Teaching employability skills through simulation games

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Abstract
This paper examines the use of a business simulation game to test its effectiveness in promoting the awareness of employability skills in undergraduate students. A mixed approach using an-online survey tool was used to record student perceptions of how their employability skills were developed across ten courses and three faculties. The survey was conducted before the unit started, and on completion. Key emerging themes show that students demonstrated an increased awareness and development of their employability skills. They acquired and developed their skills by learning how to operate a small business start-up using a business simulation game. This research project was limited to one core unit in the curriculum, and the project is university specific. A cross university research project would add further value to the research project. Students are able to articulate the skills they have acquired and developed thus showing elements of self-awareness. An increase in student's social capital is likely to enhance their career decisions. This paper will be of value to institutions wishing to evaluate the use of serious business simulation games to embed employability skills into the curriculum.

Keywords: Simulation games, employability skills, students

Introduction

This paper evaluates the use of a serious business simulation game to develop the employability skills that UK employers believe they require from graduates. A successful bid has enabled the author to conduct a three year research project which explored the game's use as a pedagogic tool to test its effectiveness in promoting the awareness and development of employability skills in undergraduate students so that these skills can be transferred into the workplace. This paper is part of a series of papers reflecting on the awareness and development of students' employability skills. This article explores the concept of business and customer awareness skills, and how the business simulation game has the potential for preparing students for the world of work. It is argued that if students can be taught business and customer awareness skills through practice they are more likely to be able to articulate these skills in the real world of business and therefore meet the needs of employers more effectively.

Simulations as a pedagogic tool

Most students are familiar with the various platforms on which to play computer generated games, therefore simulations and virtual worlds are now part of the everyday lives of Generation N, born in the 80s to mid-90s, and the 'millennials', born from the mid-90s onwards (Feiertag and Berge, 2008). Gaming has now morphed into serious business simulation games which many HEIs are now utilising to teach business skills in the UK to teach students about small businesses, entrepreneurship and employability skills (Sharif and Ranchhod, 2009).

The use of business simulation games as a pedagogic tool is not new - they have been in use for over 50 years in the USA. Simulation games are used to create experiential learning opportunities and have been found to be generally effective as a learning tool (Keys and Wolfe, 1990). In the context of employability skills business simulation games encourage decision making and team-working (Gopinath and Sawyer,

1999). Similarly, Clarke (2009) identified a wide range of hard, and soft skills that enhance the student learning experience. These included personal motivation and engagement because students were able to explore, experiment and collaborate by testing 'what if' business scenarios which are as close to reality as they can be. Simulations can be designed to replicate actual economic, market and business related problems which can develop a student's problem-solving and analytical thinking skills (Clarke, 2009). Furthermore, simulations enable a transfer of knowledge to real business situations because significant relationships exist between a player's influence on the team's decision-making process, leadership, esteem and value to the team which are valuable skills in business (Wolfe, 1993).

Furthermore, research into the educational value of business simulation games implies that students do experience a valid representation of real world business issues (Faria, 2006). Indeed, research in the UK suggests that students' enthusiasm for simulation games is very positive (Vos and Brennan, 2010) with evidence of increased student engagement compared to pure lecture based pedagogies (Strachan, 2011). Furthermore, compared to learning tools such as case studies, students perceive that simulations are an effective learning method (Jennings, 2002) and that they bridge the gap between theory and practice (Avramenko, 2012).

Whilst Universities continue to be pressurised into developing innovative courses to meet the demands from the business community (Li *et al.*, 2007) serious business simulation games can help students to gain an awareness of the skills they will need as a graduate. Reality based, experiential learning (Smart *et al.*, 1999) is compatible with the skills that employers say they prefer employees to acquire. These include, but are not limited to, communication, problem solving, critical thinking, and analysis of verbal, written and financial data skills. Students should, therefore, be able to transfer their knowledge and employability skills into the business community (Smith and Van Doren, 2004). Simulations are therefore thought to be an important experiential learning tool since they facilitate students being able to experience simulations of events and situations that are difficult to experience in real life (Vos *et al.*, 2010).

The literature indicates that the use of serious business games are effective as a pedagogic tool. However, it is probably now more important for students to reflect upon how the development of employability skills can be transferred into a 'real' working environment. Therefore, it will be increasingly important to map and test the development of students' employability skills to the simulated business environment for a clearer view of how students develop their skills.

