***DOC\_174\_REV\_C\_ASSESMENT AND IV FRONT SHEET\_INDIVIDUAL***

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# ASSESSMENT AND INTERNAL VERIFICATION FRONT SHEET (Individual Criteria)

**(Note: This version is to be used for an assignment brief issued to students via Classter)**

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| **Course Title** | **B.Sc. (Hons.) Software Development, B.Sc. (Hons.)**  **Computer Systems & Networking, B.Sc. (Hons.) Multimedia**  **Software Development, Bachelor of Science (Honours) in Applied Data Sciences** | | | **Lecturer**  **Name &**  **Surname** | Elaine Vassallo | | |
| **Unit Number & Title** | | ITRSH-506-2101 – Research Design 1 | |  |  | | |
| **Assignment Number, Title / Type** | | 01, Research Project / Home | |  |  | | |
| **Date Set** | | 28/02/2025 | **Deadline Date** | 31/05/2025 |  | | |
| **Student**  **Name** | Jake Zammit | | **ID Number** | **130099M** |  | **Class / Group** | **CCD6.2A** |

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| **Assessment Criteria** | **Maximum Mark** |
| KU1.1 Present gathered research in relation to a theme that motivates research in an area/topic. | 5 |
| SE1.2 Formulate a research hypothesis, supported with research questions from which research methods will be derived. | 10 |
| AA1.3 Illustrate a research pipeline that will be followed to address own research hypothesis. | 7 |
| KU1.4 Clarify which research methods will be used to address the identified research questions and how these will be evaluated. | 5 |
| AA1.5 Apply every stage of the research pipeline to own research endeavou**r**. | 7 |
| KU2.1 Outline the current state of the art of own research topic (h/w, data, alg). | 5 |
| KU2.2 Describe different existing sources of data with key features and uses in different research. | 5 |
| AA2.3 Contrast own research findings with that of current state of the art. | 7 |
| KU3.1 Defend the proposed pipeline by citing own results and that of the current state of the art. | 5 |
| SE3.2 Evaluate the outcome of each identified research question. | 10 |
| AA3.3 Investigate the extent to which results confirm original hypothesis. | 7 |
| AA3.4 Investigate areas in which results suggest the original hypothesis needs modification. | 7 |
| KU4.1 Record the work in a report following a proper referencing style. | 5 |
| KU4.2 Arrange own work in a scientifically structured manner with proper internal referencing, sectioning and labelling. | 5 |
| SE4.3 Criticize own research to propose new hypothesis and research questions for future work. | 10 |

**Research Aim**

The study aims to explore the impact of gamification elements in a Virtual Reality (VR) learning environment, specifically in the context of geography and history education. The research will focus on how incorporating game-like mechanics—such as points, leaderboards, challenges, and rewards—affects learner engagement, motivation, and knowledge retention. By developing and testing a VR prototype enriched with gamification features, the study seeks to determine whether these elements enhance the effectiveness of VR-based learning. Additionally, the research will analyze how gamification supports key psychological needs (autonomy, competence, and relatedness) as outlined in Self-Determination Theory (SDT).

Ultimately, this study aims to provide a framework for integrating gamification into VR educational platforms and offer recommendations for educators and developers on best practices for improving learner engagement and performance.

**Research Hypothesis**

The study is based on the following hypothesis:

1. **Primary Hypothesis (H1):** The integration of gamification elements within a VR learning environment will significantly enhance student engagement and retention of educational content compared to a non-gamified VR setting.
2. **Null Hypothesis (H0):** The integration of gamification elements in a VR learning environment will have no significant effect on student engagement or knowledge retention compared to a non-gamified VR setting.

To test these hypotheses, a comparative study will be conducted between a gamified VR learning experience and a non-gamified VR experience, measuring engagement levels and retention rates through qualitative and quantitative methods.

**Research Questions**

1. **How do gamification elements impact learner engagement in VR environments?**
   * This question examines whether gamification features such as points, badges, and leaderboards increase student motivation, attention, and willingness to participate in learning activities within a VR environment.
2. **What are the effects of gamification on knowledge retention in VR-based learning?**
   * This question investigates whether gamification elements improve students' ability to remember and recall information over time compared to a standard VR learning experience.
3. **Which specific gamification elements are most effective in enhancing the learning experience in VR?**
   * This question aims to determine which gamification features (e.g., competition-based elements like leaderboards, reward-based elements like badges, or task-based challenges) contribute the most to improving learner engagement and retention.

**Inspirational Sources**

* **Hamari, J., Koivisto, J., & Sarsa, H. (2014).** *Does Gamification Work? — A Literature Review of Empirical Studies on Gamification* (47th Hawaii International Conference on System Sciences).
* **Sailer, M., & Homner, L. (2019).** *The Gamification of Learning: A Meta-Analysis* (Educational Psychology Review, Vol. 32).
* **Alsawaier, R. S. (2018).** *The Effect of Gamification on Motivation and Engagement* (International Journal of Information and Learning Technology).**2. Virtual Reality in Learning**
* **Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. J. (2014).** *Effectiveness of Virtual Reality-Based Instruction on Students’ Learning Outcomes in K-12 and Higher Education: A Meta-Analysis* (Computers & Education, Vol. 70).
* **Cao, Y., Ng, G.-W., & Ye, S.-S. (2023).** *Design and Evaluation for Immersive Virtual Reality Learning Environments: A Systematic Literature Review* (Sustainability, Vol. 15).**3. Combining Gamification and VR**
* **Wouters, P., & van Oostendorp, H. (2017).** *A Meta-Analysis of the Cognitive and Motivational Effects of Serious Games* (Journal of Educational Psychology).
* **Bartle, R. (1996).** *Hearts, Clubs, Diamonds, Spades: Players Who Suit MUDs.*