IS TEACHING IN THE METAVERSE THAT FAR OFF?

Lessons Learned from A Higher Education Implementation Case

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INTRODUCTION

WHAT ARE 360-DEGREE VIDEOS?

Videos that are recorded in all directions so that you have a complete 360-degree view of the scene. On playback, the viewer can move around 360-degrees so they can see the scene from their preferred perspective (What is 360 video?, GCFGlobal).

WHAT IS VIRTUAL REALITY?

In virtual reality (VR), avatars are placed within a completely virtual environment. Wearing a head mounted display (HMD) and using a controller, the learner is fully immersed visually and aurally in the environment (Milgram, 1994).

RESEARCH TOPIC & IMPORTANCE

OUR USE CASE - CONTEXT

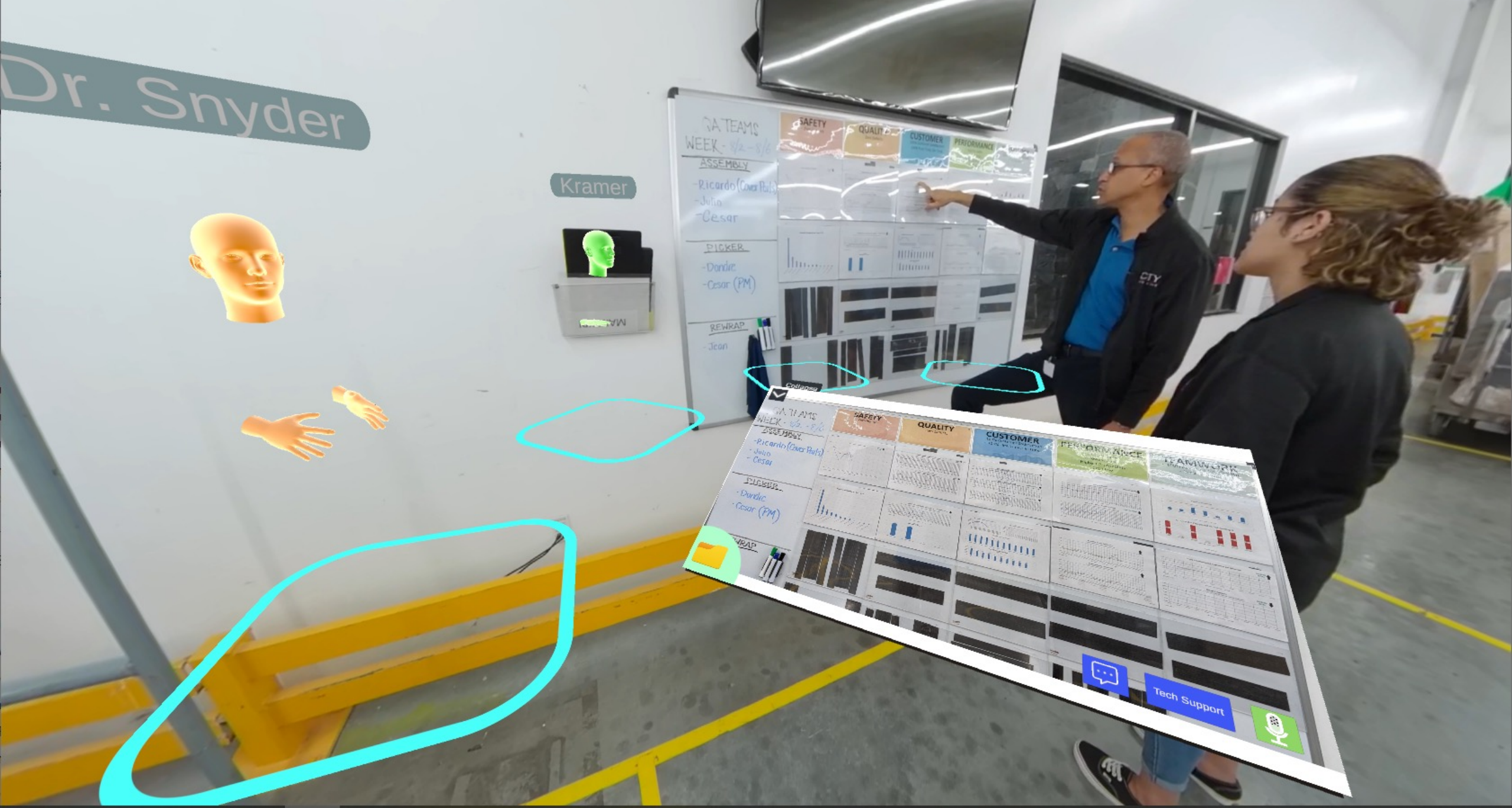
- Use of 360-degree video vignettes in immersive virtual reality PIM5450: Quality Management (master's course)
- Professor: Dr. Steve Kramer
- Eight-week foundations course at Nova Southeastern University, H. Wayne Huizenga College of Business and Entrepreneurship for MBA concentration in Process Improvement
- 16 students attending online and on-campus (mailed headset to remote students)