However, HEIs are facing increasing challenges in adopting innovative technologies such as simulation experiences. These include the perceived risks by academics and budget holders, the effort involved when time is at a premium, resistance to change and the costs involved. Yet, there is no empirical evidence to support these initial concerns.

In addition, whilst business simulation games provide a complex view of a business situation, they have limitations because nothing can replicate real life responsibilities and decision making in the real world. It is recognised that an abstracted synthetic reality limits and could distort the reality of actual business contexts, yet business simulations games are as close to reality as students' will be able to experience without real experience of setting-up and operating a business.

Furthermore, there are challenges where the student perceives the simulation to be a believable surrogate for the skills being developed (Errington, 2011). Students must therefore accept that the simulation as if it were in fact real, and suspend their beliefs whilst engaging with it. Furthermore, as Li (2007) points out, there may be many reasons why students do not take the simulation seriously and that perhaps tutors need to be clearer about the simulations' aims and purposes at the outset (Sutcliffe, 2002). If the aims and purposes of the lessons are clear then it is more likely that students and academics will feel more secure. These observations are however no different that preparing for any teaching episode, and so are not directly related to the teaching of a business simulation game.

Further arguments revolve around whether educationalists should focus on a skills-based or problem-based curriculum which this argument remains unresolved (Errington, 2011). Yet, this paper will demonstrate that the two are not mutually exclusive. The opportunities and challenges associated with

using business simulation games is also dependent upon the uptake by academics of technology-based teaching methods as they seek to engage the 'Millennium' generation.

In conclusion, there is evidence that the use of business simulation games is an invaluable tool and can provide an innovative provision of learning for students across multiple degree disciplines (Avramenko, 2012, Daly, 2001, Smith, Vos and Brennan, 2010). Indeed, there are long-term opportunities to use serious business simulation games which include the mapping of academic learning outcomes and employability skills to the simulated learning experience. This paper aims to demonstrate how this can be achieved.

Graduate skills – employers' perspectives

Findings from research with employers suggest that in terms of professional competencies communication skills are key skills of great importance, followed by the capability to apply knowledge, to think logically and be able to critically analyse (Barker, 2014). The business skills employers thought to be important when recruiting graduates included: the aptitude for problem solving, a high quality of work, teamwork, time management and initiative (Barker, 2014). When considering personal attributes employers were found to seek graduates who were enthusiastic, self-motivated, had a mature outlook and are flexible and adaptable (Barker, 2014).

Other attributes identified In Barker's (2014) research included the need for graduates to acquire knowledge about the company they were being interviewed for and their motivation for wanting to work there. Respondents' quotes included 'Knowledge of my company, knowledge of my industry' and 'Interest in my business'. Additionally, employers also continue to lament of the lack of interpersonal skills by graduates (Andrews and Higson, 2008, Finch *et. al*., 2013; PR Newswire Association LLC, 2013) along with numeracy skills (Durrani and Tariq, 2012). Interestingly, of increasing importance to employers is the need for graduates to have had some kind of work experience (The Gallop Organization, 2010).

However, any attempt at defining 'employability skills' is clouded by the difficulty in collating a strict list of attributes that employers will agree on (Iuliana *et al*., 2014) and it is acknowledged that there are a wide variety of skill requirements from employers. Appreciating the vast number of employment skills required of graduates' there is still no perfect method of either nurturing these skills at university, or being able to satisfy the needs of all employers, as they will be seeking different skills depending upon the role.

In contrast to the employers perspective Dhiman (2012) contends that the educational system cannot prepare employees because at best it can only produce prospective or potential graduates for the workforce with a generic set of skills. It is also debatable whether HEIs are the right institutions for teaching the types of employment skills that employers require. Yet, a solution is suggested in that HIE's should partner with employers to prepare students for work to enhance their education and to help with the transferability of students' employment skills into the workplace (Buhler, 2015). Indeed, Harvey (2003) suggests that further work is needed between HEIs and the workplace to enable students to acquire the skills employers say they want.

However, some employers appear to be quite satisfied with graduate employees once they had been with them for six months or more (Harvey 2003) which implies that some moulding of new employees is taking place through training programmes. The implication is that employers may prefer to train graduates in their own style and that it takes several months to achieve employer satisfaction.

