Empowering Learning Through Game Creation

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Problem Statement

Investigating the Impact of Educational Technology on Learners' Engagement and Attainment Level in Subject-Based Game Design.

General Research Approach

- This research implemented a systematic approach with a special focus on qualitative research.
- This research philosophy is grounded in the utilization of a systematic review methodology, as defined by Cochrane (2022), that seeks to systematically identify, appraise, and synthesize all relevant empirical evidence to address specific research questions. This approach aligns with the concept of Evidence-Based Practice (EBP) in education, as advocated by Hempenstall (2006), aiming to enhance the quality of educational research and bridge the gap between scientific research and educational practice. Schlosser (2006) emphasized that the systematic review serves as a valuable tool, providing practitioners with rigorous access to pre-filtered evidence pertinent to the investigated subject matter. This philosophy underscores the commitment to a comprehensive, evidence-driven approach in research, emphasizing on the synthesis and application of knowledge related to the field of study.

Research Project Overview

Games serve as a captivating medium through which learners can effectively acquire and retain information. An important consideration is given when learners learn from the process of developing their own games that are connected to the subject matter they are studying. Despite the widespread recognition of gamification-based learning as a popular approach among 21st century learners, there is a gap research related to the efficacy of involving learners in student-led learning through the creation of their own educational games.

In contemporary times, there has been an increase in educators' interest in employing innovative instructional approaches to enhance learners' engagement and active involvement, hence facilitating a deeper comprehension of the content. The latter aligns with the argument made by Fullan and Langworthy (2014) that deep learning plays a critical role in learning and assessment, serving not only as a means of ensuring responsibility, but also as a tool for identifying effective tactics to attain new educational goals. The integration of flipped learning and gamification is currently receiving considerable attention as a promising approach that has the capacity to revolutionize conventional pedagogical and/or andragogical methods. The concept of flipped learning involves a reversal of the traditional classroom model. In this approach, students are exposed to instructional materials outside of class, such as conducting interviews and gathering evidence relevant to the subject matter. The in-class time is then dedicated to interactive learning activities, such as analyzing and comparing the collected data for games creation integrated with the subject matter. In an alternative perspective, gamification involves the utilization of game design components and the user experience. The primary aim of gamification is to enhance student engagement.

Research Objective/s

- This study aims to investigate the efficacy of instructional strategies through the utilization of an innovative blend of flipped learning and gamification techniques.
- To support learners in the process of generating their own game concepts based on structured curricular concepts.
- Develop an instructional design model that incorporates a robust framework by integrating researched methodologies, narrative building, principles of design, and elements of game design.

Research Methodology

This systematic review conducted a rigorous approach selected from high to medium quality articles pertaining to the efficacy of Flipped Gamification in promoting student engagement through active participation. The research yielded 17 from 21 unique articles appraised by the Critical Appraisal Skills Programme (CASP). The criteria for selection were predetermined prior to the commencement of the systematic search in order to determine the inclusion or exclusion of relevant evidence. The latter intervention contributed to the mitigation of potential bias and the enhancement of the overall reliability of the findings (Liberati, et al., 2009). Given that Information Computer Technology (ICT) is considered a cutting-edge subject, the criteria for selecting high and medium quality research in this field necessitated the inclusion of recent articles published between 2017 and 2023, focused on international perspectives, employed the English language, and within the context of Vocational Education & Training (VET) or Higher Education (HE). Furthermore, the research explored the concept of Flipped Gamification, by incorporating essential strategic models, devices, and platforms, by considering learners' interests, and addressing the aspects of engagement, motivation, and active participation.

