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Findings

In the digital age, where individuals desire to dedicate a significant portion of their time to digital devices, the functionality of these portable devices heavily relies on small handy software applications, commonly referred to as apps. Some digital devices (smartphones) by default come with pre-installed apps, while others require manual installation of these apps to function. The scenario is that an app exists for almost everything in the app stores. Education is not an exception, as there are apps specifically designed for educational purposes, which we refer to as Learning Apps, or LAs. The digital era has completely transformed the learning process.

Now, instructors are no longer the primary source of knowledge and learning. Digital learners are now availing and accessing the required learning material via LAs, a process referred to as self-directed learning. Thus, in the current era, LAs play a crucial role due to their ability to provide immediate accessibility, flexibility, and customizability in the form of learning opportunities. That's why LAs have become increasingly popular. Almost everyone uses these apps to learn from an appropriate level perspective. Their dynamic learning content serves to increase engagement, accommodating various learning styles and encouraging self-paced learning. Furthermore, the versatility and scalability of these technologies render them (app users) indispensable in both formal and informal educational environments. Undoubtedly, such apps provide digital users with a variety of essential benefits and other beneficial outcomes.

However, at present, developing a LA does not require any pedagogical knowledge, understanding of mobile learning theories, development regulations, or other related app design protocols (Lim & Toh, 2022). As a result, individuals have begun to design their own apps, leading to a surge in the market for app development. Researchers hold the belief that the development of such apps cannot occur at a controlled pace. Over time, the field of developing LAs has rapidly expanded, leading to the introduction of a huge number of low-quality apps into the market. Experts assert that these apps frequently fail to fulfil their consumers with the intended purpose.

As developers continue to develop, the business expands, leading to an unprecedented surge in the continuous production of these apps. Furthermore, there are no formal constraints, allowing anyone to develop an app and publish it in the educational app section of app stores. Such rapidly and immaturely developed apps have been ineffective educational tools. Consequently, a re-examination regarding their design and evaluation methods has been inevitable and emerging now. Observing these significant research gaps as a foundation, it is necessary to define a research problem concerning 'Modeling and Evaluation' of such Learning Apps.

The research shows that there aren't enough sound, well-defined, and workable framework (architecture) existing right now in the market that can easily oversee the improvement of currently underdeveloped apps and provide a way to assess the learning quality of current apps. In light of these realizations and the discoveries of the research, this thesis presents the findings of a systematic literature review on the 'modeling and evaluation of Learning Apps'. It lays the groundwork for the development of a viable architecture for LAs having strong theoretical basis, as well as the proposed architecture and the necessary validations of its effectiveness.