

CPA Ontario Center for Public Policy and Innovation in Accounting

Brock University



Virtual Morality

How business educators can use VR to prepare students for real-life ethical dilemmas

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Remote learning during the Covid-19 pandemic has put educational technology in the spotlight. But what methods work best? In the fields of business and professional ethics, virtual reality has unique advantages.

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VR could improve ethical awareness in the accounting profession

Ethics are a perennial concern for accountants and accounting educators. Relatively recently, the Wirecard scandal, where EY as the auditor failed for more than three years to detect fraud at the failed payments processor (Storbeck and Chazan, 2020), has highlighted the importance of continuous ethics and professional training in the profession.

Like others before and after it, the Wirecard scandal will be used as a teaching moment for accountants through the production of text or video-based case studies. However, the disruptions to higher and professional education caused by the Covid-19 crisis have drawn particular attention to online, computer-mediated and interactive modes of instruction—including virtual reality (VR), which turns out to have special value in the teaching of ethics-focused case studies.

Text and video-based cases are often used to teach accounting students and accountants how to solve ethical issues in managerial accounting. Reading cases lets learners critically reflect on case facts and social norms, which on a first look seems beneficial. However, responses to dilemmas in text-based cases often represent what a person thinks they should do, not what they would really do. The careful and dispassionate reflection involved in studying text-based cases is not always a feature of real-world decisionmaking, where professionals are under time and performance pressures and influenced by organizational cultures.

As the present research has discovered, presenting ethical dilemmas in a virtual environment can trigger emotional responses like those they generate in real life. Experiencing the process of making flawed decisions in VR can help students identify their own weaknesses and learn strategies to improve their ethical conduct.

VR could thus be a powerful tool for accounting educators and their students in promoting and developing ethical awareness and good decisionmaking. In arriving at this insight, we also found that with the right approach and assistance, creating VR case studies will be possible for many educators within the limits of their existing skills and budgets. One does not have to be a software developer to use VR as a teaching aid to excite and engage students in-person or online.



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WHY USE VR IN EDUCATION?

Kavanagh et al. (2017) conducted a review of VR in education and discussed the technologies available. They asked how and why educators use VR, and examined the problems they face.

Why?

Increase students' motivation to learn.

How?

Gamify learning and let students experience situations virtually.

Problems?

Cost, availability, and quality of user experience.

An introduction to the use of VR in education

A VR headset can immerse students in a rich environment that can mimic the real world or create an artificial space. Depending on educators' needs, students may walk and look around, use virtual tools (e.g. a phone or whiteboard), and interact with real users or computer-controlled characters.

VR has been used in education for roughly half a century, having been adopted in flight simulators for pilot training as early as the 1970s. Interest in its use has been heightened recently by the current need for innovative teaching resources, along with recent price drops and technological advancements.

As more reputable sources, including universityaffiliated sites like Coursera, Udacity and edX, offer free or low-cost massive open online courses (MOOCs), university and professional educators can look to VR as a way to differentiate their teaching. Using a simple VR environment that we created with the help of software developers, we were able to show that VR is superior in some ways to conventional text and video-based cases, particularly for ethics education. Accounting educators who adopt the use of VR now can benefit from the experience in the long run, increase the value that students perceive in their courses, and contribute to the development of ethical awareness and behaviour in the profession.



FURTHER RESOURCES FOR EDUCATORS EXPLORING VR

American University School of Education Online Programs. Virtual reality in education: Benefits, tools, and resources. 16 December 2019. https://soeonline.american.edu/blog/ benefits-of-virtual-reality-in-education

Emma Kennedy. Can virtual reality revolutionize education? CNN. 1 November 2018. https://edition.cnn.com/2018/11/01/health/ virtual-reality-education

Jennifer Lewington. Augmented and virtual reality are helping colleges up their game. Maclean's. 4 February 2020. https://www.macleans.ca/education/college/ augmented-virtual-reality-collegestechnology-learning/

Louisiana State University Online. How virtual reality is changing education. 19 June 2020. https://online.lsu.edu/newsroom/articles/ how-virtual-reality-changing-education/

Sol Rogers. Virtual reality: THE learning aid of the 21st century. Forbes. 15 March 2019. https://www.forbes.com/sites/ solrogers/2019/03/15/virtualreality-the-learning-aid-of-the-21stcentury/?sh=a71aaa9139b6

Travis Feldler and Natalie Proulx. Virtual reality curriculum guide: Experience, immersion and excursion in the classroom – A framework for teaching with New York Times 360 V.R. videos, plus eight lesson plans for STEM and the humanities. New York Times. 29 October 2020. https://www.nytimes.com/2020/10/29/ learning/lesson-plans/virtual-realitycurriculum-guide-experience-immersionand-excursion-in-the-classroom.html

University of Toronto Libraries. Virtual reality in the classroom. Updated 26 May 2021. https://guides.library.utoronto.ca/c. php?g=607624&p=4494486



How VR compares to text and video for teaching business and professional ethics

Existing research gives educators plenty of information on how to use VR in the classroom (Kavanagh et al., 2017; Allcoat & von Mühlenen, 2018), but little is known about how it compares to well-established video- and text-based educational resources. Video and text are seen as tried and true, which can lead to a sense that there is no need for VR. A lack of existing VR cases for teaching, combined with the perception that developing new ones is difficult and expensive, also works against the use of VR in business teaching.

