with the word and GCSE English.

Cards and posters were purposefully designed to be noticed using the strapline 'Be The Change' to link with the Bridgwater & Taunton College acronym 'BTC'. These were then placed in specific areas around the departments, such as by lifts, stairways, entrances and outside of staff rooms to maximise impact.

Also, the posters contained an embedded QR code which linked to an English 'Padlet' site. This was designed to enable students to access revision resources. Examples of A3 key card posters were also placed around various CAE corridors and classrooms.

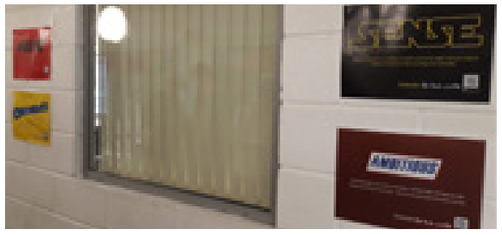
The Construction, Automotive and Engineering department was chosen for a number of specific reasons to be part of the project:

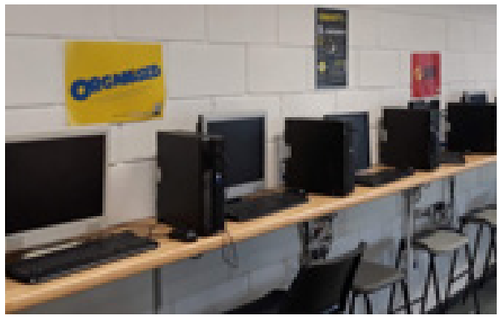
- Through previous CPD activities and support the TLA developers had fostered good working relationships with the CAE department and were ideally placed to support and encourage CAE staff who had expressed an interest in innovating their practice.

Example of a classroom poster

- The TLA project lead was ideally placed in the CAE department delivering GCSE English to engineering students.
- The CAE department had a need to improve both attendance and attainment.
- The locality of the CAE department meant that they were accessible throughout the duration of the project.

The project chimed with a key College-wide objective, which is to raise the GCSE English attainment and attendance of our students by improving the embedding and reinforcement of key GCSE English skills within vocational areas – it therefore had the buy-in of the Senior Management Team (SMT) and the CAE curriculum leads. There was also the intention to secure buy-in from teaching staff, fostering stronger relationships between GCSE English and vocational staff by encouraging them to work collaboratively on transferring and linking the GCSE English skills needed by students.





Examples of CAE corridor posters

An initial survey with 14 CAE staff relating to their motivations, skill sets and knowledge of the GCSE English curriculum before the project ran identified that:

- None of the staff questioned were confident in knowing the English GCSE Curriculum.
- Only 35% of staff were confident in their own reading and writing skills.
- When rating their students' confidence in using written English effectively, 36% were somewhat confident along with 64% being not so confident.
- Outside of English classes there is little focus on reading skills within their lessons.

Staff recognised that they needed support to develop their own skill set and to assist them with strategies that would make the embedding of English skills within their sessions more relevant, purposeful and motivating for the students.

This was reinforced by findings from a survey with students which highlighted:

- The negative attitude that students had towards being expected to retake their GCSE English.
- 75% of students surveyed stating they did not think they were good at English.
- 76% of students surveyed stating they do not enjoy English sessions.
- 68% of students recognised that effort was more important than intelligence to be successful in English.
- 68% also thought a good English grade was important.

It was crucial to get the buy-in of strategic vocational members of staff. Some staff were directly approached and selected and others, who delivered vocational subjects to students re-taking GCSE English, volunteered.

TLA Developers initially delivered to all staff at College a 'teach meet' in September, which outlined the project to all staff. In addition, bespoke CPD was provided to each participating department, i.e. English, Automotive, Construction and Engineering. This ensured that everyone was fully aware of the key GCSE English skills that were going to be promoted within vocational sessions, the process and the tools that we were going to use, as well as how this learning was going to be drawn back into and reinforced further in the discrete GCSE English lessons that many of the vocational students attend as well.

The initial CPD event produced interesting responses from staff, as it enabled a deeper understanding of students' relationships with English. We conducted a survey with students in their first GCSE English lesson to ascertain their thoughts about their English skills and the requirements for them to retake GCSE English. Outcomes of this survey were fed back to staff at the first CPD event

These findings enabled staff to understand their students' motivations and relationships with GCSE English.

All levels of College staff commented at being surprised at the visceral and honest nature of the students' responses. This became an expectantly powerful tool in encouraging participation for the project and for staff, at all levels, to understand the importance of a whole curriculum approach in encouraging participation in maths and English.

The TLA Developers also held regular 1:1 meetings with participating staff and provided termly updates to the Head of Quality and Area Head for CAE. An update of the project was also a focus at the Quality Area Review meeting delivered to the College principal and governor linked to Staff and Quality Services. This approach helped the project to maintain momentum and enabled us to celebrate and 'broadcast' pockets of success as they emerged.

Cards were then used within vocational sessions, both practical and theory based, with specific GCSE English skills, such as reflection or analysis, being highlighted as part of the aims and objectives. Ideally staff would discuss with students how those skills fitted in with their particular vocational topic. Students would then have these skills reinforced further whilst walking around their departments and looking at the A3 wall posters. Again, to triangulate the reinforcement, the key cards would then be used within their GCSE English sessions to discuss how the same skills can translate from their vocational session to GCSE English. This process enabled vocational tutors and GCSE teaching staff to bring both subjects seamlessly into each other, without impacting too much on staff planning time.

The staff involved were encouraged to use the cards in ways that suited their own teaching practice, which gave them an important sense of ownership.

Staff were encouraged to innovate and use the key cards in creative ways, for example, one member of staff developed target sheets and mark schemes to compliment the 'key words'. Another used the key words as part of the motor vehicle handouts to highlight opportunities to stretch and challenge and therefore support a more impactful programme for the learners.

The visual impact of the posters and the positioning around the CAE departments meant that they caught the attention of other members of staff beyond those immediately involved with the project. The success of the project started to breed an interest from others who wanted to become involved. A ripple effect, driven by peer support, started particularly around the participating staff rooms where staff from brickwork, light vehicle, motor sport and engineering picked up and began to use the cards.

Beyond the CAE department the staff from Heath and Social Care and Early Years saw the creative use of the cards as something that would complement their practice.

As a result of this, CPD is in place to encourage a wider College take-up of the project for delivery in the 19/20 academic year.

A quotation from a Bridgwater & Taunton College, SCQS department, Area Review Group paper commentated on impact of TLA Developers and this project:

> Staff and students have also benefitted from our engagement with various external projects aimed to develop TLA. These include an ETF project in partnership with South Devon College which aims to develop the use of key words within vocational sessions that will support extended writing as part of GCSE English. The impact of this project can be seen in the new posters and QR codes around the College, primarily focused within the Area of Construction, Automotive and Engineering and their regular use in sessions. The positive impact of this project in particular can be seen within learning walk reports and observation records (Houlihan, 2019).

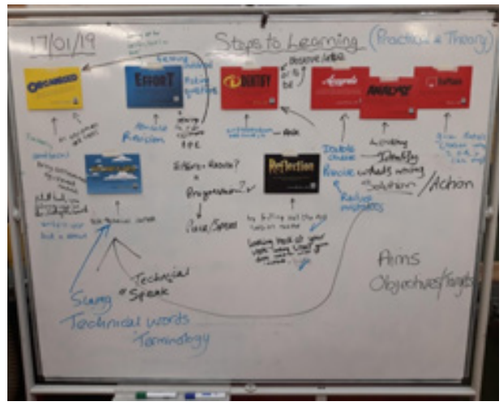
The CAE staff involved in the project were incentivised by having access to TLA developer support throughout the project. This enabled them to develop their practice by having input into resource development and strategies in using the cards.

Staff gained kudos from curriculum managers and SMT as they became 'trailblazers' in the staff rooms and, as a result, encouraged others to use the cards acting as informal mentors. The innovations in the project allowed them to feed into Quality Improvement strategies and operating plans of their departments. They enjoyed being perceived as pioneers and as members of a department that was innovating best practice, which enabled them to gain recognition from College and senior management teams. This was evidenced by the staff volunteering to be observed by our visiting partner college and by Ofsted when they requested to spend a morning focus on the project.

In addition:

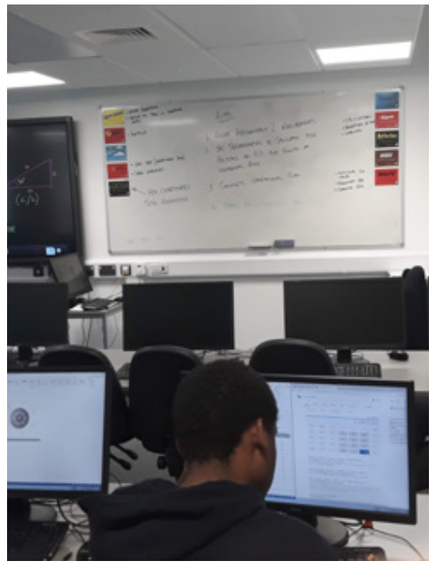
- As part of the project some staff were invited to attend the Education and Training Foundation's (ETF) 'Vocational English and maths revitaliser' sessions at South Devon College, which gave them a valuable opportunity to network with other colleges.
- Resources, coaching sessions and support from TLA Developers enabled staff to become more enthusiastic and motivated in improving, restructuring and becoming more effective in delivering their content.
- CAE English and Maths Curriculum manager and English lecturers were incentivised by being able to visit and exchange practice with partner organisation SDC.

Managers were incentivised because they could see quite quickly the difference the approach was having. They relayed back to the TLA Developers about the impact the project was having in terms of improved attendance across the department and improved mock GCSE English grades. Evidence provided by lesson observations and learning walks also showed how tutors were strengthening the way they set aims and objectives and embedded English into the structure of sessions.

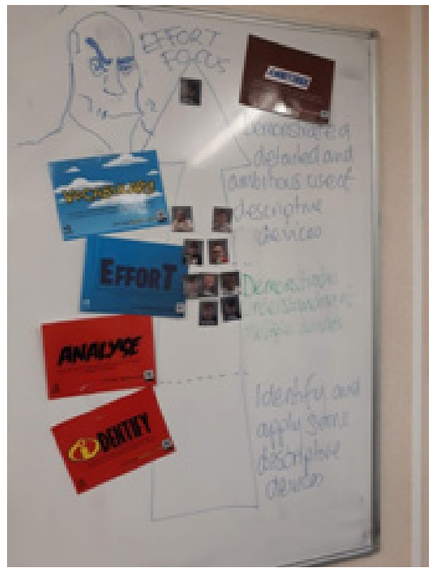


Students interacting with key cards and linking terms to their carpentry session

Key cards being used to link to aims and objectives in a motor vehicle session



All the key cards being used and highlighted as they naturally occur in an engineering session



Key cards being referenced against a progression line in a GCSE English session

All staff involved in the project mentioned that the use of the cards had no negative impact on their time, as they were simple and easy to use and had immediate impact on the quality of their objectives and learning.

The simplicity in the use of the cards and the availability of the TLA Developers meant that TLA Developers could easily provide support, at the point of need, through short incisive development activities, 1:1 discussions and workshop observations.

Through a focused discussion group with TLA developers, the main points about the value of the project from the tutors' perspective were as follows:

- The project enabled TLA support to be focused around linking skills across the GCSE English and vocational curriculums.
- It helped with supporting staff with planning learning (and writing plans of learning) to incorporate key card terms.
- It helped support staff through focused discussions on best practice in embedding English.
- It increased the knowledge and awareness of English GCSE skills within the vocational staff teams.
- It helped TLA support staff to stretch and progress learners academically.
- An increase in quality of aims and objectives was noticed, through learning walks and observations.
- CPD programme was designed around the use of cards and there has been uptake in interest from across all three campuses.
- Departments in which the project has been running have seen a significant improvement in attendance and predicted mock grades.