That said, if HEIs are to be the conduit for the development of employability skills then identifying effective assessment strategies will be a key element for course developers (Curson-Baker *et. al.*, 2011). Many new courses include QAA (2015) benchmark statements which provide a platform for embedding core generic skills which can be tailored to the relevant subject area. Embedding skills in courses has been shown to be a stronger way forward in this respect (Yorke and Knight, 2006) but even then may not provide every employer with the skills they want because each company will require a different range of skills depending upon the role.

However, there is an argument for suggesting that graduates may indeed possess the employability skills that employers are looking for but that students do not recognise their skills, or are unable to articulate or demonstrate them. Indeed, studies that explore student perceptions of their employability skills is sparse

and more investigation in this area is needed which this research tries to address (Jackson, 2013). It is also likely that if HEIs made employability skills more explicit it would narrow the gap between employer's perceptions of graduate employability skills, and the students' ability to recognise their own employability skills for their chosen career (Bridgstock, 2009).

Appreciating employers concerns, a common theme for the majority of UK HEIs remains a focus on the need to ensure that graduates acquire the necessary employability skills for work (CBI, 2009). These skills are often achieved through initiatives such as work-integrated learning - placements (Jackson, 2015), real projects for businesses (Strachan, 2014) work-based learning in social entrepreneurship and volunteering (Hills *et. al.*, 2003, Huq and Gilbert, 2013), and the development of graduate employment attributes during their degree studies (Scott, 2014). In addition employability skills can also be enhanced through business simulation games because they can replicate the real world of business up to a point with no risk to the business itself (Avramenko, 2012).

Acknowledging that graduates may, or may not, lack the employability skills employers are seeking, there is already a lot of work going on within HEIs to prepare students for graduate jobs. This paper reports on the use of one business simulation game to test its effectiveness in promoting student's awareness of their employability skills. The next part of this paper discusses how employability skills are defined.

Essential Employability skills – a definition is complex

Researchers at Southampton Solent University undertook a study with local employers and asked local employers to prioritise the Chamber of Commerce (CBI) skills from an employer perspective with a view to integrating employability skills into the curriculum (Dunlop 2011). Employers reported that they consider business and customer awareness as essential skills, with communication and literacy equally as important and prioritised these skills over others. This research supports trends identified by the Leitch Review of 2006 in which employers reported that new employees remain deficient in business skills/acumen and lack a strong commercial awareness along with a general lack of communication skills (Leitch, 2006) with many employers continuing to lament graduates' lack of skills (Wingrove, 2014).

There is also an ongoing debate amongst different stakeholders which includes students and employers as to what employability skills actually are (Andrews and Russell, 2012, Rosenberg *et al*., 2011, UK Commission for Employment and Skills, 2008) which add to the complexity of any definition because different stakeholders perceive employability skills in different ways, and have different expectations of graduates. Furthermore, the continuing debate surrounding the definition of employability skills also criticises the limitations of a skills based approach, and the author welcomes an ongoing dialogue on the subject.

However, for the purposes of this paper the definition by the Chamber of British Industries (2009) was employed because they are widely discussed by employers, and across the industries into which graduates will seek employment. Extensive collaboration with employers by the CBI resulted in the following definition of employability:

'A set of attributes, skills and knowledge that all labour market participants should possess to ensure they have the capability of being effective in the workplace – to the benefit of themselves, their employer and the wider economy'. This definition includes the core skills of: self-management, team working, business and customer awareness, problem solving, communication and literacy, application of numeracy, and the application of information technology. Underpinning these skills is the ability of students to adopt a positive attitude: a 'can-do' approach, a readiness to take part and contribute openness to new ideas and a drive to make these happen. The difficulty for academics in HEIs is how best to embed these generic skills into the curriculum, and, probably more to the point, how to facilitate students' engagement with the development of their employability skills.

Indeed, a briefing paper for the Higher Education Academy synthesised by Professor Stephen Hill points out that there is still a lack of student engagement with developing employment skills at university because students do not appreciate the need (Hill 2012, Tibby, 2012). The mapping of business skills onto a business simulation game called SimVenture was a purposeful exercise which aims to bridge this gap and which offers students the opportunity to learn about how to operate a virtual business thus becoming

more aware of the business and customer awareness skills required and then be able to reflect on their learning and skill development. In this way it is hoped that graduates will be able to transfer their learning into the workplace and be able to articulate and use their employability skills.

