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Augmenting the Learning Experience: The ALEX Framework from Affordances to Implementation

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Abstract. This practice-based, inclusive design and creative technology innovation research entitled "Augmenting the Learning Experience: The A L E X Implementation Framework for Higher Business Education: From Affordances to Implementation" investigates and measures the effectiveness and impact of novel, innovative, immersive augmented reality (AR) enhanced curriculum design on higher education business students' learning experience. This research utilised a mixed-method research approach, sampling, testing, and measuring data from research participants enrolled in selected undergraduate business modules at a leading university in Ireland. Research findings provide sufficient empirical evidence, deeming this project's proposed novel learning approach utilising AR-enhanced learning experiences as educationally significant. Hence, it can be regarded as an optimum tool to enrich learning experiences in higher business education.

Keywords: Augmented, Learning, Engagement, Motivation, TPACK.

1 Introduction

This practice-based, inclusive design and creative technology innovation research entitled "Augmenting the Learning Experience: The A L E X Implementation Framework for Higher Business Education: From Affordances to Implementation" investigates and measures the effectiveness and impact of novel, innovative, immersive augmented reality (AR) enhanced curriculum design on higher education business students' learning experience. The term "learning experience" incorporates three core components: motivation, engagement, and knowledge acquisition and retention. This thesis narrates previous research conducted in the knowledge area of immersive learning with a particular focus on Augmented Reality (AR) in education settings in the context of two underlying theories deemed most relevant for this research, namely 1) Mayer's science of instruction and multimedia learning [1, 2] and 2) Koehler and Mishra's [3] Technological, Pedagogical, and Technology Knowledge (TPACK) framework.

To address and find answers, this research utilised a mixed method research approach sampling, testing, and measuring data from research participants enrolled in selected undergraduate business modules at this project's research site, namely University College Dublin's (UCD) College of Business (CoB). The author utilised McAuley et al. [4] Intrinsic Motivation Inventory (IMI) classifications to measure student motivation. In contrast, the University Student Engagement Inventory (USEI) and National Survey of Student Engagement (NSSE) principles [5] are utilised to investigate and demonstrate the impact of AR-enhanced learning on student engagement. The learners' knowledge acquisition and retention levels were examined by taking respective control group and test group academic performance metrics (learning content assessment components, such as individual essay submissions, group work activities and tasks, and online examinations) into account.

Research findings provide sufficient empirical evidence, deeming this research's proposed novel learning approach utilising AR-enhanced learning experiences as educationally significant. Hence, it can be regarded as an optimum tool to enrich learning experiences in higher business education. The author proposes an Augmented Learning Experience (ALEX) implementation framework (see Fig 1), offering the Higher Education sector's stakeholders a unique opportunity to successfully include Augmented Reality Learning Objects (ARLOs) into their curriculum. Hence, successful ALEX implementation allows students to engage meaningfully with curriculum material, resulting in higher motivation, engagement with learning content, and knowledge acquisition.

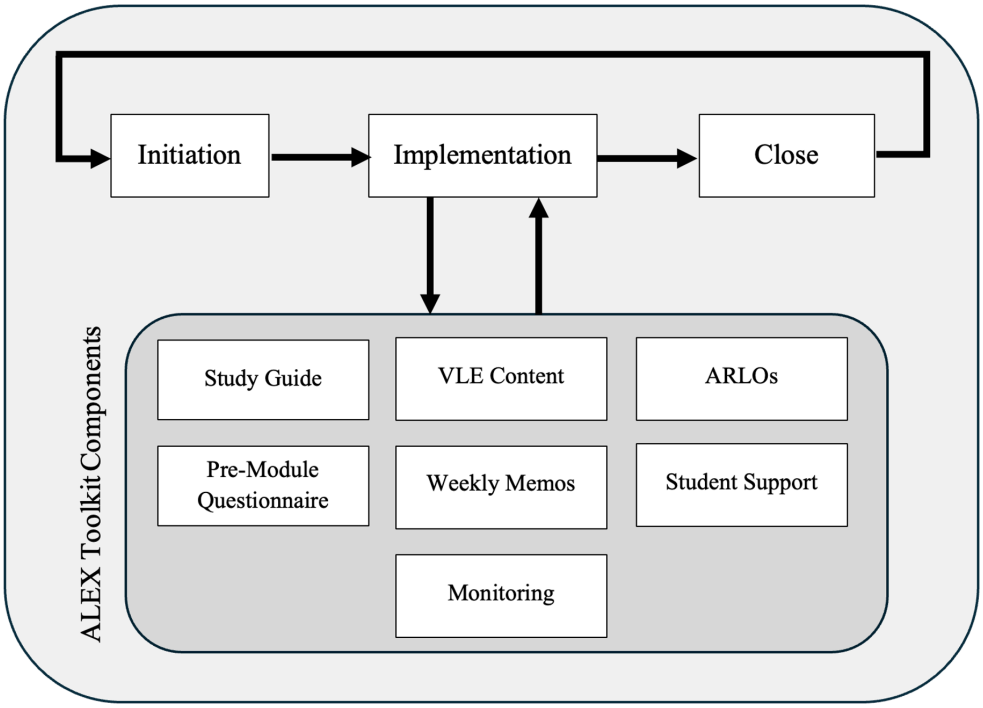

Fig. 1. The ALEX Implementation Framework.

Consequently, this research makes an original and substantial contribution to knowledge in learning and education by introducing an empirically proven, educationally significant, best practice AR Learning Experience (ALEX) implementation framework and associated toolkit for higher business education.

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