OUR USE CASE - TOOLS

8K Full View Camera with Full HDR $600.00

Zoom H3-VR 360 Audio Recorder (Ambisonic) $250

128 GB Oculus Quest 2 Headsets - $299 each


Dr. Snyder
Kramer
SAFETY
QUALITY
CUSTOMER
PERFORMANCE
TEAMWORK
Tech Support
85°F Partly sunny


BACKGROUND &
LITERATURE
REVIEW

VR TECHNOLOGY IN HIGHER EDUCATION

- Increase in VR use increased (Makransky, Borre-Gude, & Mayer, 2019)
  - Affordability of head-mounted displays (HMDs)
  - Reflects changing demographics (Millennials and Gen Z) of our students who have been raised with technology (Schwieger & Ladwig, 2018)
- Applications of VR
  - Many use cases and applications across disciplines (health care, science, business, education)

IMMERSIVE VR

- Increases behavior transfer, enjoyment, intrinsic motivation, and self efficacy (Makransky, et al., 2019)
- Improves 21st century skills (e.g., creativity, communication, collaboration, and problem-solving) (Papanastasiou, et al., 2019)
- Improves student engagement, multi-sensory learning, and spatial ability (Papanastasiou, et al., 2019)

RESEARCH GAP

Makransky, et al. (2019) stated the need to study applications of VR within “natural learning settings such as classrooms”(p. 434) and systematically study both positive and negative aspects related to content acquisition, long-term memory retention, student motivation, collaboration, usability, classroom integration, and learner differences.

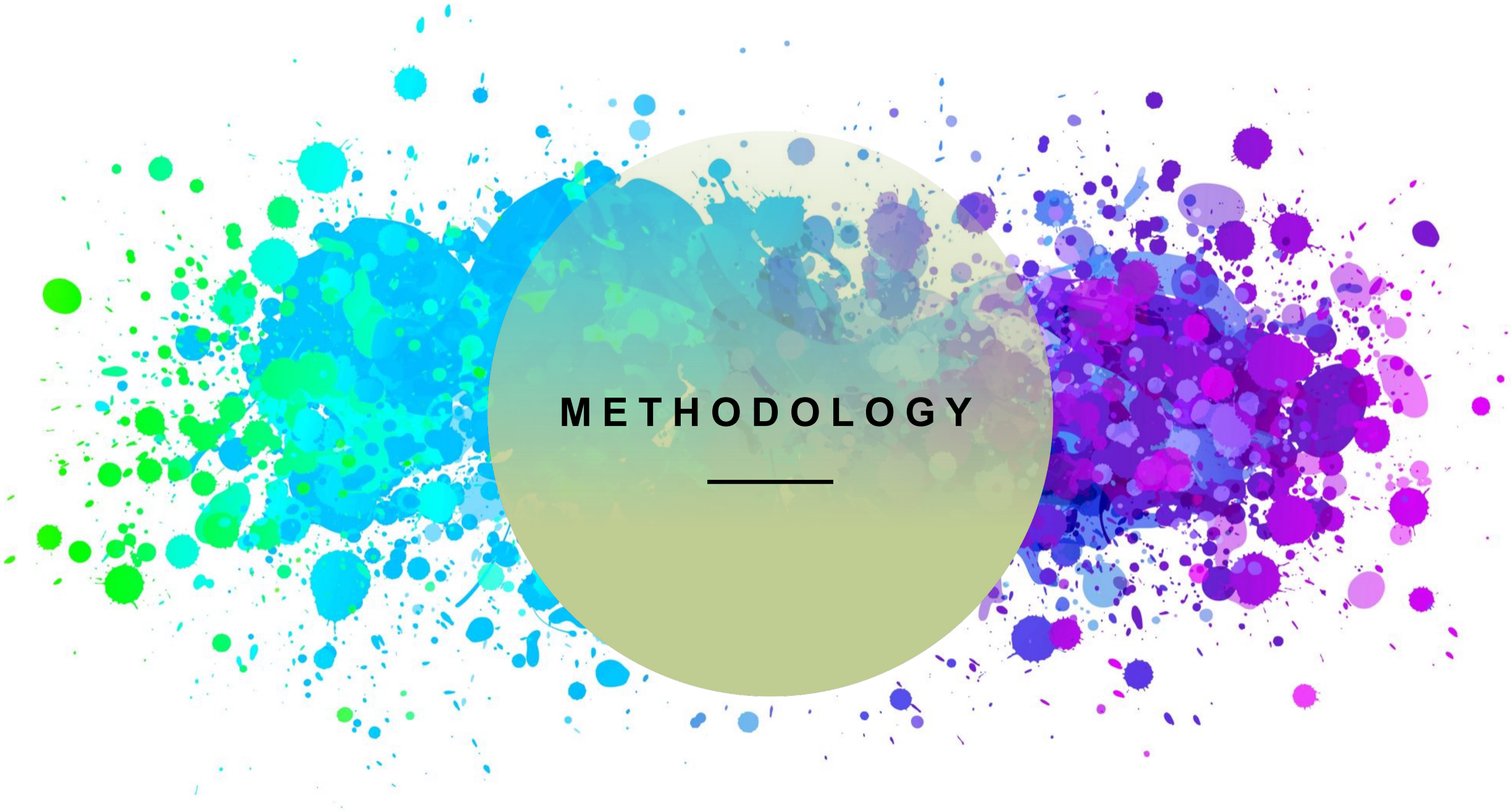
RESEARCH GOAL

Design, develop, and formatively evaluate a use case that focused on how 360-degree video vignettes presented in VR can be used to facilitate the acquisition of quality management competencies.