The project has allowed TLA Developers to identify the need to build not only on students' competencies in English, but to look at different approaches in supporting vocational staff to embed English and build awareness of skills their students require. The key cards are now being used in 1:1 discussions with staff to encourage their confidence to set work and have discussions that compliments the progression of English without impacting on planning time or core curriculum delivery.

The next phase is to start drafting strategies with curriculum leads across College, in using 'key word cards' to produce a pedagogical approach by adapting key card terms as part of a wider dissemination of key College priorities, such as embedding of maths, personal development, behaviour and welfare (PDBW) and stretch and challenge.

Throughout the project it became evident that the project enabled the TLA Developers to deliver incisive support to develop the initial outcomes of improved attendance and increased progression through mock results. It also became apparent that the real impact was in improved staff performance with tighter aims and objectives, enabling the embedding of English skills more seamlessly within their sessions to be more relevant, purposeful and motivating for the students.

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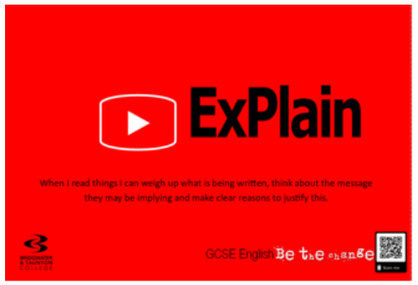

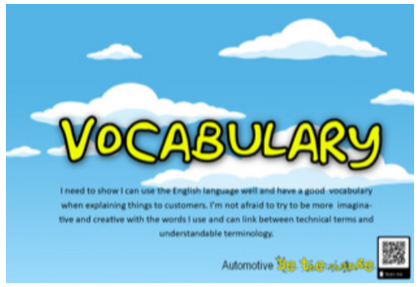

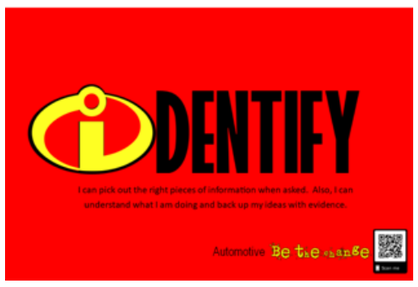

A few examples of A5 whiteboard key cards:

JOLANTA PETERS (FHEA)
Research and Library Services Manager
Learning Resources Service

A critical reflective journey in achieving HEA Fellowship

Introduction

This article is a reflective account of my recent experience of applying for the HE Academy (HEA) Fellowship. The achievement of Fellowship status is a celebration of my professional practice and a recognition of the contribution I have been making to the HE student experience. It has also been a consolidating reflective journey on evaluating the influences that have had an impact on my practice as an information and research professional, and how my practice has impacted on others. Therefore, this narrative may aid other practitioners who are planning to embark on the HEA Fellowship application journey. The article also evaluates a range of support mechanisms that can add value to a successful and timely Fellowship application process.

HEA Fellowships are professional recognitions, which are awarded by Advance HE. They support individual professional development and demonstrate 'a personal and institutional commitment to professionalism in learning and teaching in higher education' (Advance HE, 2018). This commitment is evaluated through engagement in scholarship and critical reflection and acts as evidence of personal development and professional practice.

Jolanta Peters presenting at the HE Research and Scholarship conference in Morley College, London

UK Professional Standards Framework

The evidence provided in the HEA Fellowship application has to be aligned to the UK Professional Standards Framework (UKPSF). This Framework was introduced in 2006 by the HE Academy (now Advance HE), following a recommendation in the Dearing Review (1997, cited in HE Academy, 2010), which highlighted the need to develop teacher training programmes and draw up a benchmark by which teaching and learning roles in HE could be measured.

A revised UKPSF was unveiled in 2011 to introduce four sets of descriptors for different levels of fellowship. Depending on their level of engagement in HE, practitioners can apply for either of the four fellowships: Associate (AFHEA), Fellowship (FHEA), Senior (SFHEA) and Principal

(PFHEA). Over time, HE staff can apply for more senior fellowships, provided they are able to meet the appropriate Fellowship application criteria.

The UKPSF descriptors are underpinned by dimensions of practice, which are divided into Areas of Activity, Core Knowledge and Professional Values and need to be demonstrated in a successful Fellowship application (see Figure 1).

Shaw (2018, p. 145) states that using codified professional standards is 'perhaps the most developed attempt to formalise and systematise approaches to teacher development' in UK Higher Education. Those practitioners,

Figure 1: The UKPSF dimensions of practice (adapted from Advance HE, Guild HE, Universities UK, 2011, p. 2).

who are applying for an Associate Fellowship, have to demonstrate an understanding of certain specific aspects of effective teaching and learning support. This status may suit early career lecturers, technical demonstrators, e-learning, library and learning support staff. Those who are likely to be at descriptor 2, or applying for FHEA, have to showcase a broad understanding of these aspects, whereas SFHEA is typically expected to show a much deeper engagement with all dimensions of practice. In contrast, PFHEA applicants have to focus on strategic leadership and educational policy-making skills institutionally and even nationally or internationally.

Purcell and Lea (2015, p. 207) have illustrated their understanding of these dimensions in a simplified version which encourages more meaningful reflection. They have created a continuing professional development triangle, which is depicted using three strategic questions that practitioners can ask themselves when evaluating their professional practice: *what I did; why I did it and the impact it had.* This diagram (see Figure 2) has been particularly useful while making more meaningful connections in my own Fellowship application narrative.

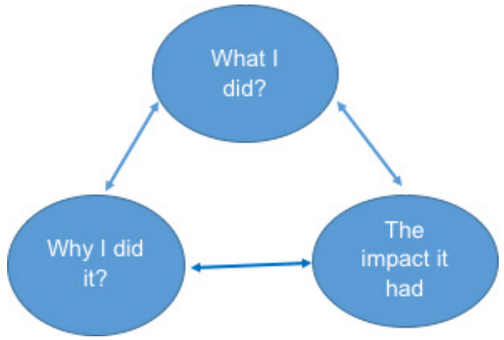

Figure 2: A continuing professional development triangle (Purcell and Lea, 2015, p. 207)

Dimensions of practice and critical reflection

All three dimensions of practice are holistically interconnected, as shown in Figures 1 and 2. When completing my Fellowship application, I had to make links between all three dimensions while reflecting on my professional practice. To make this evaluation more focused, Areas of Activity within the UKPSF are divided into a further five elements; Core Knowledge – into six, and Professional Values into four elements. For example, A5 puts emphasis on engagement in continuing professional development and subject pedagogy, incorporating research, scholarship and the evaluation of professional practice. This element resonates with V3, which focuses on the use of evidence-informed approaches, the outcomes from research, scholarship and Continuous Professional Development (CPD) (Advance HE, Guild HE, Universities UK (2011). Therefore, as an information professional I had to reflect on how I keep up-to-date with my subject through engagement in CPD; draw on research carried out by myself and others (primary and secondary); evaluate and keep-up-to-date with the methods I employ in supporting student learning in HE.

All of the above has to fit within the wider context of HE and showcase an applicant's ability to demonstrate its implications in their professional practice. For example, currently there is a big emphasis on HE students' employability skills and the widening participation agenda, as the way forward in developing more employable graduates. In my reflective narrative I therefore focused on how information literacy sessions, offered via the library service, contribute to the wider HE development agenda. For example, developing students' research, critical thinking, academic writing and presentation skills adds value to the learners' 'portfolio of soft skills'. By utilising effective questioning techniques and inquiry-based methods, information professionals are encouraging learners to gradually arrive at answers themselves.

We are therefore witnessing a change of culture in reshaping traditional pedagogy and promoting more active-learning, which adds benefits to the learners' future employability skills.

Such inquiry-based learning, or research-led teaching, has been widely promoted by a number of studies (Healey, 2005; Brew, 2010; McLinden *et al.*, 2015; Tong, Standen and Sotiriou, 2018). Naseem and Fleming (2018, p. 229) reflect on this further by demonstrating how teaching learners research design, methods and data analysis can add to a set of transferable skills required by employers. For example, teaching research methods enables students to acquire project management skills, resourcefulness, communication, listening, team work, leadership and social skills. Moreover, those HE practitioners who are continuously involved in scholarship are able to share their motivation, enthusiasm and interest with learners; develop more relevant curriculum; foster students' intellectual development and build on their future employability skills (Naseem and Fleming, 2018). This type of engagement reaffirms Said's point (1994, p. 62, quoted in Lea, 2015, p. 34) that HE practitioners should be thinking holistically, beyond 'what one is supposed to do', but 'why one does it, who benefits from it, how it can connect with a personal project and original thoughts'.

To aid meaningful critical reflection, Purcell and Lea (2015) recommend that applicants make their HEA Fellowship applications seven-fold: personal, individual, scholarly, evidence-based, current and sufficient, and aligned to UKPSF. When evaluating my practice, I substantiated my claims with evidence from theoretical and scholarly standpoints, learning theories or pedagogical ideas, and discussed their effectiveness in the wider context of HE.

Fellowship application support mechanisms

An application for either category of the Fellowship has to be a well-thought out and a reflective decision, and should not be a tick-box or tokenistic exercise. As Copeland (2014, p. 7) argues, HE staff should be motivated to apply for Fellowships for professional and pedagogical reasons. This enables them to genuinely reflect on and interrogate their practice for the purposes of enhancing teaching and learning in HE.

I therefore purposefully delayed the writing of my Fellowship application until I was confident that I would be able to align all the necessary UKPSF elements of practice to my own experience. This meant that I would be in a position to apply only when I had sufficient evidence and examples to substantiate my claim.

There are a number of support mechanisms available for practitioners to explore before or during their application process. For example, the Advance HE online Fellowship category tool is a useful self-evaluation method to help practitioners determine which of the four UKPSF descriptors is the most appropriate to their individual practice. The purpose of this online tool is to check practitioner knowledge of the UKPSF dimensions and descriptors, and align them to the activities that an applicant undertakes (Advance HE, 2019). Once all the answers are completed, an applicant receives a summary of their results and a recommendation for the Fellowship category they are eligible to apply for.

Another useful toolkit, the Continuum Model of Scholarship, designed by Dr Collins from North Lindsey College, provides 'a framework to self-evaluate […] scholarly activity in a way which is meaningful, aspirational and developmental' (Collins, 2018). This self-directed toolkit (see Figure 3) is set in the context of the UKPSF and acts as a reflective online portfolio for practitioners to build over time. The toolkit can be used for two main purposes: as a guide or a "springboard" in applying for HEA Fellowship, and for the purposes of maintaining an up-to-date online portfolio of CPD (Collins, 2018).

