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A virtual reality game to educate tomorrow's ethical managers.

Title: A virtual reality game to educate tomorrow's ethical managers.

Summary: Economic turbulence caused by poor ethics in business, means educators need to ensure students leave university understanding their responsibility to society. This paper addresses the question: *“To what extent can an interactive virtual reality game enhance students’ ethical knowledge, skills and values?”* The qualitative study evaluates the design and delivery of a virtual reality ethics game developing ethical awareness of undergraduate business students at two UK universities. It documents the design, embedded in ethics modules and evaluates its effectiveness, capturing student responses using semi-structured interviews. Findings show that within ethics teaching, student’s responded to theory presented as ‘real life’ scenarios; *gamification* techniques such as interaction, rewards and progression levels; used within a combination of pedagogical learning methods. Demonstrating that virtual reality environments impact on the learning experience of students; developing ethical sensitivity, decision-making skills, and potentially influencing future managers of industry.

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## 1. Introduction

Much of the turbulence befalling the world today (financial, economical, environmental) has come about or been exacerbated by ethical failings in business. In the light of the past economic crisis and the future uncertainty, more than ever before business schools have a strong remit to ensure students leave university with a deep understanding of their role and responsibility towards their future employers, community and society in general; to understand what a professional is; and the important part they play in shaping a business world that is seen as contributory and responsible (Felton and Sims, 2005). Alder (2011) adjures leaders to focus less on the success of individual executives and companies to see civilisation and the planet as their ultimate clients. She maintains that a key role in education should be the repositioning of our future leaders to see less from an individual and more from a social perspective and to use the power of artistic processes to foster a creative economy. These ideas resonate when considering how to teach Business Ethics. Our goal should be to help in the development of business leaders as (in Kofi Annan's words) strategic managers capable of *jumping levels* – to see the bigger picture (ibid). This requires students who are able to see reality for what it is – to have sensitivity to their surroundings and to think creatively to find innovative solutions not necessarily tried before - to have the courage to think outside the box. Helping students develop skills such as these require innovative and creative methods.

This paper will present the findings of a qualitative research project designed to evaluate one such method – an interactive 3D animated virtual reality game to teach business ethics. Our research question being “*To what extent can an interactive virtual reality game enhance students' ethical knowledge, skills and values?*” The paper begins by identifying the problem, followed by a review of the debate within pedagogical literature on how to deliver ethics education, the research methodology, presents the findings and concludes with a recommendation of how the research can inform the future design and delivery of ethics within the business and educational sectors.

It is acknowledged within education, business and society that there is a need to develop ethical awareness, as reflected in both academic and professional literature (McAlpine et al., 1997). However, the pedagogic challenges of determining what and how to deliver this lies at the core of this paper. The research problem emerges from experiences at two post 1992 universities in the delivery of ethics education. We identified the challenges of engagement, understanding and transferability of knowledge, development of skills and recognition of personal values, in what is perceived by students as a highly theoretical, hypothetical, complex and ‘dry’ subject. Anecdotal evidence from conferences and colleagues shows that for undergraduate students the problems of situational understanding and the ability to transfer ethical understanding and application of their knowledge to ‘real world’ contexts is difficult. This paper presents a solution through evaluating the design and delivery of an online 3D simulation educational tool. The paper provides deep insight into student perceptions of the use of this technology within an undergraduate ethics module via student interviews after playing the game. It builds on an earlier study (author source) and simultaneous quantitative study which evaluated the effectiveness of the game using the Technology Acceptance Model (Davis, 1993).

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## 2. Literature review

How to deliver ethics effectively presents challenges in three areas: learner engagement; understanding and transferability of knowledge; and the need to identify appropriate methods of standard and non-standard delivery mechanisms. It is the latter variable from the research perspective that presented the opportunity to design and implement an alternative method of delivering an ethics module. It is acknowledged by educators that a fundamental shift has taken place in the nature of the student body (Afari et al., 2013, Annetta et al., 2010, Whitton, 2012). And this shift is continuing as a now technically enabled and highly skilled 'techno-generation' identified as Generation Z, enters our universities. These are individuals born from 1995 that have grown up in turbulent times – their identities being shaped by socio-economic volatility and uncertainty. A 2014 US market research report revealed Gen Z as highly connected and determined to be in control of their lives; keen to 'make a difference' (Sparks & Honey, 2014) with social entrepreneurship as one of the most common career choices (source: US Department of Labor 2013). Many will choose not to go to university but those that do will be more in charge of their education, expecting access to online learning resources whenever and wherever they want.