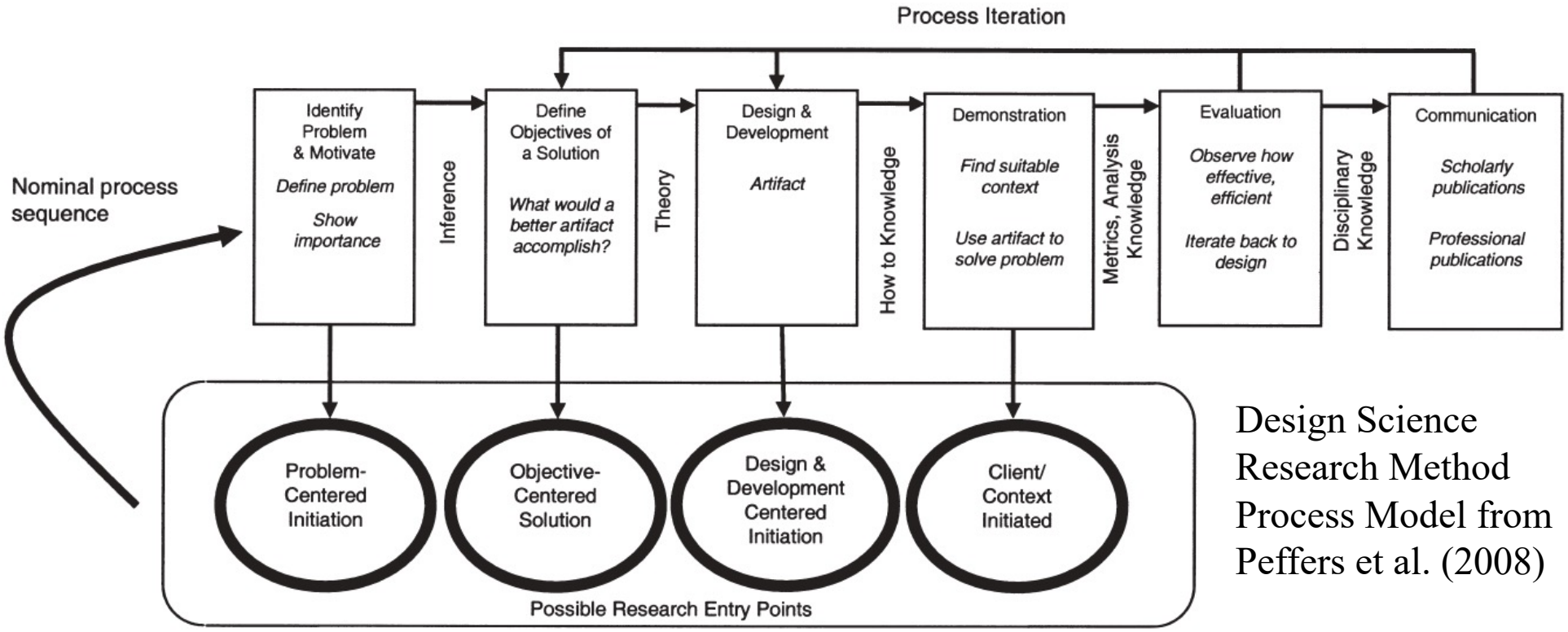
RESEARCH QUESTIONS

How can 360-degree video vignettes presented within an IVR environment be used to facilitate the development of quality management competencies?

1. How do learners experience 360-degree video vignettes within an IVR environment?
2. What is the process for integrating 360-degree video vignettes within an IVR environment?
3. What learning and instructional-design theories are most useful in guiding the design of 360-degree videos vignettes for IVR in higher education?


