

Washington State University

College of Education

Kathryn Abrams

Will defend the dissertation on

Date: January 5, 2023

Time: 10:00 A.M.

Pullman Campus – Cleveland Hall 353

Zoom by request to gradstudies@wsu.edu

Faculty, students and the general public are encouraged to attend

**USING VIRTUAL REALITY TO TEACH SCIENCE VOCABULARY TO
TRANSITION AGED YOUTH WITH INTELLECTUAL DISABILITY**

Chair: Don McMahon

Individuals with disabilities have been less involved in school activities than their same age peers and this includes career preparation in science and math (Eriksson et al., 2007; Agran et al., 2020; Jackson et al., 2022). Specifically, individuals with intellectual disabilities (ID) have been underrepresented in science education (Lee, 2011) and in science careers (NSF, 2019). Previous studies have concluded that this underrepresentation can be due to lack of preparation of students with disabilities, access to facilities, programs, and equipment, and acceptance by educators, employers, and co-workers (Burgstahler, 1994). This study aims to expose transition-aged youth with ID to science concepts by using virtual reality and to give them a better understanding of their own bodies (Collins et al., 2017; Rizzo et al., 2016). This study investigated the effects of a virtual reality (VR) human anatomy application as the means of teaching science vocabulary definition and location acquisition for three different human anatomy systems (digestive, respiratory, and integumentary) to college-age students with ID. This single subject, multiple baseline study included two college age students with ID. The intervention package included both a guided and exploratory portion. Data were collected on the participants accuracy on the definitions and locations of ten vocabulary words for each of the three body systems.

Findings indicated that a functional relation existed between the implementation of the intervention package and an increase in the accuracy of scores in both definitions and locations for each of the three body systems for each participant. Tau-U scores also yielded significant ($p < .05$) effect sizes for both participants in the digestive and respiratory systems. System Usability Scores (SUS) indicated marginal scores for one participant and excellent for the other participant. The participants' social validity questionnaire reflected a positive experience with the VR headset as well as the application offered minimal negative feedback about the study. The findings highlight that using the Universal Design for Learning (UDL) framework and virtual reality (VR) is an effective means of supporting science vocabulary acquisition for college-aged students with ID.