Career and Technical Education Teachers' Opinions on Virtual Reality

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Introduction

The technology available in schools has evolved tremendously in the last few decades (Blascovich & Bailenson, 2011; Wells & Miller, 2020). One such technology that has advanced considerably in recent years is Virtual Reality (VR). Various forms of VR (e.g., stereoscopic viewers) have been around since the early 1900's (Virtual Reality Society, 2019). The Virtual Reality Society (2017) noted that various industries have invested in VR for simulation exercises (military and healthcare), employee onboarding (business), and rapid prototyping (engineering). Career and Technical Education (CTE) prepares individuals for college and/or careers across a variety of industries (What is Career and Technical Education, 2024). It stands to reason that technology should be an integral component of CTE programs. Researchers have documented increased performance across a variety of tasks from VR trainings versus traditional training methods (Kavanagh et al., 2017; Patel et al., 2006). Skill development is a cornerstone of CTE programs. Aligned with the goals of CTE, the application of VR plays a useful role in teaching and learning across career areas (Wells & Miller, 2020). The integration of VR offers significant potential for enhancing instructional practices in CTE programs. Wells and Miller (2020) explored agricultural educators' opinions of VR, but a dearth of literature exists about the broader discipline of CTE educators' opinions on this futuristic technology. What are CTE teacher's opinions of VR technology?

Purpose and Objectives

The purpose of our study was to describe CTE teachers' opinions of VR technology in CTE settings. We developed two objectives to guide this research.

1. Describe CTE teachers' experience with VR.
2. Describe CTE teachers' opinions of VR.

Theoretical Framework

The Technology Acceptance Model served as the theoretical framework that undergirded our study. Specific attention was placed on the concepts of perceived usefulness and ease of use.

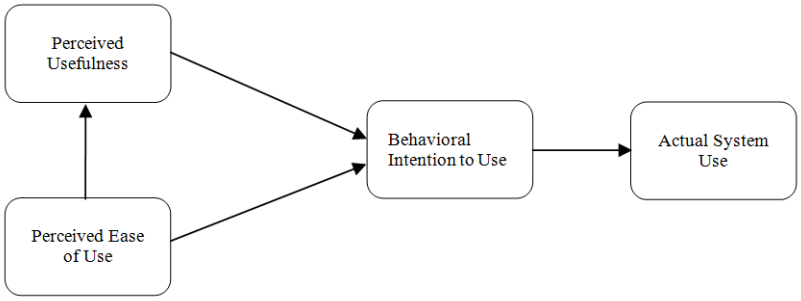

Figure 1. Technology Acceptance Model (Davis, 1989)

In the context of this study, we conceptualize behavior as the utilization of VR technology within CTE settings for instructional purposes. Aligned with Wells and Miller (2020), we posited that individual factors, such as attitudes toward VR technology, past encounters with VR, educational background, and professional experiences, could shape CTE instructors' decisions regarding the adoption and utilization of VR technology. Furthermore, perceptions and realities regarding colleagues' use of VR technology may influence one's inclination to incorporate VR into their

own instructional practices. Additionally, instructors' beliefs and attitudes toward VR within their specific CTE programs can affect their intentions and actions. Notably, perceptions of control over the learning environment, as well as actual environmental constraints such as space availability, funding, curriculum requirements, student needs, and administrative support, were identified as factors influencing perceived behavioral control and subsequent behaviors (Wells & Miller, 2020).

Methodology

This descriptive study sought to examine CTE teachers' opinions about VR technology. To accomplish this purpose, we modified the VR Technology in School-Based Agricultural Education Settings questionnaire (Wells & Miller, 2020) to reflect broader CTE applications. Based on these slight modifications, we determined the original instruments Cronbach's alpha reliability coefficient ($\alpha = .940$) to be sufficient for this study. Paper surveys were administered to 26 CTE educators participating in a "VR in CTE" professional development program developed by the authors. All 26 educators completed the instrument for a response rate of 100%. Eleven distinct CTE clusters were represented in the sample. The typical respondent was female ($f = 16$; 61.5%), was 43.62 years of age ($SD = 8.81$), had taught for an average of 12.42 academic years ($SD = 6.44$), and had a bachelor's degree ($f = 10$; 38.5%) as the highest degree earned.

Results/Findings/Conclusions

Regarding teachers' prior experiences with VR, 57.7% (f = 15) reported having used VR themselves. Teachers reported their experience using VR as fairly positive (f = 11; 42.3%) or very positive (f = 10; 38.5%). Select data regarding teachers' opinions of VR is detailed in the table below.

Table 1

CTE Teachers' Opinions of VR

Item	D	U	A
VR is useful for developing psychomotor skills	0 (0%)	8(30.8%)	18(69.3%)
There is great value in trying to learn a new skill in VR	0 (0%)	1 (3.8%)	25(96.2%)
I am comfortable trying to learn a new skill using VR	0(0%)	1(3.8%)	25(96.2%)

Note. D = Strongly Disagree or Disagree; U = Unsure; A = Agree or Strongly Agree

Teachers' opinions toward VR was overwhelmingly positive. Many teachers believed VR would improve their teaching and be useful for skill development.

Implications/Recommendations/Impact on Profession

We recommend a follow-up study to explore if and how the teacher's implemented VR in their CTE programs. This could reveal potential barriers to integrating VR into course content across CTE programs. The resulting data could inform future professional development to promote VR usage. This study could also be replicated on a regional and national level to gain additional insight into how VR technology is used in the teaching and learning process. Use of this innovative technology can foster many collaborative relationships between industry stakeholders and classroom teachers. Professional development for preservice and in-service teachers should focus on effective implementation of VR technology into the educational process.

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