It enables users to reflect in a deep and meaningful way

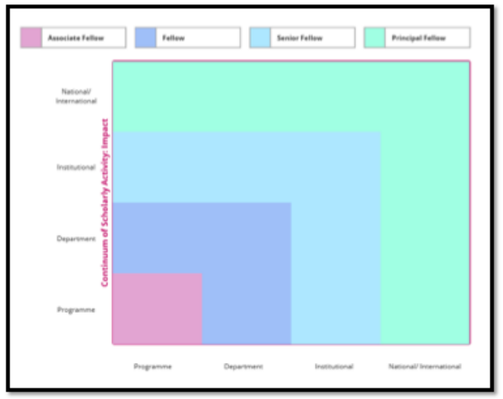

Figure 3: Continuum of teaching and learning: locus of practice (Collins, 2018)

on the interconnection between scholarship and their individual practice in HE. The practitioners' narrative is automatically saved and it can be edited or added to at a later date online. The toolkit enables practitioners to reflect how their professional practice and scholarship fit within four loci: at a programme, departmental, institutional or national/international level. This reflective exploration, in turn, helps to determine the level of Fellowship that practitioners are entitled to apply for. On the other hand, it provides them with a platform to record their practice over time and gradually apply for the Fellowship they seek. I have found this tool particularly useful because I applied for the Fellowship directly to Advance HE, rather than via any other available routes.

Engaging in reflective conversation with colleagues or current HEA Fellows can also provide motivation while applying or progressing with the Fellowship application. Furthermore, being receptive to peer consultation, observation and review can inspire reflection and yield more productive results within the application, as well as help avoid the procrastination which can come with busy working lives (Revans, 2011). Regular conversations with colleagues can provide a common ground for sharing and exchanging ideas and becoming a more reflective practitioner. Based on my own experience, I have found that talking to a colleague who holds a SFHEA has helped me to better understand UKPSF, all its associated elements and gain a better insight into the requirements of application writing. This dialogue has certainly been beneficial when evaluating the type of Fellowship I should apply for. After my initial inquiry into the application process, I thought that, as an information professional, I was only eligible to apply for the AFHEA. However, through a dialogue with an experienced Senior Fellow, deep reflection and enhancement of my practice over a period of time, I found that ultimately I was in a position to apply for the FHEA.

Additionally, Advance HE provide a wealth of valuable application guidance tools and templates via their website. The Fellowship chat line has also answered some of the pertinent questions that I had in relation to the application process. I also connected with a partner university that provides an accredited and a more supportive route to its partner colleges' HE staff seeking to gain Fellowships. Two cross-college staff development days provided invaluable CPD sessions on the Fellowship application process, and helped me connect with the College's current HEA Fellows for further support.

Fellowship Impact

Following the successful award of FHEA status, I have since provided support and mentorship to new HEA Fellowship applicants at the College. I also delivered presentations about the application process at the College's HE conferences and the Research and Scholarship Symposia. In May 2019 I was invited to talk on the subject of Fellowships at the national College HE Research and Scholarship Conference, which took place at Morley College in London and was organised by the Association of Colleges (2019). At this conference I focused on practical tips and advice on how to put together a critically reflective and coherent narrative of the professional practice that enhances teaching and learning in College-Based Higher Education (CBHE). Delegates were able to gain an understanding of the UKPSF descriptors and dimensions of practice, and the key criteria they need to meet in their applications. There was an opportunity to reflect on the AoC Scholarship Framework resources and how they can support CBHE practitioners' engagement in scholarship and CPD, since its launch in June 2018. The session also highlighted a number of benefits to practitioners who hold HEA Fellowships.

In conclusion, the HEA Fellowship application process has enabled me to engage with the UKPSF dimensions of practice in the context of my role. It has driven me to become a more reflective practitioner and continuously review and evaluate my practice. FHEA recognition has given me the confidence to provide support and mentorship to other Fellowship applicants at the College. It has also enabled me to connect with HEA Fellows nationally via available online platforms for ideas and inspiration in supporting teaching and learning in HE.

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Staff involved in Erasmus+ projects

JON HARDING
External Funding and Bid Manager EU

Position statement: Erasmus+

Bridgwater & Taunton College has been participating in European projects for 11 years. The Erasmus+ programme is structured in two ways: staff and student mobilities (work/study placements and job shadowing in Europe) and subject-specific European projects which are embedded in the curriculum teams. The Erasmus Team support all areas of the mobilities and projects.

The College recognises that involvement in Erasmus+ helps students develop personally and professionally. Students gain valuable international experience, broaden their horizons, experience new cultures and discover new ways of working. Overall, this programme contributes to diversifying their way of learning.

The Erasmus team work closely with the College's curriculum areas to ensure that students who may need additional support to be mobile are fully engaged from the beginning. Students often need encouragement to undertake a period abroad, and as part of the pre-mobility support, the team deliver an information evening for parents and guardians. The team also meet with students in groups to answer further questions – this approach has proven effective, as students see that they are not the only ones interested in going abroad.

All mobility opportunities include an application and interview process. These are focused on the students' ambitions and motivations for undertaking a mobility period, rather than just their academic attainment. Tutors provide references and students are given feedback on their application. This process encourages students to think through what the mobility period will be like and consider any additional support they may require.

When students return to the UK, they are invited to present on their experience to the rest of the group, which develops their public speaking skills and expands their network. Students are advised to keep a blog and take pictures during their trip to include in their presentation, encouraging them to be reflective during the mobility period. These activities expand their knowledge in becoming more independent, improving their self-confidence and overall encouraging them to be a successful learner.

During 2017/18 a total number of 24 students were involved in a mobility or a project. This number has ignited the desire to get involved in Erasmus+ opportunities at the College and has enabled staff to see the scope Erasmus+ has for their learners.

The College also encourages staff to be involved with Erasmus, with a total number of 26 staff either completing a mobility or being involved in a project during 2017/18. Giving staff the opportunity to undergo Erasmus+ has also helped drive the impact it has had on the students to strive to be part of such activity.

Hosting students and staff from around Europe is something that we feel is vital for contributing to the diversity of the College. Living in a rural area means that students and staff sometimes have limited travel experience, so enabling them to network and work as a team with people from different countries has given them the cultural awareness they need, but in safe and natural environment. This aspect of Erasmus+ encourages social inclusion and gives them a broader understanding of the wider world, thus setting them up for their next steps.

As a Team we understand the importance of the health and safety of sending and receiving staff and students. The steps taken to mitigate any risk is vital and at the foremost in all we do, by ensuring the College's guidelines are met and adhered to.

Overall, building relationships with the European community is something the Erasmus Team have been working on for many years. Raising the profile for Erasmus at the College is vital to encourage staff, students and the community to understand the scale of activities which are happening, thus leading them to contribute to the diversity agenda we have at the College.

Staff involved in Erasmus+ projects

JUSTIN BLAKE
Course Leader
Automotive Engineering (HE)

The study and development of a prototype air intake and its potential for research-led teaching

During 2018 I conducted a research project as part of a BSc (Hons) Motorsport Engineering degree. The following work contains abridged elements of the final project report (Blake, 2018), as well as final comments on how the research project can impact future student learning opportunities.

Background

It is known that internal combustion engines are typically capable of efficiencies in the region of 20-40% (Ganesan, 2012, p. 515; Pulkrabek, 2014, p. 389), with a significant proportion of wasted energy being resultant from engine driven ancillaries c ausing parasitic losses or energy released as heat. Energy losses can be represented by Eq. 1, where losses through the exhaust ($\dot{Q}_{Ex}$), losses to the surroundings ($\dot{Q}_{Sur}$) and parasitic losses ($\dot{W}_{acc}$) are shown.

Eq. 1

$$Energy\ Losses = \dot{Q}_{Ex} + \dot{Q}_{Sur} + \dot{W}_{acc}$$

It is known that the volumetric efficiency (Eq. 2) developed by an engine increases with a cooler intake charge due to the increase in density associated with a cooler charge (Di Battista, Di Bartolomeo and Cipollone, 2018) and methods of thermal loss reduction were investigated within the project (Birtok-Bneas, Raiu and Hepu, 2017).

Eq. 2

$$\eta_v = \frac{\dot{m}_a}{\rho_a \times V_d}$$

It is proposed that heat will be lost from the engine into the tub region; due to the previously mentioned inefficiencies of the internal combustion engine and supported research of under-hood thermal management (Franchetta, Suen and Bancroft, 2007; Khaled, Harambat and Peerhossaini, 2011; Khaled *et al.*, 2014). The architecture of the rear tub section provides no partition between the cool intake air and the hot tub region, providing opportunity for the cool intake air to be mixed with hot air from the tub, reducing the intake air density and potentially affecting power output of the engine.

Introduction

The aim of this project was to analyse the thermodynamic and fluid mechanic phenomena of the inducted air flow through the optimization of the vehicle intake air system. In order to carry out analysis, several methods of data collection and analysis were used. Data collection through the use of thermocouple sensors and data logging equipment was used alongside Computational Fluid Dynamic (CFD) software; Star-CCM+, and Computer Aided Design (CAD) software; Autodesk Inventor. The production of a prototype sleeve allowing for the collection and comparison of intake data provided opportunity for optimization analysis to take place using 1-Dimensional (1-D) engine analysis software; GT-ISE (Integrated Simulation Environment).

Figure 1: The tub intake is shown with its aperture being moulded by fibre glass. The inner aperture is the airbox intake and the region between the two intakes being the area for which the prototype sleeve was made (Blake, 2018)

Data Collection

The concept of the data collection was to record intake temperature at the entrance of the air box, after it passed the sleeve position. This enabled the capture of any difference in initial intake temperature with and without the sleeve installed.

The prototype sleeve underwent a testing session at Brands Hatch and temperature data was recorded. The thermocouples used were surface mounted K-type thermocouples, suitable for a temperature range between -50°C through to 250°C.

Figure 2: The prototype sleeve, as used in the thermocouple temperature data collection (Blake, 2018)

Analysis and Results

Utilising Autodesk's Inventor CAD software, the validated air box was modelled from a solid block, which was then shaped appropriately through a series of extrusion, fillet, sweep and shell operations. Accuracy of the model dimensions was maintained through the careful use of the measure function, allowing for each operation to be checked periodically. The created CAD model was then imported into the CFD software and the model prepared for simulation. The physics continuum selection allowed models to be selected that would define what the simulation would solve for and allowed the selection of the solvers that would produce simulation results. Physics continua are mathematical models derived from fundamental laws that express conservation principles. The physics continua were chosen with the purpose of analysing temperature change and heat transfer, fluid flow and any associated turbulence or flow phenomena.

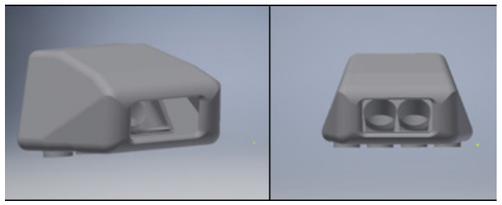

Figure 3: Final CAD air box assembly, complete with air box aperture and inlet trumpets (Blake, 2018)

Temperature results from both thermocouple test data and CFD results can be seen in Figure 4.

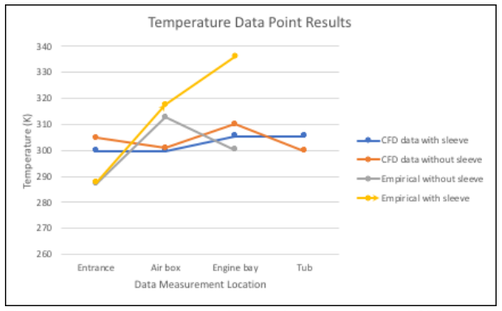

Figure 4: Temperature data results from both test data and CFD simulation (Blake, 2018)

In order to verify performance changes due to the use of the prototype intake sleeve, an engine simulation of the radical PR6 was required. The software used for this was GT-ISE v2018 by Gamma Technologies. An initial four-cylinder spark ignition engine was created and a basic simulation executed to ensure that it would run correctly in a steady state. The complex geometries of the air intake and exhaust systems were neglected for brevity, with generic cam profile and flow rate data being used in the absence of manufacturer data availability. Known data was used for intake and exhaust valve diameters and stroke length (Coombes and Mather, 2017). Specific engine dimensions were calculated from known engine capacities and key engine dimension equations.