While studying VR as a teaching tool for business ethics, we discovered that it may be more effective than existing methods such as video and text-based cases. Decisions made in VR may more closely resemble those a person would make in real life than those they make following reflection on a text or video case. By creating the VR environment used in our research, we also found that the process and its costs are less daunting than many would assume.

Audit and accounting firms, along with professional associations, provide ethics training to satisfy regulatory requirements. CPA Ontario, for example, requires members to take four verifiable hours of ethics training every three years. It is possible to see ethics training as a matter of mere compliance simply a box to be checked by completing it in a cost-effective way. Such a mentality would lead to a preference for using the most cost- and time-efficient resources and delivery methods, e.g., webinars that present text-based cases.

An inherent preference for moral behaviour is one reason organizations may want to see members or workers adhere to high ethical standards. Another is the desire to avoid the long-term costs of unethical employee conduct. Those costs can be substantial: in a 2018 LinkedIn survey, 39% of employees said they would quit rather than having to engage in unethical conduct (McQueen, 2018), and more dramatically, Volkswagen has estimated that intentionally cheating diesel emissions tests cost it \in 31.3 billion (around C\$45 billion) as of March 2020 (Reuters, 2020).

Regardless of their reasons for doing so, organizations that genuinely want to see their members or workers adhering to high ethical standards should consider choosing the most effective modes of instruction.

When viewing ethics education as an investment that leads to a long-term return, it makes sense to understand the strengths of each of the resources available. To fill a knowledge gap in this area, we developed a simple VR environment based on a well-known MBA case (the Pinto fire case) by Dennis Gioia (1992). We then compared data from participants who used this VR environment with data from participants who used video- and text-based resources on the same case.

Our VR environment mimics the office of a car manufacturer that is struggling with the transition to electric cars (Figure 1). Users can walk around the building, watch a video advertisement about the company on the TV, hear a water-cooler conversation between co-workers and listen in on a meeting between the CEO and COO. In the ethical scenario, these elements of the environment focused on the importance of organizational values, long-term profits and stakeholder balance, while in the unethical scenario they focused on short-term profits, stock-market value, and executive bonuses.



Figure 1. In the VR case, participants were immersed in an office environment that used video, water-cooler conversations, and meetings to express elements of an ethical or unethical organizational culture.

After being immersed in the organizational culture for around 10 minutes, users received a call in their office from their supervisor with bad news: during a voluntary rear-end collision test of their first electric car, the engineers discovered that the rear axle could easily break and rupture the battery pack. Participants then had to decide whether to release the car as-is, risking the lives of around 180 customers, or spending \$200 million more to install a part that separates the rear axle from the battery pack (Figure 2).

We also created a video version of this case by recording a walkthrough of the VR environment and a text-based case with shortened versions of the script. We recruited 180 participants and tested how the three training modes (VR, video and text) communicate the different ethical climates of the organizations and affect participants' decisions.

See the video of the ethical scenario at https://youtu.be/co-M7hauMYA and of the unethical scenario at https://youtu.be/x_E1gA89c2c



Figure 2. The VR environment presented the choice of releasing a dangerous car as-is or incurring a substantial cost to correct the problem.

VR makes decision-making more difficult and emotional

Participants in our experiment were grouped according to which one of three case formats they engaged with: text, video or VR. We asked them to answer a series of questions on a seven-point Likert scale to assess their experience, and charted the means of these responses to compare them across scenarios and across different modes of delivery. Higher values on the charts indicated a stronger perception of an aspect of the case in a particular mode.

To see if they could identify the differences between the ethical and unethical organizational cultures, we asked participants about their perception of aspects of the Ethical Climate Index, which assesses ethical dimensions of a work climate including empathy, focus on self or others, and moral motivation and character (Arnaud, 2010). The results showed that although all three modes of instruction effectively communicate the differences between the scenarios, the text-based case scenario tended to do so slightly more effectively.

We also asked participants whether it was difficult to make the decision to amend the dangerous defect or sell the car as-is (following Goodman, Broniarczyk, Griffin & McAlister, 2013) and how much effort they had to exert (Mohr & Bitner, 1995; Langan & Kumar, 2019). Those engaging with the VR case study found the decision more difficult than those engaging with video or text, but reported applying less effort in making it (Figure 3).

Research has shown that VR-based dilemmas are more emotionally arousing than those presented as text (Patil et al., 2014). Managers are strongly influenced by emotions when they make tough calls in crises (Sayegh, Anthony & Perrewé, 2004). Scholars have also found that video-based cases may inhibit critical thinking (Basu Roy & McMahon, 2012), which could explain why participants who watched a video of the ethical dilemma found the decision easier than peers who read about it—they reflected on it less. Finally, scholars comparing text and video cases found that students reading could set their own pace and critically reflect on the material (LeeSing & Miles, 1999; Woodham et al., 2015). Such reflective decision-making is less emotional (Patil, et al., 2014), and while it takes more effort, it is less likely to be perceived as difficult or overwhelming.