The study questions had an impact on the selection criteria, thereby playing a crucial role in shaping the search approach (Gough, 2020). As a result, the selection criteria served as guidelines to identify key terms and additionally eliminated the need for extensive research to locate investigations that directly addressed the review topic (Gough, 2020).
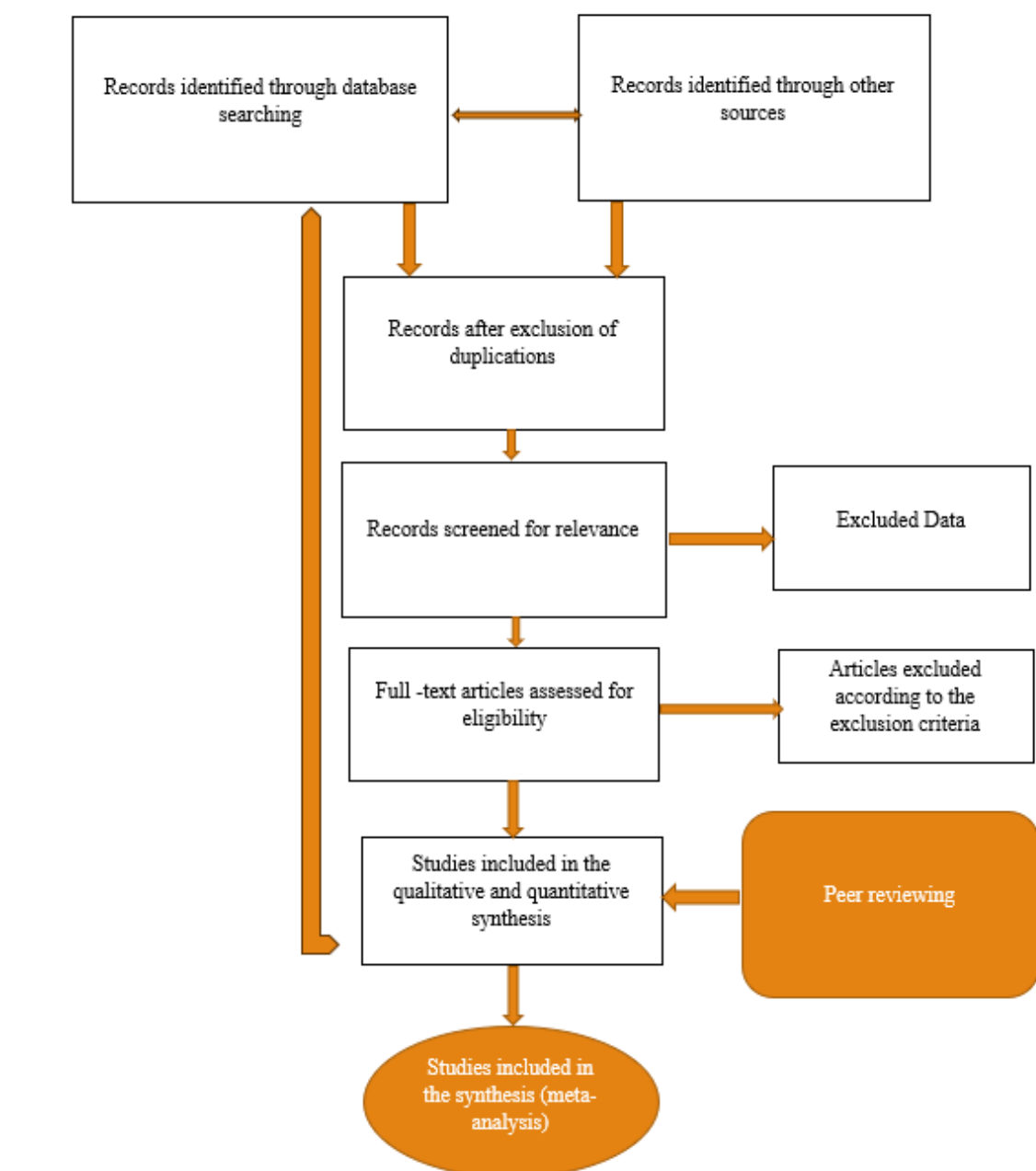
Research Propositions or Key Findings

Key Propositions/Findings

- Potential impact of educational game design on learners' creative thinking abilities
- Enhancing cognitive processes.
- Improve student engagement, educational attainment, and the flexibility of learning.

Key Figures & Visuals

Diagram 1: PRISMA-P adapted from (PRISMA, 2021)

Topic and cluster	Search Terms
Flipped Gamification	**"Flipped Gamification**+ definition" OR **"Use of Games"** OR "Creative + **Learning"** OR "Autonomy Support" OR **"Games + creation+ learners"** OR **"students + creating+ games"** OR "Gamification Technology+ Learning" "2022" OR "**engagement"** OR **"Fostering Creativity"** OR **"Gamification"**
Enhancement in Student-Led Learning	**"educational+ technology+ gamification"** OR **"creativity"** OR **"Strategic + Model"** OR "motivation + engagement" **"Active Learning"** OR **"problem-solving"** OR **"critical + thinking"** OR "**empowerment"** OR "collaboration" OR **"Team building."**
Engagement & Motivation for learning	**"Planning+ Models"** **"Flipped+ Gamification"** OR "Structure" OR "virtual+ classroom" OR "Learning Management System (LMS)" OR "Platform" OR "Learning management system and UDL" OR **"Use of google suite for learning" OR** "Learning **Management Platforms"** OR "Access" OR "simulation" OR "personalized+ learning+ environment" OR "Board+ games" OR "Game **Design"** OR **"Gamification+ embedded+ curriculum"**
Life-Long Learning	**"Engagement + motivation + intrinsic+ motivation"** OR "self-directed" OR "Learners'+ interests" OR **"Instructional+ Paradigm+ Shift"**

Flipped Gamification Search String Adapted from the "ActiveLeaRn Project" (Bedenlier, Zawachi-Ritcher, Kerras, Bond, & Buntins, 2020, p. 115)

Key References

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