The simulation was run in standard condition and then with the temperature data obtained from the thermocouple devices. The results provided a comparison of engine power both with and without the sleeve fitment.

The graph shown in Figure 6 depicts the power output based on CFD temperature results being inputted to the engine model (values in Table 3). These results contrast the thermocouple results; and show that when the sleeve is fitted, for the same RPM value of 9000 RPM the power increases 1.51%. This is due to the heat transfer from the tub region into the air box not being fully represented. This data proves to be important, as this shows that if the engine bay temperatures could be maintained lower or the same as in standard condition, lowering the heat transfer into the air box, then the sleeve has potential to produce greater engine power.

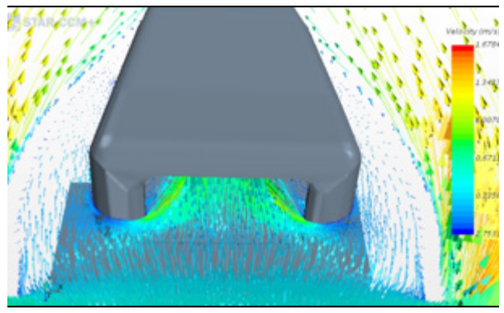

Figure 5: Velocity vector plane section showing air flow into tub area (Blake, 2018)

Conclusion

Within the proposal, it was hypothesised that temperatures would be greater without the prototype sleeve, due to heat transfer into the air intake stream from the hot engine region. The CFD results without the prototype sleeve fitted showed heat transfer into the intake stream, however the absence of the intake sleeve also allowed for cooling of the tub region, which was not predicted. The CFD results with the prototype sleeve fitted showed that, without the air flow into the tub, the tub temperature rose. This was supported by the thermocouple results, which also showed an increase in tub temperature with the sleeve fitted. Analysis of engine performance at 9000 RPM, with only temperature data changes, showed a power loss of 0.32% when the sleeve was fitted based on thermocouple results and an increase in power of 1.51% when the sleeve was fitted based on CFD data, due to the CFD results not allowing for heat transfer through the sleeve material. This suggests that if the tub region could be adequately cooled from alternative sources, then the sleeve has potential for minor engine power improvements.

Future Impact on Learning

In my own experience of teaching Higher Education, it can sometimes be difficult for learners to engage with research-based learning and can find themselves quite detached from the content of journals and academic research, often finding that they do not have the resources available to carry out their own research. With this research project having been carried out on the Bridgwater & Taunton College (BTC) Radical PR6 race car and on a tight budget, I am hopeful that learners will see the relevance and accessibility of the project.

The research project, as it stands, has scope to be further investigated as a student-led project, either on an individual or group basis. The thermocouple temperature measurement devices used within the project will remain the property of BTC and as such can be used for a wide variety of case studies, which presents further research opportunities for students.

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Fake news: what is it all about?

The spread of false information has become a worldwide concern. The recent scandals around the United States Presidential Election in 2016 have highlighted the difficulty to spot fake news and the importance of educating students to think critically in the digital age.

Fake news in the digital age

Fake news is false information spread through the internet and social media. It imitates the format of news media but is not processed identically as it doesn't follow the editorial validity process (Lazer *et al.*, 2018), and therefore readers are left to spot false information. According to Wardle (2017), there are seven types of mis and disinformation: "Satire or parody, misleading content, imposter content, fabricated content, false connection, false context and manipulated content". Some content, such as fabricated or manipulated, is clearly meant to deceive or harm; whereas other content, such as misleading, can potentially damage unintentionally as was the case in the measles outbreak. In 2017 a conspiracy website published a Harvard study that proved unvaccinated children were not a risk (Obukhanych, 2017). This article spread on social media as part of an anti-vaccine campaign. A third party fact checker investigated and found out that most of the conclusions on the article were false (Kasprak, 2018).


Fact Checks · Medical

Did a Harvard Study Prove That "Unvaccinated Children Pose No Risk" to Other Kids?

A deceptive and factually challenged blog post on an anti-vaccine website is not a "Harvard study," yet its false conclusions are popular on social media.

ALEX KASPRAK
PUBLISHED 14 AUGUST 2018

Did a Harvard study prove that 'unvaccinated children pose no risk' to other kids – a screenshot from the article (2018)

As such, misinformation has always been linked to the media press system (Tandoc, Lim and Ling, 2017). However, with the development of the internet and the wide possibilities for anyone to publish online, accessing and consuming information has significantly changed (Tandoc, Lim and Ling, 2017). To understand the scale of information exchange, the Real Time Statistics Project provides live statistics visualisation of the internet: every second 8,455 tweets are sent, 909 Instagram photos are uploaded and 73,856 Google searches are made (Internet Live Stats, no date). In addition, the average number of daily users on Facebook since September 2018 is 1.49 billion (Facebook, 2018). These overwhelming numbers show how quick fake news can be disseminated. In 2018, the biggest 50 fake news posts on Facebook generated about 22 million comments, shares and reactions (Silverman and Pham, 2018).

Social media has a definite role in this ecosystem. It gives the possibility for everyone to communicate first-hand newsworthy information. Social media platforms have quickly understood this and adapted their technologies to make everyone a potential journalist. For example "Facebook live" is a tool to broadcast and interact with followers. This new way to communicate has changed the approach to how news and, to some extent information, should look (Tandoc, Lim and Ling, 2017).

In addition, major technology companies (including social media companies) have developed algorithms suggesting contents similar to an original request. They are based on the collection of personal data such as search history and links clicked on Google, Facebook posts liked or geolocation of the phone (using an internal phone geolocation system). If this is an invaluable marketing tool, it also has the effect of amplifying ideas segregation which is the tendency for people to go for information that confirms their views and therefore doesn't widen their horizon (Seargeant and Tagg, 2018).

More fundamentally, why is fake news spread? According to Acerbi (2019), fake news can be created from fictional narratives. Without the boundaries of reality, narratives can be structured in ways which attract attention and may be more memorable. He also notices that negative contents, specifically threats, disgust- and sexual related information, appeal as more truthful than positive contents. Even if Acerbi (2019) starts a beginning of an explanation, this still remains largely unclear how fake news impact the way we make decision.

What has been done so far to tackle the phenomenon?

As highlighted previously, fake news can be difficult to spot because of its apparent truthfulness, therefore different responses have emerged to tackle it.

Facebook has introduced measures to reduce the spread of Fake news by using a fact-checking system (Levin, 2017). The company paired up with a third party to debunk fake news. Third-parties are independent companies that verify the information and publish their results on their websites. The idea was to flag fake news in order to let users know when the information tagged is fake. This was seen as not effective because fake news is already spread before it gets tagged as fake.

Another solution developed is using algorithms to detect fake news. According to Figueira and Oliveira (2017, p.820), there are three types of method: algorithms that use linguistics, algorithms that are based on the diffusion of the information and algorithms that take into account "human classification with machine learning and content with dynamics of propagation". Despite the research and the attempt to adapt it to social media, there is still a lack of reliability.

Policy makers are also tackling the issues. At a European level, a High Level Expert Group has been working on the subject to develop an EU strategy. Countries such as Germany asked social media companies to comply with the law and urged them to adopt the warning signs to let users knows when the information is potentially fake. Despite the apparent technical facility to put this solution in place, this is not a straightforward solution, as it needs to balance the truthfulness of information and the fundamental right of freedom of speech (Goodman, 2017). As a consequence, tackling fake news by restricting it technically or by law will always challenge fundamental rights on top of challenging the philosophical aspect of truth.

Law enforcement and technological solutions are not the only key elements of the issues. Social media are largely used by people, therefore the spread of fake news involves people's actions (Seargeant and Tagg, 2018). In these circumstances, it appears that being able to make a balanced judgment is crucial and education is at the very heart of it. Empowering future generations with enough tools to critically appraise the complex world we live in, is one of the core purposes of education (Seargeant and Tagg, 2018). Librarians already offer sessions on how to critically appraise information online. Nonetheless, with the evolution of the internet and the development of social media, librarians need to adapt their services.

At Bridgwater & Taunton College, the Learning Resource Centre staff have offered key sessions to Higher Education students through the HEADStart programme since 2013/2014. Library Co-ordinators deliver the programme to new students starting Higher Education, with the aim to help Further Education students through their transition into Higher Education (LRC, 2017). In six hours spread over different themed sessions students learn how to navigate through information offered in libraries (both the College library and partner institutions), how to find information on the internet, what plagiarism is and how to avoid it, how to reference in an assignment following university standard and how to evaluate information. Librarians are reviewing this programme in order to meet students' expectations and to reflect on the evolution of new technologies. They will tackle the spread of fake news through their session on the evaluation of information.

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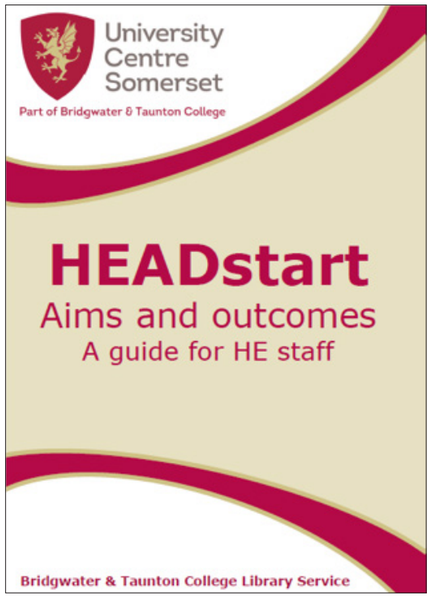

HeadStart programme leaflet (LRC, 2019)

Figure 1: Molly Fitton's chosen artworks for CCU corridor at Musgrove (2019)

LORNA SHEPPARD (FHEA)

Course Leader FD/BA (Hons) Graphic Media and Communication
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Musgrove Park Hospital and Art for Life live project brief

In my role as a tutor-practitioner it is essential that the development of my skills is maintained. Shreeve, Wareing and Drew suggest 'combining two fulfilling professions which nourish each other … are undeniably positives', but 'knowledge is frequently held tacitly by practitioners' (2009, p. 346). Continuing professional development allows me to incorporate insights from the wider world of my illustration practice, and as a PhD candidate embedding strategies that I apply in my own studies can also be used to enhance my students' learning experience.

The strategies I adopt are drawn from these experiences. The resources made available to me through my role as a Course Leader focus on a variety of pedagogical topics, from both a general and more specific art and design context. Through my illustrative practice, I am able to draw on over twenty years' experience, from pricing of commissions to working to very short deadlines. To be a successful practitioner requires patience, flexibility and professionalism, attributes that students must also possess to prosper and achieve.

My past and current experience as a practitioner and a PhD candidate, has brought variety and quality to my teaching. It is essential that a student of the visual arts experiences a range of possible learning activities to avoid tacit knowledge, and to prepare them for eventual professional practice. 'Live projects' and 'event-based learning' have been identified to enhance this experience, which I embed into the curriculum having worked on Editorial, Design and Public realm illustration commissions myself for clients as diverse as B&Q, BBC Magazines and Woodmansterne to Musgrove Park Hospital in Taunton.

In January and February 2019, both my First Year students and I were tasked to complete separate projects for Art for Life. Art for Life (2019) has been delivering the arts programme at Musgrove Park Hospital since 1993 working with artists, staff and service users to enhance the experience of those spending time in hospital.