Figure 3. Participants experiencing the VR case found the decision most difficult (left) but perceived the least effort in making it (right). Those reading the text case perceived the greatest effort, suggesting a more reflective decision-making process.



Decision-making in VR more accurately predicts real-world behaviour

Whether cases are presented in text or VR, a key question in teaching business ethics is whether classroom decision-making accurately reflects what students would do in real life. Asking people what they would do in a scenario seems like an obvious approach to assessing whether they would behave ethically, but stated intentions may not accurately predict actual behaviour (Rest, 1986).

Asking participants what a peer in the same situation would do can be a more powerful predictor of whether they would behave ethically themselves (Zey-Ferrell & Ferrell, 1982; Zey-Ferrell, Weaver & Ferrell, 1979). We asked participants both - what they would do and what "the average employee" would do. As expected, we found that all participants expected the average employee in this situation would be more likely to repair the cars in the ethical scenario than in the unethical scenario, regardless of the mode of instruction. In addition, we found that across all scenarios and modes, participants reported that they would be more likely to repair the car than the average employee. However, those experiencing the unethical scenario in VR were significantly less likely to repair the car themselves compared to participants in the text or video-based scenario. While this sounds alarming, their decision closest reassembles what they thought the average employee would do. This indicates that

the participants' response in the VR scenario is likely to be the best guide to what they would do if facing a similar dilemma and organizational culture in real life.

Like those of Pan and Hamilton (2018), our results provide support for the idea that VR is especially useful in teaching and in social-science research. It is an especially effective tool for teaching people about how an unethical organizational climate can affect their decision-making. VR can also give students a space where they can experiment with voicing their values when asked to engage in unethical organizational conduct and learn how to do so effectively.

Research on discrepancies between judgment and behaviour has found that participants use utilitarian judgment that more closely reflects real-life behaviour when facing dilemmas in a VR environment, even though they use a deontological judgment (one based more on the qualities of the act than on its consequences) that reflects social norms for the same scenario presented in text (Patil et al., 2014). This means that text-based scenarios, in contrast to VR ones, may give students a particularly unrealistic view of how they would behave, which could prevent them from acknowledging their biases and learning mitigation strategies.

Creating VR cases is a practical way to improve business ethics training

Teaching business ethics through VR may be uniquely effective, but a relative lack of VR cases is a significant obstacle for educators wanting to do so. At the same time, creating new VR cases oneself is likely to seem prohibitively expensive or technically demanding. But in undertaking this research, we found these challenges can be overcome.

Software-development costs for customized VR environments have fallen sharply over the years, and educators can harness grant opportunities that support the development of innovative teaching resources. For example, we recently received a grant from eCampus Ontario Virtual Learning Strategies (VLS) to develop a VR teaching resource addressing sexual harassment and racism in the workplace. This new VR environment will soon be available free to all educators.

Developing text- and video-based training resources is clearly cheaper than creating them in VR. But organizations also need to take the cost of unethical employee conduct into account when calculating the return on investment (ROI). A preference for cheap training methods may even have a negative ROI, relative to other options, if they fail to reduce unethical employee conduct. Investing in up-to-date educational resources, such as VR, to excite employees to enrol in training, strengthen organizational culture, and reduce costly unethical employee conduct may deliver greater returns.

Additionally, our journey in conducting this research shows that creating a custom VR environment is not as daunting as it may appear.

We started out with the idea of creating an office environment that can teach about the effects an organizational climate has on ethical decision-making. To discuss this idea, we contacted XpertVR, a software developer in Niagara Falls that creates VR training and research environments. Our main takeaway from the first meeting was that everything is possible but not necessarily affordable. We encourage educators who consult VR developers to be open about their budget and expectations and ask what parts of their idea are easy to implement and what parts are challenging and therefore expensive. We stayed within our budget of C\$10,000 by developing our own scripts, recording the video ourselves, and using friends as voice actors. We also learned that developing, testing and refining scripts takes time. The final script for this simple VR environment was over 4,000 words long. After finishing the first pilot environment and collecting preliminary data, we were able to discuss our experience and the feedback we received from participants at the 2020 Management and Organizational Behavior Teaching Society virtual conference (Steinbauer & To, 2020). The attending educators were excited to hear about how to use VR as a teaching tool and gave us extremely positive feedback. We used this momentum to apply for an additional C\$5,000 grant that enabled us to refine our VR environment and collect more data for the present study.

For organizations developing internal training, custom VR environments allow each aspect of the simulation to be controlled, and can be more effective than text and video in alerting employees to deficiencies in how they respond to ethical hazards. Such VR environments can easily be adapted to address pressing or new issues for a company or industry and can be seen as a longterm investment in mitigating risks associated with unethical employee behaviour.

As educators in business and professionals look for ways to make their courses stand out, the superiority of VR in revealing decision-making tendencies makes it a potential differentiator. We encourage educators to explore their ideas for VR-based training by reaching out to software-development companies, teaming up with friends and colleagues to write scripts and grant applications for new cases, and investing in this highly effective way of fostering high ethical standards in business and professional practice.





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