In a sector responding to KIS, NSS statistics and potential REF criteria, the flexibility of Internet-based learning (which is neither time nor situation-dependent), now influences overall student satisfaction (Campbell and Christopher, 1996). Kolb et al argues that educational methods need to cater to new learning styles, described as the 'inside-out' approach and educators should aim to tap into the internal interest and intrinsic motivation of this new student audience, building on prior knowledge and experience (2014:207). In response to Kolb educators need to now think about how this impacts on students' thinking, interaction, communication and engagement. Responding to the call from the literature, the intention was to design a virtual reality game to teach business ethics that incorporates both rules and values based approaches within familiar environments to foster engagement whilst meeting learning outcomes.

To achieve this involved an evaluation of existing pedagogical approaches used by both institutions in the teaching of business ethics, which centred primarily on didactic lectures and standard case based seminars of existing or contemporary ethical issues. Acknowledging the drivers of the research being to sustain engagement and transferability of knowledge, development of skills in ethical decision making and recognition of personal values, the research identifies an alternative method of delivery capable of supporting existing pedagogical approaches whilst engaging with a new generation of technically oriented students. The use of computerised business simulations in education is standard practice (Vos and Brennan, 2010). Within the literature the development and delivery of an interactive game builds on existing research with the use of dilemma-based scenarios, but adds the added dimension of *gamification* (the addition of point-scoring, level progression and autonomous play) (Gee, 2003) as a way of developing learning and appealing to the technically oriented (Klopfer, Osterweil, & Salen, 2009).

The game is a business ethics visual case exercise, requiring interactive decision-making to address the academic learning outcomes. The distinctive and student-focused nature of the game (in the form of comic book pages, a realistic storyline, and interactive characters) was designed to put the player 'in the moment' – to enable 'virtual presence' - an emotional connection or 'state' whereby a user is fully

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immersed in the virtual reality. A number of studies support the use of games as a method to create virtual presence to help students make the connection between being sensitive to the issues, deciding on a judgment, taking action and discovering the consequences - utilising the technology to develop knowledge and ethical decision making skills but also emotional buy-in to ethical concepts and personal values. Schrader and Bastiaens (2012) demonstrated that virtual presence is positively associated with learning success. The solution presented in this paper adopts the technology agenda gaining momentum amongst educators of using online computer games to motivate, interest and ensure engagement of a learner's understanding of ethical dilemmas and thereby providing evidence to answer our research question.

### **3. Methodology**

#### **The Ethics Game**

The game is in the first person and follows the ethical challenges and decisions required of the main character, a marketing manager in a competitive marketing firm. Using an interactive human-computer interface made up of four different 3D environments – an office, a park, a party, and a personal office - and aided by comic book pages and clues to deliver the story narrative, the user establishes the objectives of the game and moves through the environments. At various points they are presented with a number of ethical dilemmas and are required to make choices for their character. They receive immediate feedback as a result of their choices and in the final level they discover the ultimate consequences of their main decisions. After each level they undertake a small quiz providing further reflection on some of the decisions they will have made in the previous level and a chance to consider again the impact of their choices on different stakeholders. To sustain engagement the use of gamification in the form of point accumulation, autonomous play, and progression levels adds a competitive element which could lead to a place on the top ten leader board located on the home page of the website.

#### **Research Method**

Having collected survey results for two quantitative studies on the effectiveness of the game [author source], we wished to explore the experiences of students at a deeper level to determine what may have been behind the quantitative results. To establish the effectiveness from the student perspective a qualitative data was collected using semi-structured interviews. Template analysis (King, 2004) allowed the opportunity for synthesis, as well as dovetailing with the relevant parts of the academic literature.

The interviews were targeted specifically to students on both institutions' final year Business Ethics course playing the game, to evaluate how it had impacted on their learning of business ethics and dealing with more complex issues such as the level of immersion and integration into the pedagogic delivery of the course. In order to get a representative selection we chose a stratified random selection method (Robson, 2002) placing students into three groups based on their points scored. This ensured the sample reflected the particular experiential characteristic of low, medium or high point scores. From the students who played the game 40 were randomly selected from each category and sent an email with the incentive of a £10 Amazon voucher for the first ten to reply. Acknowledging the fact that on the day of the interviews some respondents failed to attend the final sample comprised of 6 students from University A consisting of 2 females and 4 males; and 7 students from University B, consisting of 2 males and

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5 females. The table below (with pseudonyms) identifies the students, their gender, score and evaluation of the game out of 10 as a learning tool against existing methods. The facilitators for the interviews were not involved in teaching the students on the modules nor involved in marking their work. Both universities' ethics committees had approved the studies and consent forms outlining the details of the research and treatment of the data had been distributed to participants.