Figure 2: The Sultry Light by Lorna Sheppard (2019)

Figure 3: The Loosened Pane by Lorna Sheppard (2019)

The six week long student brief, which formed the basis of the Studio Practice module, saw students produce artworks for the corridor of the Coronary Care Unit. Working closely with the Arts Co-ordinators Lisa Harty and Emma Quick, it was imperative that all works were respectful of the environment and patients with concepts that had to be practical, original, innovative and stimulating. This experience allowed for an evaluation of live project directed learning, based on teaching drawn from active practice. Studio sessions were organised to reflect the skills required when working on a live project brief. Activities centred on topics such as collecting and utilising primary research, client communication and generating outcomes in a non-traditional art space. As my own project was running concurrently to this, I could provide appropriate advice and support based on my own experience (both historically and contemporaneously). This ensured student focus firmly remained within the brief's requirements and to expand knowledge of a range of concepts, values and debates to inform and influence the student's own creative practice.

The level of work produced implied an effective method of teaching, enhanced by group interaction, peer learning, and community engagement. The integration of knowledge drawn from my own practice gave students awareness and experience of employability-led skills and professional experience. With outcomes that showed diversity in the application of theoretical and practical methods, Lisa and Emma considered a number of options that showed great integrity. The unanimously chosen artworks by Molly Fitton saw a theme that combined an iconic Somerset landmark with the Dorset and Somerset Air Ambulance (see Fig 1). Developed using Pop Art elements, in a digital format, Molly's use of colour brought a celebratory piece of work to life having selected then scrutinised a number of themes. Displayed in a sequence of four, the images were designed to illustrate the helicopter's movements through the air.

Molly's approach shows similarities to the project I completed for Art for Life, in drawing on Somerset themes and landscapes. The project brief was to design six artworks for Eliot Ward (in six weeks). With existing commitment to my Course Leader role, organisation and flexibility was key in delivering this project on brief and on time. As Eliot Ward's patients are often dementia patients, the imagery had to be simple and accompanied by only three words (for way finding). Using TS Eliot's poem East Coker (1940) as a theme (his family originated from East Coker and Eliot's ashes are interred in St Michael and All Angels' Church), I initially visited various locations in East Coker for inspiration. Using photographs as a reference point, I chose scenes around the village that reflected passages within the poem, and ones that could be easily recalled. Examples such as 'the sultry light', 'the loosened pane' and 'into the village' (see Fig 2, 3 and 4) provided imagery that was non-threatening and suitable for a busy hospital ward. Using an existing colour palette that had been used on previous projects for Art for Life (this was my sixth) brought uniformity and cohesion to the project. Using a largely digital process to reformat and bring the images to life, this technique was chosen to replicate previous successful projects but also for its ease of use, very similar to the technique used by Molly.

Now the artworks have been installed, the feedback so far has been very positive both from the ward staff and patients alike. Each individual artwork (there are twenty-four in total – six images have been replicated in four different colours) has been placed in bays, to assist the patient in identifying their own bay (See Fig 5). This was also previously implemented in Coleridge and Dunkery Wards to great success.

I hope in the future opportunities like this will arise again as students see the benefit in working for a client, but, equally, it places my own illustrative practice into the wider pedagogical context. Students must be made aware of their lecturer's own professional practice, as it reinforces the breadth and depth of knowledge the lecturer is imparting to the student.

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Figure 4: Into the Village by Lorna Sheppard (2019)

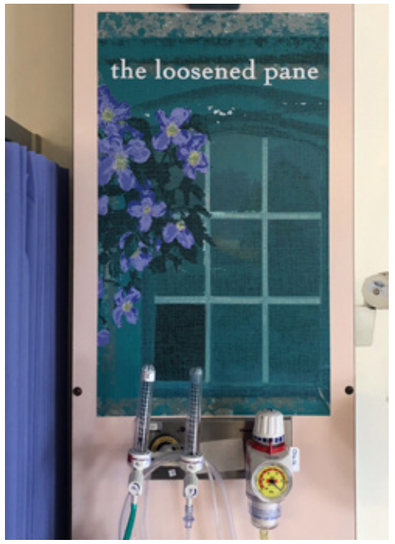

Figure 5: Artwork installed in Eliot Ward (2019)

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Environmental sustainability of Higher Education buildings - a case study of University Centre Somerset building

Abstract

Environmental sustainability and efficient use of energy in Higher Education (HE) buildings have the potential to contribute to HE energy policy development as a commitment towards significant energy reduction and achieving 80% CO2 emissions reduction by 2050. The research evaluates the environmental sustainability of HE buildings by determining the environmental performance of the University Centre Somerset (UCS) building. The study integrates students' learning and participation as the context, by using Edexcel BTEC Level 4, Regulated Qualifications Framework (RQF) unit 3 Science and Materials (for construction and engineering) to investigate the UCS building as a case-study in achieving outlined learning outcomes in the unit specification. The UCS building is embedded in the students' assignment as a case-study. This study's methodology involves a quasi-experiment (a measurement of case building's thermal comfort and environmental performance parameters) and the occupants' comfort evaluation survey as quantitative techniques. The targeted participants are students undertaking the Higher National Certificate in Civil Engineering and the Construction & the Built Environment. The participating students and researchers are expected to collect and analyse experimental data on the environmental performance of the case study building. They will also evaluate the building's performance and human comfort requirements, and the ecological sustainability of the case-building, thereby fulfilling learning outcomes 1 to 4 of unit 3.

Introduction

Globally, existing buildings form a clear majority of building stocks. Almost one-half of existing building stocks were built before modern energy efficiency standards, and new construction is only 1% per year of existing building stocks (Mafimisebi *et al.*, 2018). Hence, environmental sustainability and the efficient use of energy in buildings has the potential to contribute to HE energy policy development, as a commitment for achieving significant energy reduction and achieving 80% CO2 emissions reduction by 2050. Also, in Europe, buildings account for about 40% of total primary energy consumption and about 36% of greenhouse gases (GHG) emissions (Albatici *et al.*, 2016). According to Mafimisebi (2018), office building typology accounts for over 50% of the total energy consumption of the public building, excluding domestic buildings. Therefore, HE buildings could be a viable target for adaptation to extreme weather and climate change (CCH) in reducing harmful impacts (Linnenluecke, Griffiths and Mumby, 2015). This study aimed to integrate students' learning and participation as the context for measuring environmental sustainability and energy efficiency performance of buildings and also serves as the contribution of Bridgwater & Taunton College (BTC) towards climate change action and scholarship research. Furthermore, achieving this study aim will help teach students how to undertake quasi-experiment/fieldwork experiment in environmental science and sustainability. The activities for the experiment are an integral part of unit 2 Qualifications & Credit Framework (QCF) or 3 (RQF) Science & Materials, unit 12 Conservation and Adaptation (environmental implications), and unit 13 Environmental Impact of Construction. Students will acquire the skills of measuring environmental sustainability parameters and energy efficiency performance.

Figure 1: University Centre Somerset - Front Elevation

Figure 2: University Centre Somerset - Side Elevation

Methods

The study will involve an extensive literature review to identify a range of variables that contribute to environmental sustainability and the energy performance of buildings. This study uses the Edexcel BTEC Level 4, (RQF) unit 3 Science and Materials (for construction and engineering) to investigate the Somerset University Centre building as a case-study in achieving the outlined learning outcomes in the unit specification. The UCS building (Figures 1 and 2) is embedded in the students' assignment as a case-study. A quantitative method of research will be used in the collection and analysis of data.

The research enquiry involves fieldwork/quasi-experiments to collect environmental data related to the case-building and the energy use of the building. A self-administered online questionnaire will be employed to gather data on the identified environmental sustainability factors and determine the level of thermal comfort within the case-building. Students and researchers will collect case building's energy consumption data from the BTC Facilities Management department in determining the building's energy performance. The data collected will be analysed with IBM SPSS and the AMOS software. This study will use Exploratory Factor Analysis for examining the consistency, reliability and validity of the collected data on variables, and the structural equation modelling technique for examining the relationship between the environmental sustainability factors and the case building's energy efficiency performance. The proposed participants are students of the Edexcel BTEC Level 4 Civil Engineering and Construction & Built Environment, BTC Facilities Management Department, lecturers and staff and students, using the Somerset University Centre building as this study's case-building.

Results and Discussion

As part of the students' assignments, the research will help integrate students' learning and participation as the context for measuring environmental sustainability and the energy efficiency performance of buildings and serve as the contribution of BTC towards climate change action and scholarship research. Also, it could help to teach students how to undertake a quasi-experiment/ fieldwork experiment in environmental science and sustainability. The research study will contribute to a better understanding of unit 2 (QCF) or 3 (RQF) Science & Materials, unit 12 Conservation and Adaptation (environmental implications), and unit 13 Environmental Impact of Construction. This will enable students to acquire the skills of measuring environmental sustainability parameters and energy efficiency performance.

Conclusion

This study's contributions to the body of knowledge are:

- The study will enable students to acquire the practical skills of measuring environmental sustainability criteria and building energy performance
- This study will improve the knowledge and learning experience of students and help them to fulfil the learning outcomes of unit 3 Science and materials, unit 12 Conversion and Adaptation and unit 13 Environmental Implication of Construction.
- Students will understand how to carry out environmental studies and science experiments (quasi-experiment and fieldwork) and acquire the skills of data collection, data analysis and evaluation that will prepare them for future scholarship endeavour.
- The outcome of the study might help the BTC Facilities department to understand how the College buildings use energy and their sustainability performance for improving energy use and environmental management of College buildings.
- The research will serve as a contribution of BTC towards climate change action and scholarship research.
- The College could use the research findings to seek external funding for the application in other areas of climate change and sustainability.

Acknowledgement

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Impacts of case-study research projects on Higher and Further Education students' apprenticeship skills and competence at the workplace

Abstract

The UK construction industry was involved in the apprenticeship scheme before the inception of the apprenticeship levy fee in 2017. While the UK construction industry is starting to benefit from the scheme as evidenced in the increased number of skilled workers (i.e. technical and practical contributions to business) in the past ten years, the subject of how apprentices acquire relevant skills and knowledge has not been fully explored. The aim of this study is to reveal the impact of the apprenticeship scheme on knowledge, skills, competence, behaviour, scholarship and the students' progression. In this vein, the study will investigate the use of final year students' case-study projects to understand how students acquire the knowledge, skills, behaviour and competence required for business and as a prerequisite to developmental scholarship and progression for lifelong learning. The research seeks to answer two questions: first, what are the measurable impacts of disciplinary case study research on learning experience and skills development in the workplace, and secondly, what are the benefits of the knowledge and disciplinary skills gained on the programme within the work-based environment. An extensive literature review will be conducted to reveal the relevant factors corroborated by a simulated project designed within the Level 4 Edexcel BTEC unit 5 Group project assessment (undertaken by the final year students studying on Construction and Civil Engineering in Built Environment

programme at BTC and the National College for Nuclear - Southern Hub) to reveal further relevant factors. A quantitative method of research will be used to collect and analyse data, including a self-administered online questionnaires' survey to validate factors identified within the literature and determine the most relevant variables for the research. The defined variables will be used to identify the impact of the apprenticeship scheme on knowledge, skills, competence, behaviour, scholarship and students' progression, and a second survey will be conducted to validate the result of the first study. The current research will ensure the reliability and credibility of collected data by using the IBM SPSS for exploratory factor analysis. Findings from the research will holistically aid understanding of the specific impacts of case study research projects on learning and workplace experiences and generally improve knowledge and skills gained in construction apprenticeship programmes.