This paper argues that the embedding of employability skills into teaching and learning strategies enables students be become more aware of them, and their importance to employers, and that the use of serious business simulation games are helpful in this respect. As part of a series of papers, this particular one focusses on one of the employability skills defined by the CBI, that of 'business and customer awareness'.

Research aims and methodology

The rationale and research aims are centred on assessing whether students perceive that business simulation games help them to improve their business awareness skills and assessing the impact of a business simulation game versus tradition methods of delivery.

A mixed interpretative approach using a structured questionnaire involved a sample consisting of 96 undergraduate second-year students, with 52 males and 44 females aged between 18 and 25. The students came from ten degree courses including students from Fashion, Events, Marketing, Business, Computing and networking, Human Resource Management, Psychology, Advertising, and HND courses. The courses are located across three faculties at Southampton Solent University. The questionnaire was administered online and asked questions relating to all of the CBI employability skills. Analytical tools (SPSS and NVivo) were used to investigate the data collected. This paper reports the findings relating to two specific areas: whether or not the business simulation game facilitated an improvement in students' business skills; and whether they engaged more with the business simulation game compared to traditional methods of delivery. The students responses were included as part of the summative assessment process in order to raise student's awareness of, and development of their employability skills thus aiding data collection.

Results

Students were asked to what extent they agreed that the business simulation game had improved their overall business awareness. Of 96 respondents 5.76% strongly agreed, 56.64% agreed, 12.48% had no opinion, 15.36%, disagreed and 1.92%, strongly disagreed. The results suggest that the use of simulations is helpful to creating an awareness of business skills in students and supports the research discussed in the literature review. However, some caution is advised in that other teaching methods may be equally effective and this paper has only considered one business simulation game (SimVenture). Further research across HEIs would also be beneficial as the current research is restricted to one institution.

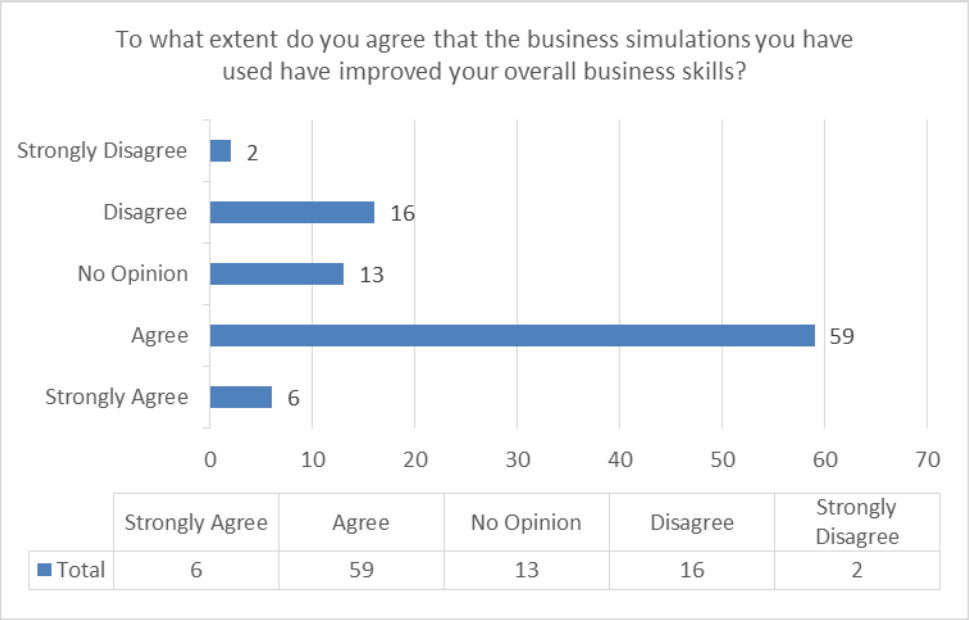

Figure 1 – Business skills

Students were also asked for qualitative feedback as to the business skills they perceived had improved following completion of the business simulation game. The qualitative responses were analysed in NVivo software. A word frequency search was conducted on the top thirty words that occurred in the qualitative feedback (Figure 1).

Figure 2- Business skills word frequency

The four most quoted words from the word frequency query (Table 1 below) were business, running (a business), knowledge and understanding.

