

## **2024-25 HIVE Summer Internship Project**

### **Shaping Sustainable Behaviors: Exploring Intrinsic vs. Extrinsic Prompts in a Virtual Campus Setting**

14FBL\_MM\_SustainableBehaviours

#### **Primary Academic Supervisor**

Katharina Wolf

#### **Project Background**

Sustainability is a key focus in addressing global environmental challenges. This project aligns with the United Nations' Sustainable Development Goals (SDGs), specifically SDG 12: Sustainable Consumption and Production, which emphasises the need to reduce waste and encourages resource efficiency and sustainable practices. In campus environments, cafés and food outlets serve as everyday interaction points where decisions about sustainability, such as the choice between single-use and reusable items, are made. This project aims to explore how intrinsic (self-motivated) and extrinsic (externally influenced) prompts affect these decisions by replicating the Curtin University campus (café) environment using virtual reality (VR). The project design and objectives exemplify Curtin's 'commitment to sustainability in its learning, teaching and research' as it is focused on sustainability behaviour change in the campus environment, thereby seeking to shape attitudes and behaviours by staff, visitors and students, i.e. future leaders and decision makers. The primary objective of this project is to investigate the effectiveness of intrinsic prompts (such as personal values or internalised motivations) versus extrinsic prompts (such as visible cues or external messaging) on influencing sustainability behaviours, with a focus on reducing single-use coffee cups and water bottles at the point of sale. Associated objectives include:

- To create a virtual experience that replicates the real-life café /shopping experience at Curtin's Bentley campus.
- To assess the impact of different types of messaging at the point of sale in encouraging sustainable choices, thereby contributing to SDG 12: Sustainable Consumption and Production.
- To analyse how VR can be used as a tool to simulate real-world environments and predict actual behaviour in sustainability-related contexts (as opposed to relying on predicted/ self-reported behaviour).

### **Project Description, Expected Outputs, Possible Stretch Goals**

This project aims to create an immersive virtual reality experience that exposes participants to various scenarios, allowing for an exploration of how different intrinsic and extrinsic prompts affect sustainable decision-making. It builds on a long-term work-integrated learning project and a 2024 Faculty of Business and Law Collaborative Project Grant (“Real World Impact: The Effects of a Student-led Project on Changing Plastic Consumption Behaviours at Curtin”). This project encouraged Digital PR students to co-design strategies promoting sustainable consumption behaviours through a collaboration between Plastic Free Places (part of the Boomerang Alliance) and Curtin University. Rather than focusing solely on digital engagement, this immersive project takes those insights further by examining actual purchase and consumption behaviours based on behavioural prompts.

**Expected Outputs** The project will develop a VR simulation that replicates a typical campus café. This environment will include common elements such as service counters, beverage options, seating areas, point-of-sale promotions, and reusable vs. single-use container displays. The simulation will incorporate different intrinsic and extrinsic prompts to assess their impact on reducing single-use items. Intrinsic prompts include features like water refill stations and cup libraries, while extrinsic prompts involve posters promoting reusables, point-of-sale reminders and monetary incentives. The simulation will also explore behavioural norms by modelling actions displayed by other (virtual) customers, thus examining peer influence on sustainable decisions.

**Stretch Goals** While piloting the VR experience is a key output, a stretch goal includes collecting actual research data. Ethics approval is expected to be in place by the internship’s start, allowing the collection of data to extend beyond the project timeline, possibly supporting future Honours or HDR research that builds on the project’s outputs.

### **Links to background reading and any relevant recent work in the field**

<https://www.curtin.edu.au/about/values-vision-strategy/sustainability/>

<https://sdgs.un.org/goals>

<https://www.emerald.com/insight/content/doi/10.1108/ITSE-02-2022-0025/full/html> <https://www.mdpi.com/2079-9292/12/2/315>

### **What type of visualisation will the student develop or produce?**

Using HIVE technology & the Dome, the student will create an immersive experience exposing participants to various campus scenarios, encouraging sustainable behaviors. They will develop a CGI virtual environment in Unity, simulating real campus settings with intrinsic and extrinsic prompts and 'norming' behaviours. The project will track sustainable choices & analyse them qualitatively and quantitatively, incl. interviews to explore psychological and emotional factors influencing decision-making

### **How will the visualisation contribute to your research outcomes?**

Most sustainability research relies on predicted or self-reported behaviours. This visualization will offer real-time insights into actual decision-making at the point of sale in response to different prompts, providing context through qualitative interview data. Unlike assumed behaviours, it reveals real-time actions, influencing future sustainability campaigns and the development of immersive virtual reality experiences aimed at promoting sustainable behaviours.

### **If the project is successful, where would you consider publishing the results?**

If this project is successful, the results would be value able in different contexts. This includes

- a) Public relations literature (e.g. PR Review, SCMIMAGO Q1 or Strategic Communication Management) – detailing the experience of PR/ communication students and their contribution to sustainability thinking
- b) Sustainability journals (e.g. MDPI, open access; or Sustainability, SCIMAGO Q1) – sharing insights gained, including the value of intrinsic vs extrinsic value messaging
- c) L&T / scholarly literature, detailing the value of campus/ student based projects
- d) Computer science journals (e.g. Virtual Reality, SCIMAGO Q1), detailing the contribution of virtual reality and associated technologies to insights gained. Plus insights shared at the WA L&T Forum and similar local, national and international conferences.

## **Draft Project Timeline:**

### **Week 1**

Pre-project: ethics approval Project onboarding, familiarise with project, commence literature review, familiarisation with campus environment (different café/ retail options)

### **Week 2**

Literature review, deep familiarisation with on-campus café environment, familiarisation with equipment

### **Week 3**

Recruit talent/volunteers for filming, negotiate filming days/ times  
Continue/ finalise literature review, draft questionnaire and reflection questions Discuss any ethics application amendments with supervisors.

### **Week 4**

Commence filming/ creation of complete virtual environment (CGI) – iterative testing in HIVE Finalise questionnaire and reflection questions  
Action potential ethics amendments

### **Week 5**

Time amend/fine tune design of CGI environment Recruit pilot participants

### **Week 6**

Fine tune/ develop VR environment – multiple scenarios to be decided on with supervisors

### **Week 7**

Pilot testing of VR environment Iterative approach: adjustment to instruments and VR environment as needed

### **Week 8**

Further pilot testing of VR environment and instruments Stretch goal: actual data collection

### **Week 9**

Draft report and showcase presentation Write up findings – future recommendations; Stretch goal: actual data collection

**Week 10**

Complete project report and showcase

**Student Experience and Supervision:**

**How often will you meet with the student over the 10-week period?**

Weekly meetings with the supervisory team. Further meetings on demand.

Ongoing communication via email and social media (e.g. WhatsApp)

**Your work desk location and the location of student desk**

Building 402.216 and 218.

**Student Attributes:**

**Please indicate any preference for student's academic discipline or field of study**

Focus on attitude and commitment rather than discipline/ technical knowledge, passion for sustainability issues desirable. Previous experience with virtual environmental design advantageous.

**What competencies are required to start this project**

Beginner - 3D modelling software (e.g. Blender, 3ds Max)

Beginner - Unity 2D/3D Artistry (assets, lighting, cameras, materials implementation)

Beginner - Unity Programming (C# coding, animation syntax, debugging, problem-solving)

Beginner - Unity Virtual Reality Development (rendering pipelines, scene content design, interaction)

**Do you have any other student attributes you think are important to the project?**

Self-starter, independent worker, good communicator – able to reach out when and if needed.