METHODOLOGY

DESIGN-BASED RESEARCH/DESIGN SCIENCE

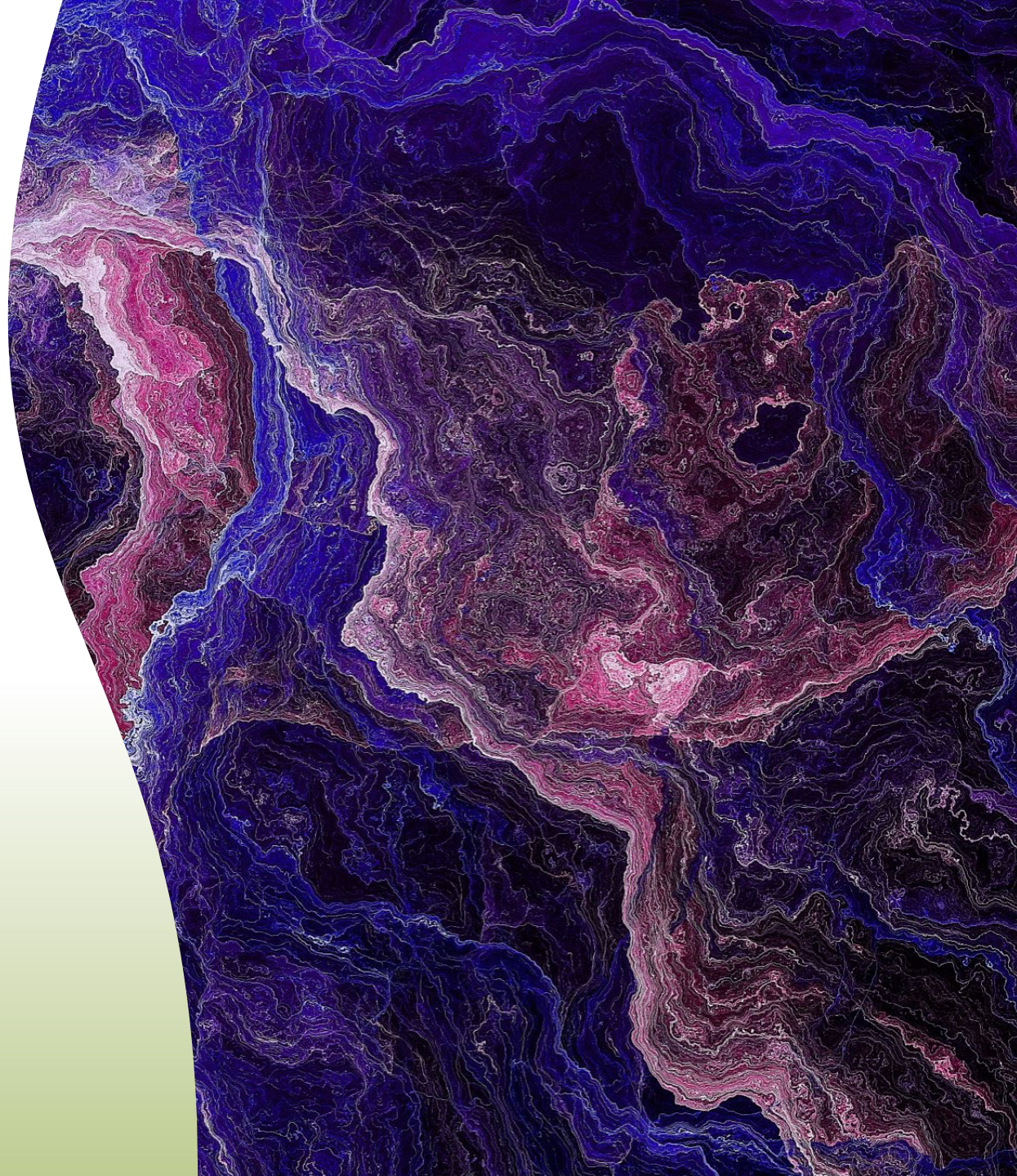


Design Science Research Method Process Model from Peffers et al. (2008)

- Methods from design-based research (Wang & Hannafin, 2005) and design-science (Hevner, March, Park, and Ram, 2004; Peffers, Tuunanen, Rothenberger, & Chatterjee, 2008).
- Systematic, flexible, iterative, pragmatic, grounded, interactive, integrative, contextual

DATA COLLECTION

- Demographic & VR Use Pre-Screening Questionnaire
- IVR Perceptions Questionnaire
- Individual Semi-Structured Interviews
- Observations and Reflexive Journal



DATA ANALYSIS

- Descriptive statistics were used to analyze the quantitative data from questionnaires (Gay, Mills, & Airasian, 2009)
- Content analysis was used to analyze the open-ended questions and interview transcripts (Hsieh & Shannon, 2005).

EXAMPLE OF INITIAL CODING PROCESS USING MS WORD

Interviewer: Yeah. And so, what did you like best about... I had another question though about that. I'm sure it'll come back to me. What did you like best about your experience watching the videos, first by yourself? What did you like best? What were the best features or how it made you feel.

Steven: Excuse me. It was very immersive.

Interviewer: Immersive.

Steven: I mean that. It was an immersive experience. I mean, a lot of people misuse that word, I feel. Because it sounds catchy. But I feel like that's what it really felt like. I was immersed in there. I was right there sitting on top of the table. And I think that was very cool. I think visualizing. What I also liked was that first video when we first started, with the lady, she's at the whiteboard. And they're talking about the process and stuff like that. Because I was reading the book that Dr. xxx... And then I was like, well, when would I do this?

Because I work in an office right now. I work in an office with Excel and stuff like that. So I don't visualize the back receiving stuff. I don't see that. And so being there makes me think about that. Hey, this is the environment that you're going to be in or you're going to be participating in. So it gives you an idea of like... It's like, wow, this is different. It's not just your office job.