Table 1 - Word frequency query

Word	Count	Weighted Percentage (%)
business	19	11.95
running	7	4.40
knowledge	5	3.14
understanding	4	2.52
better	3	1.89
company	3	1.89
decisions	3	1.89
importance	3	1.89
run	3	1.89
start	3	1.89
understand	3	1.89
aspects	2	1.26
awareness	2	1.26
customer	2	1.26
feedback	2	1.26
given	2	1.26
life	2	1.26
make	2	1.26
new	2	1.26
real	2	1.26
sales	2	1.26
tasks	2	1.26
able	1	0.63
across	1	0.63
affect	1	0.63
allocation	1	0.63
application	1	0.63
arise	1	0.63
aspect	1	0.63
asset	1	0.63

The word **'business'** was the word most cited by students. Students were asked to give specific examples as to how they perceived their business awareness had developed. Qualitative comments included:

'It gives you an idea on how to start and run your own business, which would be really helpful in the future to start your own business, and I've learnt that you need to devote more of your own time into a business for it to be successful, than I first thought.'

'The simulation game SimVenture helped me to gain some knowledge of how it is to run a business, as there is different areas of the business such as the marketing and the finance department, and I had to make decisions in order to make the business successful. The fact that the game provide a customer report, it helped me to see whether my customers were satisfied with my product or not, and every time the customers satisfaction were low, I had to make changes in the product in order to satisfy the customer's needs.'

'During this assignment it was obvious that we had to treat it like a real business, and that's what we did. Our business became a very personal thing in our lives and we got very involved with it making calculated risks and decisions. I believe we learnt more about how important the consumer is and that what you do is all about pleasing them. At the end of the day, if you have no customers, you have no business.'

Further comments reflected on awareness of how to run a business and of being mindful of the bigger picture. This was an interesting outcome of the research as most students' studies are often restricted to specific subject specialisms and therefore students do not usually have the opportunity to practice their skills across multiple disciplines. The business simulation game appears to have facilitated students' understanding of how the different business functions integrate with each other.

The word **'running'** a business was the second most cited word indicating that it is likely students are more aware of how to run a business than before. Comments included:

'I understand that I will need to put in hours, and balance part time/full time work as well to be successful.'

Also, being the financial director, 'I can see just how quickly money goes down when running a business and I understand how to manage cash inflows and outflows better than before.'

'Playing the SimVenture game and running a virtual business has improved my basic business and customer awareness and what is needed to run a successful business.'

'My business and customer awareness has improved greatly. Having gone through the simulation 2 or 3 times, I found that each time my knowledge and understanding of running a business grew. I was able to make better decisions each time which lead to my business being more successful each time.'

'Within my current assignments I have learnt what businesses need to succeed, through taking risks in investment to knowing exactly what customers want through customer research, to improve customer satisfaction. Investing in marketing, drove the business success through reaching new consumers and generating sales.'

Knowledge and understanding

Knowledge and understanding is a ley learning outcome in HEIs so the qualitative feedback in this area was encouraging since it is likely that the use of the simulation facilitates increased knowledge and understanding of the subject matter. Students commented:

'We have more knowledge of the many responsibilities that have to be managed across the company in order to generate sales, I understand my workload and how to keep the company solvent'. In addition, students expressed an increase in their knowledge and understanding of how to set up a business, and the key factors that arise when running a business, and how to overcome them. Another student commented 'It has given me a better understanding of the complexity of running a business, and in particular emphasised the importance of planning skills' and, 'I further understand the challenges within running a business and better understand the importance of things such as sales techniques and the market research to run your company.'

Furthermore, there appears to be an increased connection between theory and real life situations with students commenting: 'I have been able to apply business theories to a real life situation.' Further comments related to making decisions in a real scenario where the decision cannot be undone, and learning from those decision points. The topic of thinking, reflecting and making decisions are important considerations because in the early stages of running the virtual business some students were unwilling to make decisions at all, but later perceived that they became more competent decision makers. Students also appeared to appreciate the complexities and challenges related to operating a business which are useful transferable skills to take into any business. In addition, the ability to apply learnt theory in a practical hands-on environment is viewed by students as an engaging learning experience.

Engagement with the simulation

Students were asked to what extent they engaged with the business simulation compared to traditional lecture theatre based teaching methods. 95 students responded with 11 skipping the question. Of those who responded 15.2% reported that they engaged far more with the simulation, 42.75% said they engaged more, 13.3% of respondents reported it made no difference either way to them with 3.8% reporting that they engaged less with the simulation compared to a traditional lecture and 10.45% engaging much less (Figure 3 below).