University	Student	Gender	Points	Game Evaluation (out of 10)
B	Alice	F	8570	9
B	Petra	F	2600	8
A	Cheryl	F	2580	7
A	Trevor	M	2335	7
A	Shaun	M	2160	1
B	Andrew	M	1530	9
B	Bella	F	1250	7
A	Justin	M	1205	8
A	Lisa	F	1170	8
B	Pandora	F	1120	9
B	Raymond	M	920	6
B	Natalie	F	875	6
A	Steven	M	410	5

**Table 1: Table of Participants**

#### 4. Analysis and discussion

Twelve out of the thirteen students interviewed were favourable in their view that the game helped them in their understanding of ethics. Of the females interviewed, 2 gave the game 9/10, 2 gave 8/10, 2 gave 7/10 and 1 gave 6/10. The males were slightly lower with one giving 9/10, one 8/10, one, 7/10, one 5/10, and one 1/10. The student who gave 1/10 (Shaun) was particularly interesting. His opinion of the ethics course in general was not positive, feeling that it was a waste of his time – his main point being that he did not believe he could be affected in any way about ethics unless he experiences it personally.

*Well, for me, ethics is probably more about experience, like, if I experience something, then I'd maybe, that'd maybe make me think differently. Whereas if I had somebody in the classroom say, "Oh, this, this or this theory, or this, this and this," I'd be, like, at the moment that's irrelevant to me, but until I actually experience something, then, and until I actually have to think about it. (Shaun)*

A main objective of the game was an attempt to help students experience virtually the results of their actions. In the case of this student this affect was not achieved. It would be interesting to know whether the 'virtual presence' we were attempting to emulate, would have been better achieved with better graphics and technology. There were technological issues with this version of the game due to our limited development budget. As a result of this feedback and results from the quantitative study, Version 2 is dramatically improved technically and in content. We also noted that males were less tolerant of technological glitches and several commented on a need for improved

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graphics whereas the females seemed less affected (although there is no question that the technical issues were an issue).

*I think you'd just, my [inaudible] just come down the funding really because if the more funding that there was to improve the graphics, improve the layout visually by paying, buying better software... (Raymond)*

Four main themes emerged from the qualitative analysis as an indication of the main reasons students found the game beneficial to their learning which are discussed in the following sections. The qualitative work gives credence to a related quantitative study (author source), which found that the majority of students felt the game contributed to their understanding of ethics and helped them develop better ethical decision-making skills. However this qualitative study probes deeper to determine specific reasons behind these positive perceptions.

#### *4.1 A vehicle for developing knowledge and practical ethical skills.*

An important theme was that the students found the elements of the game helpful in developing knowledge and understanding the importance of and how to apply ethical theory. This was due to the direct application within real life situations. As part of the individual interviews students were asked to discuss and evaluate the various ethical issues they had encountered and the rules and values based approaches used. Significantly for the rules-based components students were able to recall and identify particular embedded game clues – the stakeholder map, the laws and acts, code of conduct, and the philosophical writings. More importantly from the research perspective of engagement and understanding they were able to relate these back to what they had learned in their lectures. Students made a point of mentioning how it supported their understanding of ethical theory – an area they historically had problems with.

*... you link the theory up to practice and then you easily, you, like, personally, that's how I learn when I relate it to, to the things that can happen in real life... (Petra)*

*... you can read about all these ethical theories and things like that, but when you, when it is put into perspective, like, for example, that tweeting with the thing, it's something that you may not necessarily really think of. And especially when we're quite young and still, you know, even when you just leave uni it can come quite in handy I think, that piece of knowledge. (Bella)*

*... so when Anna was looking around the office, that was, particularly the second time round I thought that was the most helpful because the books came up, so it was all the books and then I understood what the different [inaudible] ethics and the different concepts were. (Raymond)*

But not everyone found this. Steven struggled to make sense of the theories within the game and confirmed that it was only in doing his assignment that he finally got the point of the theory.

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*You learn it in the class and you have the basic knowledge of what you have to do, but you don't really apply the knowledge until you write the assignment. So I didn't really know straightaway which, what the framework was all about, so I couldn't, in that moment on the game I couldn't relate it to... (Steven)*

However he did think the game helped in understanding an ethical dilemma within the context.