EMOTION: Felt like he was right there in the room (embodied).

Reply

MS Author

EMOTION: Engaged. Connection of classroom learning to real-world application (authentic).

Reply

MS Author

EMOTION: Reaction. Provided a better sense of "what it would be like."

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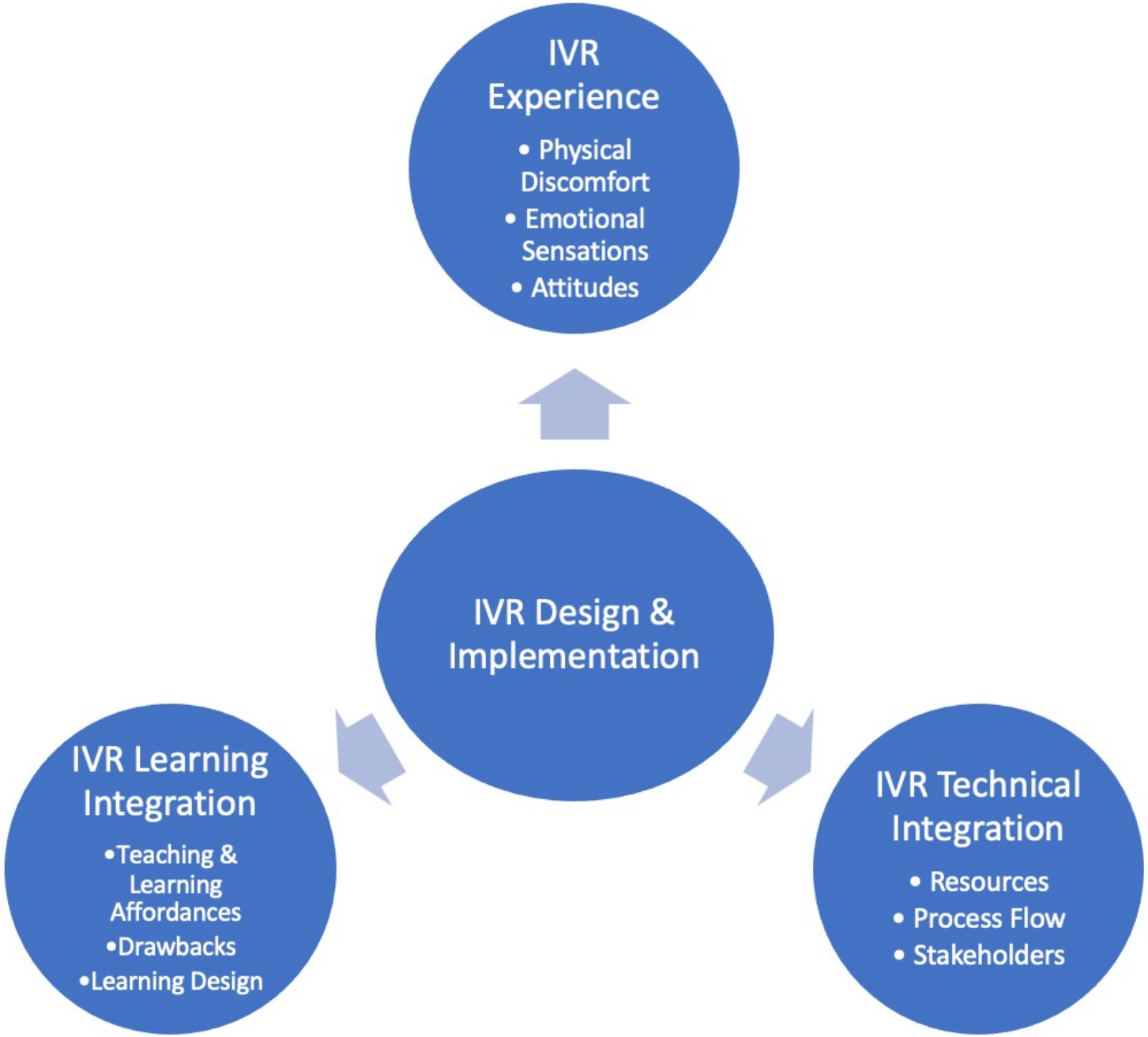
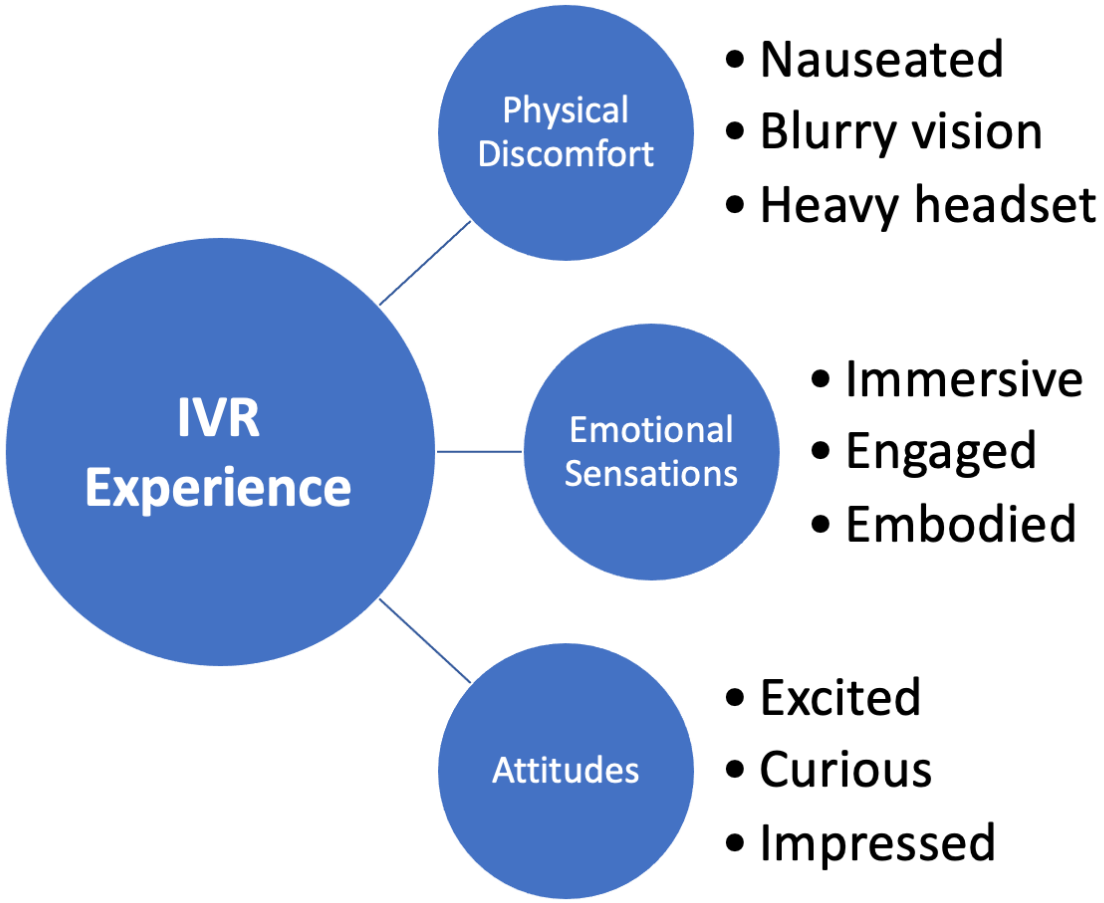
QUALITATIVE FINDINGS