Introduction

The apprenticeship scheme is part of the vocational education and training system that represents a Universalist Nomadic Education Model. In the UK, France, USA and other countries that practise this scheme, students are the primary focus for achieving the conceptual aim of development from novice to expert for the benefits of society (Grytnes *et al.*, 2018). Hence, the apprenticeship scheme is often run to integrate knowledge, skills and behaviour that underpins both the school-based and the company-based components of the vocational and technical education system. It has been recognised that students have the potential of knowledge development and transmission of such knowledge and skills with innovations (Anumnu, 2001; Felstead, 2007; Green, 2016). According to Hahn (2012), apprentices are producers of their knowledge; therefore, a vector of knowledge between the school and the workplace (Hahn, 2012). Grytnes *et al.* (2018) position collaborated Hahn's view; they argued that the programme promotes social equity and enhances the cooperation among further & higher education (FHE) institutions, government, employer organisations and trade unions. While other studies (Anumnu, 2001; Felstead, 2007; Green, 2016) have identified knowledge gain, skills, and competence as benefits from the apprentice scheme, issues of scholarship and students' progression are still under-researched. Therefore, the need arises for examining the benefits of this scheme to the stakeholders, especially the students and employer organisations as contributors to competence, scholarship and progression. The research target is to understand the absolute impact of students' knowledge, skills, behaviour and competence whilst studying on the apprenticeship programme.

Research Aim

The aim of the current study is to reveal the impact of the apprenticeship scheme on knowledge, skills, competence, behaviour, scholarship and students' progression.

Research Question

What are the measurable impacts of disciplinary case study research on learning experience and skills development in the workplace?

What are the benefits of knowledge and disciplinary skills gained on the programme within the work-based environment?

Methodology

The study involves an extensive systematic literature review that will identify a range of variables which contribute to knowledge, skills, competence, behaviour, scholarship and the students' progression. Also, the study will propose a research hypothesis to test the relationship and the interdependency between identified constructs and their defined variables. The current research will apply a quantitative research method and a pilot study to streamline and confirm factors derived from the literature review. The research enquiry for the pilot study will involve using a self-administered online questionnaire to gather data on the identified factors. A second online survey for the collection of data from employers and other respondents will be used to validate the refined factors derived from the pilot study. The second online survey (self-administered questionnaire) will help investigate the impacts of the apprenticeship scheme on knowledge, skills, competence, behaviour, scholarship and students' progression, including the relationships between these factors. The IBM SPSS will be used to analyse the data collected. The targeted audience is final year students on the Edexcel BTEC Level 4 Civil Engineering and Construction & Built Environment pathways, National Nuclear College Southern-Hub, employers, colleagues, managers/superiors, lecturers and assessors in the department. An information pack containing a consent form, research information (profile, summary and method), GDPR and Health & Safety issues and guidelines will be issued to participants and their employers in line with the College's ethical approval procedure.

Research Implications

This is an ongoing research project and findings are expected to help understand the specific impacts of case study research projects on learning and workplace experiences, and generally, improve knowledge and skills gained in construction apprenticeship programmes.

Research Outcomes

Employers will be able to measure the skills and competencies acquired in the programme and devise work-based training/seminars/workshops to complement areas needing improvement.

- Can help students determine a more definite career pathway in both their academic and professional pursuits
- Can help FHE institutions and businesses capture critical scholarships for apprenticeship programmes
- The researchers and the College could use the research findings to seek external funding for the application in other areas of the FHE apprenticeship scheme, nationwide.

Acknowledgement

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Creative Arts

Students begin Kolam design using salt

Student uses brush to neaten lines

A finished Kolam design

When is housework art?

When is housework art? The makers of kolams consider their efforts housework. Kolams are designs rendered in rice flour or chalk powder on the streets of Tamil Nadu, India. As a routine daily activity, it certainly has a resemblance to housework. However, in our Western eyes, it seems more like art. It has many of the elements and values we might look for in art such as sensitivity of line or composition and structure; values that are shared by the makers too. It is what separates kolams from a Western perspective of art that reveals our entrenched restricted ideas about art. Those ideas include notions such as: art has an artist, art is special and separate from daily life, and art is made to last. I am indebted to Renate Dohmen (2001; 2004), whose research into kolams was an inspiration for my broader research into the problematic identities of Western and non-Western art production and consumption.

Off the back of this research, I wanted to challenge Art students' assumptions about art. After introducing them to the traditional dotted grid structure, abstract designs, the street, path or doorway location, the ephemerality of the work and the technique of pouring the flour, students set to their own kolam designs. We used salt rather than rice flour or chalk, but otherwise students were asked to undertake the task in the most 'authentic' way possible. Mindful of their assumptions and previous training in art, it was interesting to see how they responded. The technique was the first deviation. Granted, the students had not been practising since childhood as the makers from Tamil Nadu would have. Nonetheless, the students felt at liberty to fashion cones out of paper to help apply the salt and use brushes to keep stray salt in line, which indicated their sense of creative freedom to do things their own way. As they neared completion, they became precious about their designs and wary of them being walked over, despite this being an integral part of the kolam's function.

This seemed to indicate their acquired understanding that artistic successes needed to be conserved. Resigned to the kolams' fate, one pair of students walked carefully and with purpose arm in arm over their completed design, as if in reverence of the work. This felt like an act of activating the work. They insisted they should be the first to do this which suggested a sense of ownership by the artists. This idea was accentuated by another pair of students who initialled their completed work. This seems to allude to the Western notion of the artist as a genius, whose unique vision rises them above other humans; a notion that many of the students would be aware and accepting of. One of the students went beyond the traditional abstract design to create a fish. This deviation was also inspired by a Japanese design. That this fish was depicted on a speedbump gave it a three dimensionality and an implication that it would be worn away by a vehicle rather than by foot. The combination of these variations illustrate an arguably Western preoccupation to drive creativity forward.

A discussion on authenticity followed. I showed the students how kolams evolved to include animal designs, the use of colour and even the use of cartoon characters from Western media. Although these additions seemed to be diluting the authenticity of the kolams, are they really inauthentic? Picasso's Les Demoiselles d'Avignon seemed an appropriate comparison. He borrowed imagery from African masks. Does that make his work any less authentic as a piece of Western art? Why is it alright for a Western artist to appropriate imagery from other cultures, when practitioners of other cultural traditions are denied that opportunity, if they are to escape accusations of inauthenticity? In other words, why does Western art seem to have a monopoly on creative progress and divergence? Of course, artists of any nationality can and do create work which might reference traditional practices from their own global region in a new way, but often it is only in a Western, gallery-centred context, where this becomes innovative rather than an affront to tradition. One of the reasons for this is the mismatch of functions. Regardless of contemporary art's all-encompassing spectrum of practices, the function is still tied to Western traditions and values. True, Picasso did speak of the magic of the masks that inspired him and sought to feed that function into his art, yet it remains that gallery-focussed art has different functions from housework.

Walking over design

Signed with initials 'AK' in corner

Fish design still fits grid pattern

Appropriating Japanese imagery

Post-kolam, I set the students a challenge: inspired by a non-Western cultural tradition, they had to produce work that went beyond merely appropriating imagery. They had to respect the function, purpose and values of their inspiration whilst still making something relevant for a UK gallery audience. The various results included: an Ancient Egyptian inspired body bag referencing the relationship between Egyptian art and the afterlife and a contemporary Western utilitarian way of dressing the dead; rubber masks inspired by the transformative power of African masks and the physical and emotional transformations offered by cosmetic surgery; and a set of stamps referencing the dynastic similarities between North Korea and the UK and each culture's apparent blindness to the propaganda to which they are subjected.

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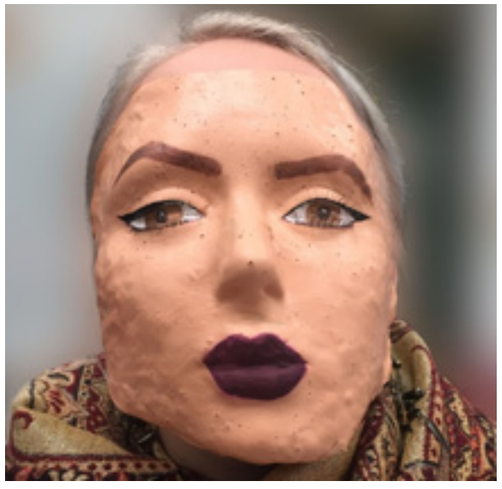
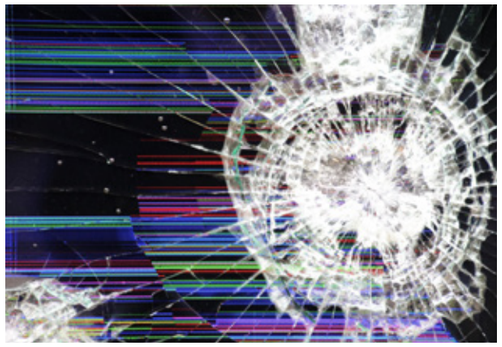
Egyptian bodybag (head detail)



Presenting a new identity with a transformative mask

MAX DALDA MÜLLER
Course Leader
Counselling

Black mirror: a literature review on the influence of technology and social media on mental health and wellbeing



Broken LCD screen (Middendorp, 2019)

Why am I doing this?

In my work as both a counsellor and teacher, I have noticed the increased presence of technology and social media. My clients in my counselling practice speak of finding old friends through social media and using technology to their advantage. But they also speak of heightened anxiety and low self-esteem when they compare themselves with others online. Students in college use their smartphones to google and access information all the time but it is also the first thing they check when they have a break, like a child with a comfort blanket. The vast majority of these people have one thing in common: they feel like they cannot go without their phones and their Facebook, Twitters, Snapchats, etc. This is especially true for children and young people who are born into the technology.

At times, I have suggested that they give it up or that they merely cut it down. In these instances, they look at me in a strange way that I have come to recognise as both dismissive and fearful. I have seen this look before when working with clients who are affected by substance misuse disorders. In that field we call it denial.

This has made me question the influence, even the impact, that these new technologies are having on our personal and social wellbeing.

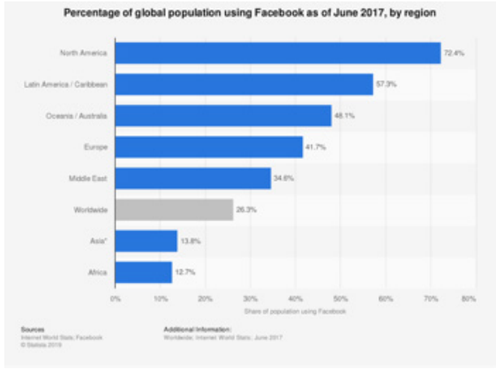
In this literature review I will explore what the experts have written about this topic and also take a look at current research. I will also make some recommendations as to how we could approach this topic here at Bridgwater & Taunton College.

What is the evidence?

Technology and Social Media
I purchased my first mobile phone in 1998 and got my first (dial-up) internet connection that same year. In 1998 26% of

UK households owned a mobile phone compared to 95% 20 years later (Statista, 2018). Internet access has gone from 9% to 90% in the same period (Office for National Statistics, 2018).

Facebook launched openly in 2006 and had about 12 million users. It has since grown to reach 2.2 billion people which is about a quarter of the world's population.



In this country 66% of people access social networking sites regularly and these numbers are much higher for those aged 16-24, of whom 96% access social networks regularly (Office for National Statistics, 2017).

Mental Health Statistics

Mental health problems are a growing public health concern. They are prevalent not just in the UK, but around the world. In England, one adult in six had a common mental disorder (CMD) last week: about one woman in five and one man in eight. Since 2000, overall rates of CMD in England steadily increased in women and remained largely stable in men (NHS Digital, 2014).