*See, now that's a different point because it did make you think about your own dilemmas and the way you think ethically, so maybe that's, yeah... (Steven)*

The following quotes illustrate how the learning experience revealed and challenged students to understand the mechanics and consequences of an ethical decision.

*Yeah, well, actually I thought, "Why is it an ethical issue?" Then I looked at the, err, framework [theory] and it actually helped me understand why it was an ethical issue. Because at first I thought it was a matter of point of view. ... But actually there is, like, this zone of understanding what everyone agree, because of the framework, and I think I would not be able to understand that without the game. (Cheryl)*

*... while working now at my workplace I notice a lot of things that's related to ethical dilemmas whereas before I wouldn't have noticed. (Pandora)*

*Because you learn from it, and it makes you just think twice and it makes you open your, ... mind to different issues and seeing that [not] your way is probably not the correct way and just to see what the consequences of your actions would be (Petra)*

*Yeah, it definitely made me think about the impact, because when you go into the game and you pick an option, it's like it forces you to see the impact but as you keep going, your little decision that you made, you know, follows you through your other decisions in the game... (Natalie)*

*The most, the most one would be the, the hacking situation, like, whether she should hack the files or not. ... I liked them, because at first I'm thinking, it doesn't really sound like a big deal, but then when you play the game and you see the consequences and see what happens, you start to see it from other people's perspectives... That makes you re-evaluate whether it was actually the right decision. (Andrew)*

#### 4.2 The link between virtual presence and real life.

Acknowledging the demographic profile of the undergraduate student body, age, exposure to business decisions, behaviour, work experience it was recognised that often the textbooks, case studies used represent a world of work which they have limited experience of and subsequently find hard to relate to. Again the objective of developing the game was to create a simulated world into which they could immerse, take control of, and understand the consequences of their decisions on the central

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character. Largely the game appeared to achieve this with students recognising that the transference of skills and knowledge they used in the game were useful because of their perception of how they represented and related to the real world including a reflection on their personal values. As one student stated, the game, "...gave the real world examples linked to the theory and that was really helpful". The following quotes illustrate further how the medium, scenarios and decision-making elements allowed the students to transfer how the content moved from theory to helping them link and to practice. Engaging the students in a scenario – through the use of characters and a story in which they participate provided a realism that could be attributed to real life. Schneider et al (2004) found that a greater sense of presence and more affinity with characters was found when a game was structured around a storyline.

*....the story of the game was relatable, wasn't anything fancy or anything exaggerated. (Justin)*

*It's very important because we're all going to go off to work and you see all those ethical issues that are in the newspaper and that kind of thing and I think that if we, business students, are aware of the ethical issues that can happen – and that they do happen – and then you might be responsible for solving an ethical issue and that the game helps you to realise that. (Petra)*

Notice how the students in the quotes below refer to the character in the first person, as if they are the character, suggesting that for these students a level of *virtual presence* was achieved whereby students *felt* they were in the moment. Vieira (2012) found that role-playing inherent in game-playing helps players learn to see things from different points of view facilitating pro-social attitudes, empathies, sympathies and related behaviours.

*...when I talked about the social media and the bribing and the hacking, you know, before the game I wouldn't have seen bribing as a big thing, because I wouldn't have called it bribing. But after looking at the game and finding out, okay, bribery is actually wrong no matter how much you sugar-coat it, you know, it's still an ethical dilemma and if I were to encounter something similar, I would think about that... (Natalie)*

*It was really, really helpful because I was in the situation with those in this corporation in the office...it just felt so real it felt like I was actually there and being a part of...because it was so visual that you had a sense even more because you observed the environment, you observed the people you learn and you did things yourself. (Alice)*

#### 4.3 Use of gamification to motivate and engage.

Gamification is defined as making an activity or process with game-like qualities - that is motivational characteristics such as interaction, competition, progression levels, player autonomy and point scoring. In response to our driver of engagement the concept of "incentivisation" has been identified in educational learning and pedagogy literature with evidence that the use of incentives can enhance students' learning abilities and expectations (Kennedy and Willcutt, 1964, Benowitz and Busse, 1970, Benowitz and Busse, 1976, Cartwright, 1970, Figlio and Kenny, 2007, Bisett and

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Rieber, 1966, Witryol and Hayne, 1971). Interviews showed that where gaining a contribution toward their final mark, a high point score, and achieving a place in the top ten on the game web site's Leader Board were chief motivators. One male student commented that he and his friends set up a competition between themselves to see who could score the highest points. Individual point scoring did induce a level of involvement and competition, and from the research perspective of engagement, as the following quotes show, provided motivation to play the game.