THEMES & SUB-THEMES



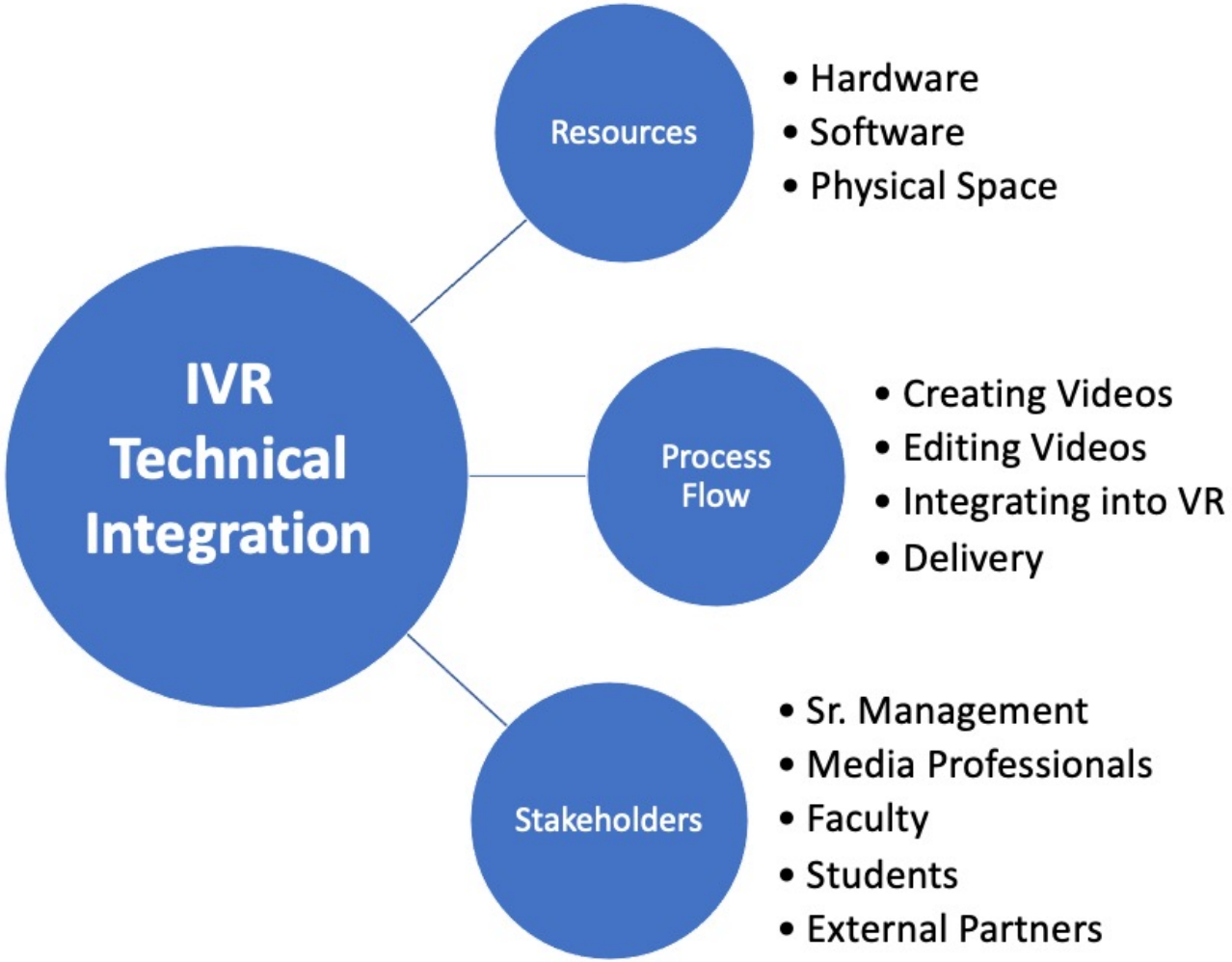
THEME 1: IVR EXPERIENCE



Emotional Sensations (Immersed): ”It was an immersive experience. I mean a lot of people misuse that word I feel. Because it sounds catchy. But I feel like that’s what it really felt like. I was immersed in there. I was sitting right at the table.”