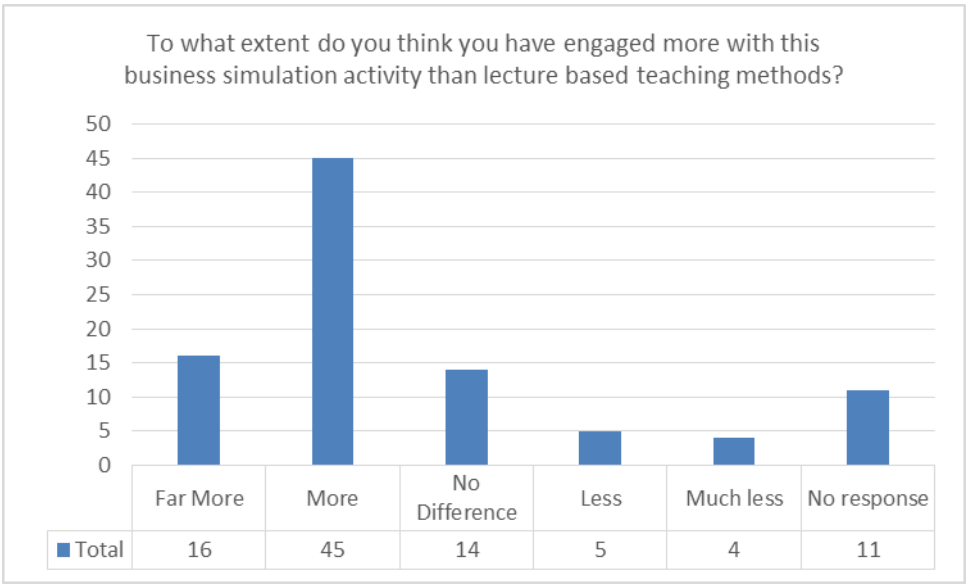

Figure 3 – Student engagement

The findings imply that students are engaging far more/more with the simulation than with traditional lectures and adds weight to the argument that experiential learning engages students more than pure lecture based teaching methods. From a tutor perspective the use of a business simulation game (SimVenture) resulted in an improved attendance rates from students, and increased pass rates for summative assessments. Student engagement with the learning process improved since the simulation facilitated a lot of discussion in the classroom compared to traditional lecture-based methods. Students have demonstrated that they want to be involved in their learning, and simulations provide that kind of environment. It was noticed that on many occasions students would stay behind after class finished to complete their game which was an unusual experience for both student and tutor.

Conclusion

Students perceive the simulation game to be an effective learning method, delivering valuable knowledge and employability skills. Students have been able to recognise and develop their business and customer awareness skills throughout the simulation. More importantly, from a tutor perspective, students have been able to articulate their learning and therefore are possibly more likely to be able to transfer their learnt skills into the work place. In addition, students find the game to be an enjoyable learning approach.

Lecturers are enthusiastic about this learning method, but note some barriers to adoption; particularly cost, the learning curve, and the difficulty of finding unbiased advice about suitable games to deliver desired learning outcomes. The sharing of good practice and evidence which demonstrates that business simulations can add value to the student learning experience will be a key factor for other academics who may be sceptical about adopting technology-based learning tools.

The challenge for HEIs also lies in the acceptance of flexibility within the curriculum. Indeed, time for reflection and course development is often restricted and internal processes are often blamed for new and creative ideas being dropped in favour of the status quo. It is hoped that further research amongst those academics using simulation games will provide more evidence that will allow for a richer student experience.

Research limitations/implications

There are acknowledged limitations to using a business simulation game. Firstly, a simulation cannot completely replicate real world business scenarios on a day to day basis. However, simulation experiences do enable students to start-up and operate a business in a safe environment which they would not otherwise have access to. Students can bankrupt the business, or make money yet the key concepts of starting-up and operating a business are key skills which are transferable to any workplace.

Further limitations lie in the location of the research - it was restricted to one university in the UK and a collaborative approach amongst a number of other universities would be helpful. Furthermore, the questionnaire reported students own perceptions of their learning which may or may not be shared by employers. Further research papers are planned which explore the remaining CBI skills. These may confirm or contradict the findings of this paper and an ongoing academic discussion on the findings to date is welcomed.

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