*That was good because I think it's good for motivation. Yeah. ... Yes, they definitely saw it as a competition because when it was over, it was like, "Oh, how much have you got?" "Oh, how did you do that?" (Cheryl)*

*And the thing that made me really into getting the right answer was getting the points. When they said, 'Oh you'll get ten points if you get it right' that kind of made me into it, 'Oh I want to get that ten points'. And if I didn't get it 'Oh I'm defeated. Okay... 'and it gave me more drive to get the questions right'. (Natalie)*

Research corroborates that perceived rewards in their extrinsic and intrinsic form can augment the learning experience and motivations of (Dean and Beggs, 2006). This is evident in the quote below where the student initially was motivated by point scoring but on replaying the game moved towards realising the importance of the material through the points scored. A further development of student transition from points to relevancy and evidence that they had achieved a better understanding of the ethical content is illustrated in the following quotes.

*Err, it was two more, three times, yeah, that I did it. Yeah. ... Because I wasn't satisfied with my score, so I wanted to get a better score. (Laughs.) And also because, when you do it a second time, you kind of, because when you do it the first time you can overlook things but when you go back, you can say, "Oh, I didn't see that, I missed that." No, also you have more, the game makes more sense when you go back, so you understand it better and I think when you do it several times then you get a better impression from it than if you do it once. And it gets easier... (Petra)*

#### *4.4 The placement of the game within learning approaches.*

The need for multiple learning methods has been documented in the literature. Kolb's experiential learning cycle (2005) identifies four stages: active experimentation, concrete experiences, reflective observation and abstract conceptualisation, and avers that all stages need to be completed for learning to be achieved. Saunders (1997) and Thompson et. al (1997) identified that for full learning to occur students need to experience multiple learning methods including simulations which require a methodological approach to meet the four components. Simulations represent a constructivist approach to learning involving active involvement and experimentation. The game includes reflective quizzes at the end of each level to support reflective observation and abstract conceptualisation. However more specific classroom tasks could ensure the game is integrated as part of the full spectrum of learning approaches to avoid the risk of students perceiving it as for entertainment as opposed to a learning tool. Below is a table mapping Kolb's stages against participant quotations.

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Stage	Description	Supporting quote
Concrete experience	Doing something in which the individual is assigned a task. Key to learning is active involvement. One cannot learn by reading you need to do it.	<i>... it's a different learning method. It keeps your concentration going and keep you doing it. ...with the game you can sit down, you can concentrate and you can do it by yourself, and you can do it whenever you want to. You don't have to show up at a specific time and, yeah.</i>
Reflective observation	Stepping back from the viewing and reviewing what has been don and experienced. Lost of questions are asked.	<i>No, it's just because it makes you think and it makes you think that maybe the thing that you thought was right maybe isn't really the best decision, so it's like, it opens your view to, like, to be more critical with your thinking and it's, like, it's almost like a puzzle. You're collecting pieces. It's, like, it's a good way to learn.</i>  <i>... that's how I learn when I relate it to the things that can happen in real life...</i>
Abstract conceptualisation	Making sense of what has happened, involves interpreting the events and the relationships between them. May draw upon theory from textbooks for framing and explaining events, models they are familiar with and other knowledge.	<i>Why is it an ethical issue?' then I looked at the er framework and it actually helped me understand why it was an ethical issue.</i>  <i>You know the theories, you know the background knowledge, and you remember that when you play the game... and I think that everything just together is a good mix.</i>
Active experimentation	The learner considers how they are going to put what they have learnt into practice. Translates the knowledge into predictions of what will happen next, what actions will be taken. Must be able to place in a context that is relevant to them.	<i>...with the knowledge that I get from the lectures and with the examples and issues that come up in the game, that together makes me, erm, like, identify issues when I see them in real life now when I go on to work . And actually that, things that I might not consider ethical issues before, I would consider them being ethical issues now because of the game.</i>

**Table 2: Kolb's Stages of Learning with supporting quotes (Kolb and Kolb, 2005)**

The importance of interaction as a constructivist method to engage and promote personal buy-in to ethical concepts is supported in the quotes below which demonstrate students' appreciation for an alternative form of learning as an adjunct (not replacement) of the course.