Attitudes (Excited/Curious): “I was excited to use the device anyway, so I’m one of those guys. I’m like, ‘I’m just going in headfirst’.”

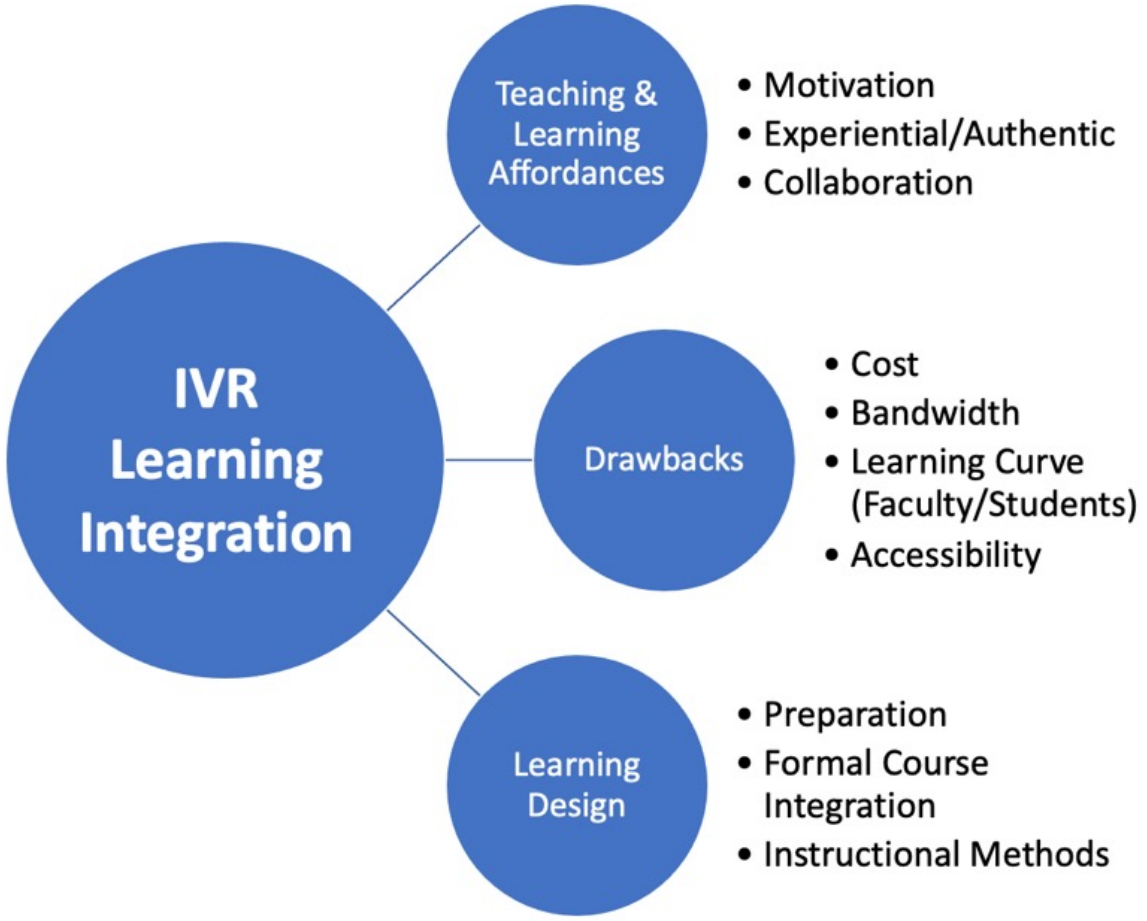
THEME 2: TECHNICAL INTEGRATION



Process Flow: "I would like to see [the process] become more streamlined."