Amongst children and young people, the statistics show a slight but steady increase in the prevalence of CMD for 5 to 15-year olds, rising from 9.7% in 1999 and 10.1% in 2004, to 11.2% in 2017 (NHS, Digital 2018).

The Mental Health Foundation (2016) argues that the rates of mental health problems rise steeply in mid- to late-adolescence. For adolescents aged 11–16, the rate of mental health problems is 13% for boys (an increase from 10% of boys aged 5–10) and 10% for girls (an increase from 5% of girls aged 5–10), and this figure rises to around 23% by age 18–20. According to NHS Digital (2018), 22.4% of girls aged 17-19 have an emotional disorder. It is worth noting that young women spend more time on mobile devices than their male counterparts. NHS (2017) highlight that young women are more likely to be affected with emotional disorders than young men.

These are worrying trends and something that we, as a College, need to take into consideration in order to support our young learners.

Is there a link between technology and social media use and the increases in mental health problems?

A systematic review published in the *Journal of Medical Internet Research* in 2016 takes a careful look at the complex ways that social media is related to anxiety and depression. It argues that social media helps users to connect to friends, family, colleagues, strangers and celebrities and can help users to maintain and develop new friendships, as well as helping with the expression of ideas, emotions and identity. It also comments on the fact that, for most people, social media use is linked to higher levels of life satisfaction and self-esteem (Seabrook, Kern and Rickard, 2016).

On the other side, this study argues that for those who are already experiencing CMD such as depression or anxiety, the use of social media can exacerbate their symptoms of isolation, loneliness and low self-worth (Seabrook, Kern and Rickard, 2016).

A report by the American Academy of Pediatrics (2011) has defined 'Facebook depression' as a concern resulting from children and young people's use of social media. This is defined as depression that develops when preteens and teens spend a great deal of time on social media sites, such as Facebook, and then begin to exhibit classic symptoms of depression. As with offline depression, preadolescents and adolescents who suffer from Facebook de- pression are at risk for social isolation and sometimes turn to risky Internet sites and blogs for 'help' that may promote substance abuse, unsafe sexual practices, or aggressive or self-destructive behaviours.

A 2015 University of Houston study published in the *Journal of Social and Clinical Psychology* showed that Facebook usage can lead to the manifestation of depressive symptoms and it describes the psychological phenomenon of 'social comparison' as the mechanism which increases this depressive mood. Polk (cited in Alter, 2017 p.118) argues that we, humans, are inherently aspirational so we tend to focus on people who have more than us, which leaves us with a sense of loss and deprivation when compared to those other people. This is a common experience on social media, often described as the Fear Of Missing out or FOMO.

Kardaras, in his comprehensive book *Glow Kids* (2016, pp.115-116) highlights the fact that more young people are developing Electronic Screen Syndrome or ESS, which is described as a disorder which brings about in children and young people an inability to modulate moods, maintain attention and regulate levels of arousal in a healthy manner.

Kardaras argues that electronic screens overstimulate the nervous system and trigger a fight-or-flight mode which in turn exacerbates, or creates, disorders such as ADHD, depression and anxiety. I would go on to argue that we all carry within a little boy or little girl, who feels, thinks, acts, talks and responds just the way he or she did when he/she was a child (Berne, 1972, p.12), and that this inner child is influenced and affected by our experiences as adults.

Having read quite a lot of literature on this topic, I cannot clearly make a definite link between mobile phone and social media use and the development of common mental disorders. But all the evidence seems to point in that direction. As with any human activity, something which we do regularly will have an influence on our health and wellbeing. At present, we spend an average of 2.5 hours on our mobile phones (Ofcom, 2018), a great majority of this is on social media. This is especially true of young people who spend even more time on their devices.

Conclusion and recommendations

Any new technology brings advantages to some and challenges to others. The rapid rise of mobile phone and social media use has not given society enough time to absorb and process these changes. We cannot blame new technology for the rise in mental health problems in young people. It is the way that we use this technology that can bring either benefits or difficulties to our society. We have to take responsibility for the choices that we make whilst we are online. I feel strongly that we need to support young people in making informed choices. We need more information on this topic.

We talk of addiction to tech and social media but, differently to substance dependency disorder where abstinence is the solution, we need to think differently when it comes to screens. Mobile phones and the internet are essential tools to function in today's society. We cannot ask young people to 'go cold turkey', we need to help them to have a healthy and balanced relationship with technology.

Over a year ago, I took part in a digital detox: for a whole month, I changed my smartphone for a phone-and-text-only phone; logged out of all social media and stopped reading online news media. I had access to email for work purposes 3 times a day.

I found this experience strange at first but incredibly rewarding. As a result of this, I have changed my relationship with technology to a more balanced, less stressful one. I believe that I have improved my digital diet.

However, it is easy for me to do this. After all, I was born before the internet so all I had to do was go back to basics. I understand that for those born into the technology this might prove more challenging.

I think that as adults we have a responsibility to be role models to young people. For this, I propose that we have mobile phone free days here at the College. Perhaps once a term we could put away our mobile devices and attempt some old school face to face communication.

I am also putting together a research proposal to conduct a digital detox experiment across ages, genders and cultures. We are privileged to have thousands of students at the College and I am sure that some of them will volunteer for this project. I think that the findings from this could really inform the college in how to support young people into a healthy relationship with social media and technology.

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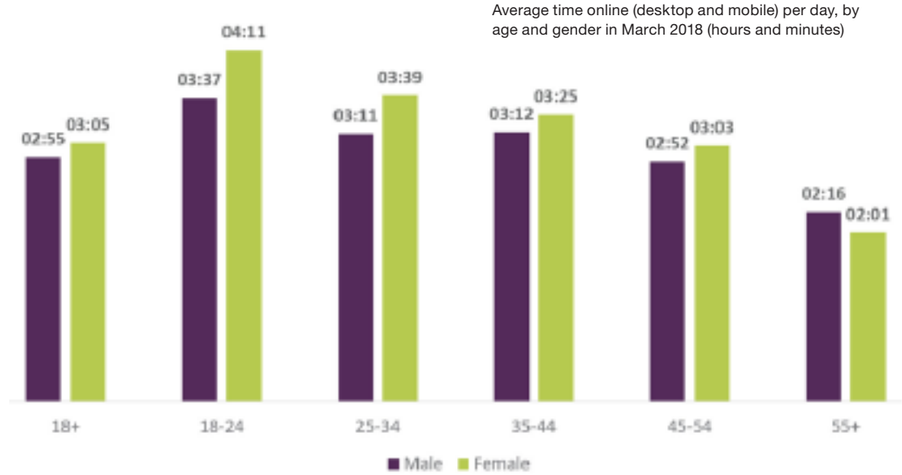

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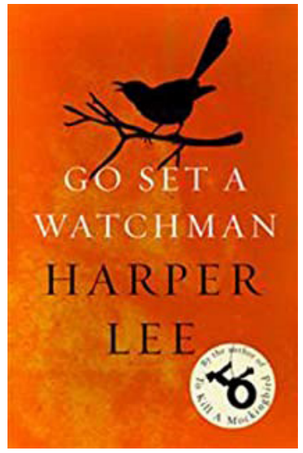
Book clubs - educational and therapeutic? An example of best practice at BTC

The Book Club is a monthly Library Services initiative that has been running during term time at the Taunton Campus since February 2016. The first book that was chosen by the book club was *Go Set a Watchman* by Harper Lee (2015). There was much excitement about this book when it was published in 2015 because it was 55 years since the publication of her Pulitzer Prize winning masterpiece To Kill a Mockingbird (Lee, 1960).



Go Set a Watchman book cover

Good Immigrant book cover

The attendees at the Taunton Campus include teaching staff, students, learning facilitators and members of the library team. We have a core membership of about eight people. One student, a regular attendee, encouraged us to read *Glass Houses: the Morganville Vampires* by Rachael Caine (2008). It was the first book in a series of fifteen. He loved the book and had read it many times. We were given an insight into the reading interest of the younger generation.

We try to cover a wide variety of reading genres and styles. Every participant can put forward a suggestion and the group will then agree upon a title. We have been influenced

in our choice of book by its availability, i.e. already part of our collection and/or available in local libraries. We have encouraged our attendees to use the local libraries and our local independent bookshop Brendon Books.

The types of literature that have been chosen are: novels, biographies, poetry (Ted Hughes and Sylvia Plath) and science fiction. We have read a great variety of novels from Charles Dickens and Scott Fitzgerald to Stephen King and James Patterson.

In February 2018 the Word on Tour Event came to Bridgwater & Taunton College, Taunton Campus. Author Nikesh Shukla and poet Byron Vincent entertained and educated us about some of the social issues of the day; namely, racism and the stigma of poor mental health. Following this event we chose Nikesh Shukla's book *The Good Immigrant* (2016) as our book of the month. This book is a collection of essays by writers of colour who express their anger, concern, worry and weariness about being considered potential terrorists merely because of their colour and immigrant status.

We also read *The Good Thief's Guide to Amsterdam* (2007), written by an author born in Taunton, Chris Ewan. The protagonist is a writer who writes crime fiction about a career thief whilst also being a thief. It is a very entertaining novel with much humour and unexpected developments.

The book club meets for one hour, at lunchtime in the HE Study Centre. We enjoy freshly brewed coffee and a delicious cake. It is free of charge. We discuss the chosen book and then ask for suggestions for next month's read. The atmosphere is very relaxed and informal. When pressures of work and timetables allow, it enables staff and students to escape from their work and enjoy a complete break.

The therapeutic benefits of the book club have been noted by staff and students. A learning support facilitator said:

> I look forward to book club each month and my interest in reading has been rekindled. It's friendly and sociable, allowing people from different areas of the College to get together and share their views. It encourages us to go outside our comfort zone and try different genres. Tea and cake is an added bonus!

A student believes that 'book club is a great time, meeting with other book lovers. Free tea, coffee and cake are a plus!' One lecturer wrote: 'The Book Club has encouraged me to read different authors and subjects. It also provides an opportunity to share views about books with others whilst enjoying a cup of tea and biscuits'.

We hope to continue into the distant future because we believe that those who have attended have welcomed the challenge to read genres of literature that they would not normally choose, have enjoyed the lively discussions and the opportunity to relax for a short time in the middle of a very busy working week.

The Good Thief's Guide to Amsterdam book

The Hate U Give book cover

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Embedding transitional behavioural skills - how can transitional behavioural skills needed for employment within the nuclear sector be effectively woven into the fabric of the curriculum, equipping students ready for employment?

Master's Research Project
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Abstract

The research project's aim was to investigate how the delivery of transitional behavioural skills needed in the nuclear sector can be effectively woven into the fabric of the curriculum, equipping students ready to transition into employment. Due to the safety critical nature of the nuclear sector, the need and application of these behavioural skills are amplified, therefore they must be a key curriculum design consideration for the National College for Nuclear (NCfN). This negates the need for students to develop these skills when transitioning into employment, which limits their productivity during this period.

The nuclear sector has developed a culture whereby behavioural skills are vital for all employees to possess, enabling them to perform in a safety critical environment. Students leaving colleges and universities have often been criticised for not possessing or applying these skills in sufficient quantities when transitioning into the nuclear sector. Working with industry, Bridgwater & Taunton College (BTC) in partnership with the newly formed NCfN have the responsibility to train the future workforce, ensuring they all hold high levels of behavioural skills. The main objective for the research project was therefore to understand the behavioural skills gap and in response develop a curriculum delivery methodology in order to produce students who are more industrially equipped.