*It goes well with the lectures and seminars, side by side... (Justin)*

*... I think the interactive bit of it was really worth doing and I ... the fact that there was an interactive aspect of the module was really useful compared to other modules which was perhaps more, just a lot of reading and things like that. So, personally, I thought it was a really, really useful thing to add to the module. (Lisa)*

*It was, yeah, it was another way to learn, in a different way, it was cool to learn that way. It's still a learning game, so you don't enjoy it the same way, like, if you found something, but, yeah, it was still, err, nice to have another way to, to learn something. (Trevor)*

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*I can't remember exactly what type of learner I am, but I know from my revision I'm doing at the moment is in anything to learn something that's not through a textbook or a journal, a scholar's article, would be a big plus rate at the moment – well, for me. (Raymond)*

*Err, I liked it because it was different from, ... doing seminars or lectures. ... So actually more attractive than anything I've done in the module. Yeah, sorry. Erm, yeah, it's more interactive. (Justin)*

*You know, you could attempt, you know, thirty lectures in a semester and you might not, might only remember five of them off the top of your head. But this is something that everyone remembers. (Lisa)*

*It was different from what every other lesson is about, powerpoint slides and textbooks, kind of different – it was nice. (Andrew)*

*... you are still doing new work and you are still kind of learning, but it's through an interactive kind of thing. I mean, people are different types of learners, but I think everyone can benefit in some way from interactive learning. (Bella)*

## **5. Discussion and Conclusions**

This paper responds to the growing recognition of the importance of the inclusion of ethics within business education to meet the needs of a new 'connected' society – one that has higher goals and ambitions in terms of active support from business to be part of the solution in these turbulent times. The question is how best to deliver this to the students of Generation Z who educators find are challenged in the classroom by lack of situational understanding, ability to transfer knowledge, develop ethical decision making skills and (most importantly) buy-in to ethical concepts at a personal level. By exploring the use of a technology enhanced learning tool through qualitative interviews with game participants, we answer some questions as to why the use of a virtual reality game may address some of these issues in ethics education. The four research themes emerging from the research address both the research objectives and respond to the calls within the literature. Theme 1: *A vehicle for developing knowledge and practicable ethical skills.* The results demonstrated that students responded positively to the game as a vehicle through which to transfer knowledge and ethical skills particularly to develop theoretical understanding and an ability to apply these theoretical frameworks to real life ethical dilemmas.

Theme 2: *The link between virtual presence and real life.* A key driver of developing the game was to provide the students with a three-dimensional learning experience via virtual presence. As previously identified the challenges of situational understanding and the ability to transfer ethical understanding and application of their knowledge to 'real world' contexts is problematic. The findings confirm that students perceived the approach to learning business ethics through a visual simulation game as useful in helping them relate and apply their learning of ethics to their needs and interests in the outside world. This is because they found themselves 'in the moment', within a story where they play a part – a story not that far removed from what they may experience in future employments. This addresses important aspects of business ethics teaching:

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providing real-life scenarios the students can relate to, allowing the students to engage in decision making with differing consequences (enhancing transferability of cause and effect) and ultimately through the case and vehicle of delivery engage students sufficiently for them to see why ethics is important to them personally, rather than as an academic exercise or box-ticking requirement. More significantly the students were able to make the link of the material from a classroom 'academic' exercise to one where the scenarios and consequences presented were applicable to their future working context.

The emergence of the strategic student (Kneale et al., 1997) where it is argued attendance, engagement and motivation is underpinned by assessment marks and demoted by sport, leisure and cultural activities links to the research driver related to motivation and engagement. Theme 3: *Use of gamification to motivate and engage* clearly indicates that the power of reward conveyed through gamification techniques such as engagement through point scoring, leader board status, autonomous play, and combined with completion incorporated into their final mark, were significant motivators. However, a rewarding finding was the student transition from viewing the relevancy of the game as a point collecting mechanism to evidence showing that they had achieved a better understanding of the ethical content supporting the value of the game as a learning tool.

And finally, as demonstrated by theme 4: *The placement of the game within learning approaches* - the game responds to a need to develop pedagogic tools suitable for a technologically oriented population – Gen Z - by supporting the view that learning styles are evolving as a result of technological innovations. The new virtual reality game developed in this research provided a unique solution when integrated as part of an overall learning scaffold, and contributor to the learning cycle. The implications of this include the role of technology as an educational enabler and the ability to present an interactive learning environment (if designed with pedagogic acumen) over which the student has control and can influence decisions to impact on all stages of the learning cycle. Although not developed in this phase of the research the implications of the approach for class contact hours, part time and distance delivery modes, large group teaching and transferability to the business sector are exciting opportunities for further development.

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