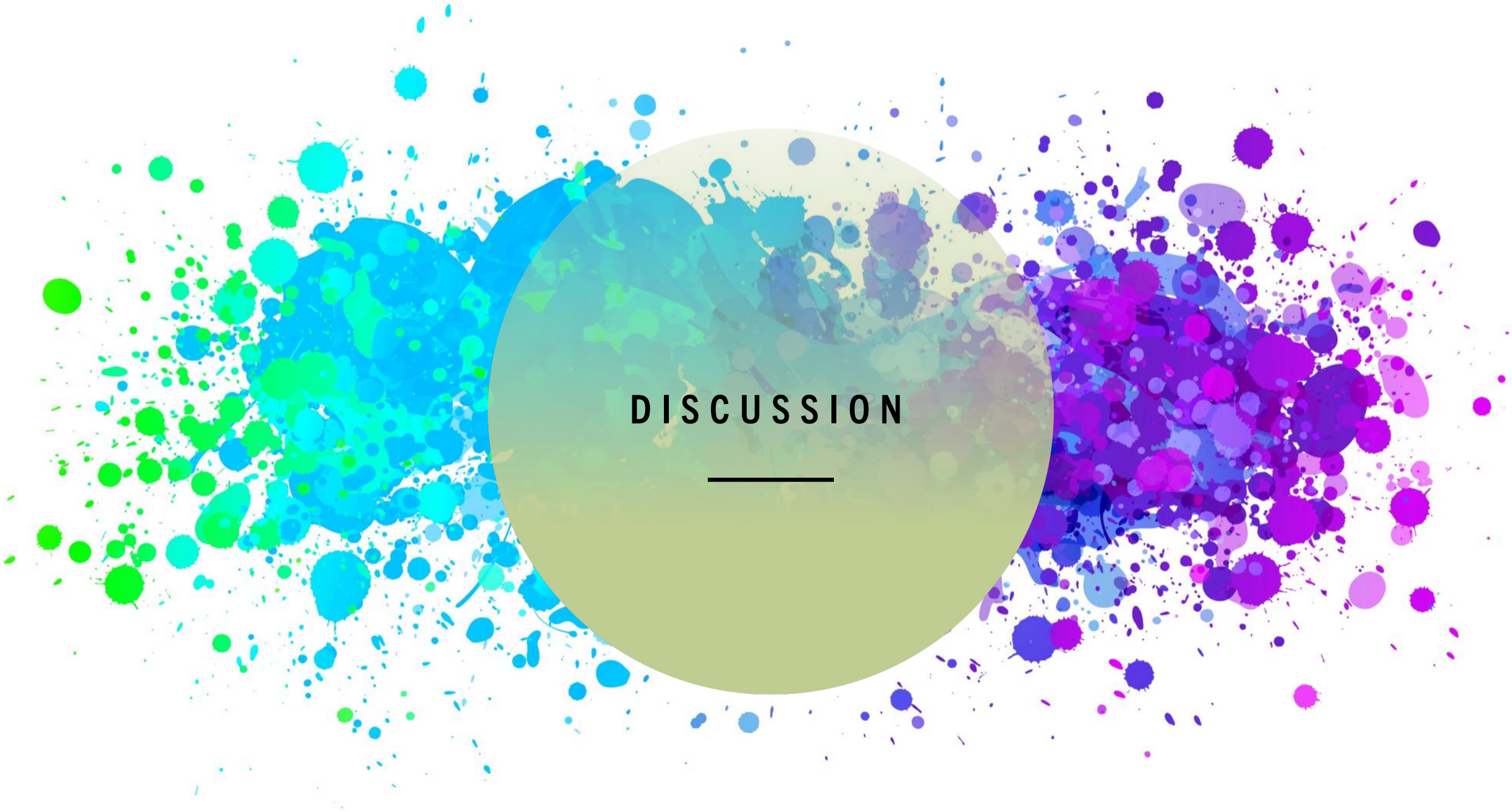
Stakeholders: "You need [faculty] who are willing to work on the bleeding edge. [You need] partners who can help with the technical stuff. . .and you need a dean who will support you too!"

THEME 3: IVR LEARNING INTEGRATION



T&L Affordances (Collaboration): "In [IVR] you can have a bunch of students watch and share their analysis, which ultimately generates diversity of thought."

Drawbacks (Cost): If headsets were furnished by the institution, I think it would be good because I don't know how many people can necessarily afford the Oculus."


DISCUSSION

IMPLICATIONS

- Planning for diversity and inclusion
- Leveraging excitement and curiosity
- Documenting workflow
- Identifying learning affordances and drawbacks
- Considering learning and instructional-design theories unique to IVR

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QUESTIONS & ANSWERS