The project reviewed relevant literature, including The Wolf Report (2011); CBI (2016); Heart of the Southwest LEP (2014) and UK Commission's Employer Skills Survey (2014), who all support the issues around students transitioning with insufficient levels of behavioural skills. The literature review also considered more specific nuclear sector reports ranging from Industry Regulators, Employers and Government Departments, including Crichton and Flin (2004); Department for Energy and Climate Change (2015); EDF Energy Nuclear Generation (2016) and Office for Nuclear Regulation (2016). These specific industry reports helped to confirm the existence of a skills gap and, more importantly, established the actual skillsets required by the nuclear sector. The initial literature review indicated possible delivery methodologies that could be adapted, however these were very limited and needed extensive primary research to establish more reliable findings to formulate potential proposals.

The primary research, which included semi-structured interviews and a case study, built upon many of the themes established by the literature review, however it critically developed the emerging theme around contextualised scenario-based learning, which aligned pedagogically with Problem/Project Based Learning (PBL). The student group case study provided valuable insights into appropriate experiential delivery techniques and when combined with other emerging themes solutions became apparent.

An inductive research approach allowed converging themes to be synthesised through data reduction techniques, providing reliable findings from which new knowledge shaped the proposed curriculum methodology. The proposed delivery methodology crucially operates within an environment that models itself on nuclear behavioural cultures. At the centre a PBL approach allows the contextualised scenario based delivery to operate, which is enhanced by delivery techniques that require students to adopt and apply the behavioural skills needed by the sector.

In summary, the recommendations address the project's aims to successfully derive a curriculum delivery methodology that would increase student attainment, whilst the embedding the application of interpersonal and non-technical behavioural skills ready to transition students successfully into the workplace.

Research Aims and Objectives

The project set about conducting research into the ability of College and University level students' to hold and apply behavioural skills when transitioning into employment within the nuclear sector. Once established, the intentions was to investigate appropriate pedagogical approaches in order to propose a curriculum methodology that integrates these behavioural skills for Colleges and Universities to adopt, in order to better equip students to gain employment and enhance their performance.

Behavioural skills within safety critical employment sectors have become a vital factor required by all employees to carry out their job roles and to execute them safely, resulting in improved performance plus reducing and or eliminating error. The Nuclear sector is one such critical sector. As set out by the Office for Nuclear Regulation (2017) within its License Condition Handbook; training is crucial for the sectors safety critical status to ensure its incident free. The Office for Nuclear Regulation (2017) highlights the importance of behavioural human factors and how they can be achieved through training. This clearly indicates the need for these behaviours to be delivered and incorporated into the sector's training and education programme. In response, the sector has developed highly effective behavioural performance training and cultural environments in which all employees must comply (EDF, 2016). Industry has been asking for years why college leavers and university graduates do not arrive in the workplace with these behaviours and cultural understanding. Graduates from colleges or universities historically do not arrive in the workplace with these skills (CBI, 2016), and it is left for industry to train and embed the behavioural skills required. It was therefore this project's aim to investigate how the educational sector can learn from industry in order to embed behavioural skills into the National College for Nuclear curriculum, equipping students with high levels of behavioural performance capability and the cultural understanding required when transitioning into the sector.

The key aims were therefore to:

- Ensure the findings from the project will implement a change in curriculum delivery that truly delivers non-technical transitional behavioural skills for students progressing into nuclear sector employment.
- Produce curriculum recommendations that will equip students with the non-technical behavioural skillsets that provide educational success and propel their careers.
- Make curriculum recommendations that industry benefit from that equips students with work-ready behaviours to meet current and future sector workforce expectations.

Research Methodology

Introduction
The Applied Project research required a methodology that set out theoretical and philosophical approaches, allowing systematic methods to establish converging data from which findings could provide reliable and trustworthy evidence in order to derive new knowledge and possible solutions.

Research Approaches
The appropriate research methodology is largely dependent on the project proposal in relation to the philosophical intent (Johnson and Clark, 2006). Fundamentally the project objectives fell within the Applied Research field, therefore the chosen methodology aligned with this approach in order to derive suitable and reliable data (Hendrick, Bickman and Rog, 1993; Esterby-Smith et al., 2008).

The combination of ontological and epistemology approaches overlaid with an interpretivism methodology promoted situational awareness, and the use of action research created a constant state of revision, review and interpretation of findings. Cohen, Manion and Morrison (2007) suggest this approach would allow a deeper understanding of the participant's environment, views and opinions. Critical to this approach was the ability to adopt an empathetic approach, in order to appreciate the participant's perspective to fully understand and interpret their views (Brown, 2009; Saunders, Lewis and Thornhill, 2015).

Data Collation Process and Results Analysis

Research Strategy
Action research formed the basis of the research project investigations. The cyclic nature of an action research approach promotes 4 key stages, planning, data collection, analysis and the revision of the plan, whilst engaging with real world processes. Applying this approach throughout the project enabled a continuous funnelling effect to occur, creating a lens through which to focus the investigation, providing clear outputs in line with the aims of the project. Parlett and Hamilton (1976) support the approach of taking a wide angle lens and progressively focusing/filtering the findings until emerging themes appear.

The collaborative approach with all stakeholders was beneficial in achieving the objectives and robust nature of the findings. Eden and Huxham (1996) and Coghlan and Brannick (2005) highlight action research as good practice when the participants are the focus within strong collaborative partnerships.

Research Methods
Semi-structured interviews and a case study were conducted with the primary stakeholder groups, students, educational practitioners and employers. Semi-structured interviews were selected because they allowed a standardised set of themed questions based around the lines of enquiry. This also allowed the interview questions to be varied depending on the interviewee who held different organisational viewpoints (Saunders, Lewis and Thornhill, 2015). Template analysis (King 2004), data reduction and display methodology (Miles and Huberman, 1994) enabled qualitative triangulation of stakeholder contributions to develop. Analysing the data in this way allowed the participants' views to be grouped in order to establish converging themes that informed the research project findings.

The inclusion of the Case Study analysis allowed a unique insight into Design Thinking delivery techniques and their impact on the students' behavioural skills attainment. Cohen, Manion and Morrison (2011, p.129) support this approach.

The literature review established local, national and international nuclear sector demand signals and the associated regulatory requirements for employees to possess high levels of interpersonal and non-technical behavioural skillsets.

The primary research focused on emerging lines of enquiry with the intension of supporting or challenging the literature review to establish original content that contributed to the findings. The semi-structured interviews found many similarities to the literature review, with regard to the particular skillsets required and conformation of a transitional skills gap. Insightful emerging themes around delivery pedagogies and barriers to change developed within the primary research and was further supported by the Design Thinking project case study findings, which demonstrated how behavioural skills can be successfully embedded into the curriculum and attained by students.

Results and Key Messages

The literature review and primary research established converging themes which provided robust evidence that addressed the core aims of the project from which feasible recommendations could be formed. The investigations identified skillset grouping which can be broken down into two categories, interpersonal and non-technical behavioural skills. The interpersonal skills are those that originate from individuals personality characteristics which have been shaped by upbringing e.g. life experiences, the non-technical behavioural skills are those that can be applied to job performance e.g. problem solving. Both these skillsets are important and dependent upon each other, however the development of the non-technical behavioural skills are potentially more malleable than interpersonal skills.

The primary research developed the emerging theme around contextualised learning but also established a pedagogical approach based upon PBL. It became apparent that a PBL approach would be suitable, however this approach still requires structure and delivery techniques to achieve a comprehensive curriculum methodology. The delivery techniques observed during the Design Thinking

case study provide such a structure, and blending these techniques with PBL would further enhance the impact and attainment of behavioural skillsets. The combination of PBL and Design Thinking techniques require students to learn, understand and apply behavioural skills in order to participate and succeed in this learning environment. However, this is not the complete solution, as it became apparent that contextualisation of the curriculum delivery was required alongside the creation of a professional nuclear cultural environment. The learning environment must comply with industry expectations, and for this to succeed visual management and college staff must model industry behaviours, creating a naturally occurring culture whereby the sector standards are adhered to.

Research Outcomes and Potential Areas for Further Research

Background

For decades colleges and universities have been accused of producing students that are not ready for work, with respect of their interpersonal and non-technical behavioural skills. CBI (2016, p.32) state:

> The results from our survey show there are challenges. There are still too many young people leaving school and college not fully equipped with the skills and attributes essential for their working lives.

The investigation supports the need to better equip our students with these skillsets, and the NCfN is fundamentally positioned to fulfil this challenge in terms of both technical and behavioural factors. In response the findings recommend a new delivery methodology that supports the development and application of interpersonal and non-technical behavioural skills. At the heart is the contextualised scenario PBL pedagogy which is brought to life by Teaching, Learning and Assessment (TLA) techniques that emit and enable the application of behavioural skillsets, all immersed in a nuclear culture that mirrors a professional industrialised learning environment, (Figure 1). Although not directly considered within the study, utilising existing College processes, such as The Bridgwater & Taunton College Advantage, Value Added or Student Enhancement, will undoubtedly increase the impact of the proposed methodology.

Proposed Curriculum Methodology

The proposed curriculum methodology (Figure 1) is centred on a PBL pedagogy which delivers contextualised scenario learning projects. The actual delivery of these learning projects incorporates a series of TLA techniques that radiates interpersonal and non-technical behavioural learning opportunities and, more crucially, the application of these skillsets. Studies have also identified that the use of PBL approaches can improve academic attainment leading to higher grades and success rates (Balım, 2009; Savery, 2015). These higher academic attainment results would benefit outcomes for learners, quality of TLA, the College's reputation and key performance indicators (KPIs), which reflect positively with all stakeholders. The curriculum delivery should be immersed in a professional culture inside and outside of the classroom that models industry standards and expectations. In order for the culture to be successful, all delivery and non-delivery staff must model sector behaviours. Industry will need to support staff development and ongoing delivery through, CPD, secondments and sharing of material including, work procedures, policy, process and visual messaging.

Further Recommendations

Whilst the literature review and the primary research project did not specifically consider the use of IT, further research needs to be conducted into how the use of emerging technologies, such as virtual reality (VR), augmented reality (AR), Apple TV, apps and Google Home, can further enhance the proposed methodology. Particularly important is the use of VR, which can immerse students into realistic scenarios where their performance can be measured, played back and then repeated to perfect behavioural performance.

PBL studies have indicated it can be difficult to consistently deliver in this way to larger groups (Webber-Jones and Lanser, 2018). NCfN typical group sizes will be up to 20 students, and there is no evidence to suggest that this is too many, however this will need monitoring and strategies or techniques adapted to maintain the intended outcomes.

The investigation was limited to current curriculum qualifications, however further research would be beneficial into how the findings of this project can be combined with work experience and the new Tech Levels, to produce the complete delivery model that maximises the students' ability to transition into employment.

Finally, an impact study into the effectiveness of the proposed methodology will be a measure of its success and further modifications to the approach identified.

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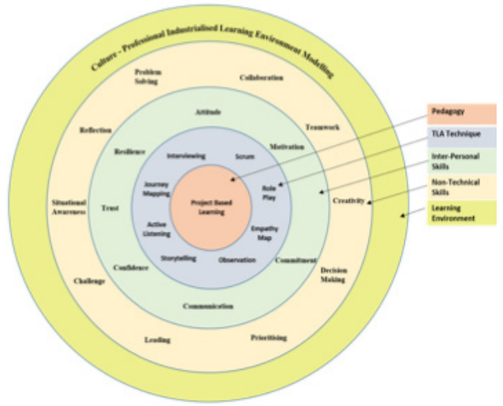

Figure 1: Proposed curriculum delivery methodology

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