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Utilising mobile game based learning methods effectively to support education

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Abstract

This paper is a response concerning the implications of scholarship of the article entitled "*A critical review of 13 years of mobile game-based learning*" by Giannakas et al. (in Educ Technol Res Dev 66:341–384, 2018). This response focuses on the key ideas presented in Giannakas et al. (2018) from a practical perspective, highlighting how practitioners, scholars and designers can use their findings to effectively utilise mobile Game Based Learning (mBGL) approaches to support and enhance learning. This response paper is discussing the value, impact and practical implications of Giannakas, et al. (2018) and possible future directions relevant to the use of smartphone enabled virtual reality to support mGBL.

Keywords Mobile game based learning · mGBL · Technology enhanced learning · Online education · Games based learning

Giannakas et al. (2018) offers a comprehensive review of the literature on the research field of mobile Game Based Learning (mGBL) approaches to support education, for the period between 2004 and 2016. The key ideas and contributions of this paper are significant at multiple levels. The review focusses on mGBL during a period in which the advancements in hardware, software, and networking technologies were radical and have introduced and made mobile ubiquitous devices an integral part of our everyday life. In Giannakas et al. (2018), the readers can find answers to a series of important questions that can help understanding:

(i) main learning strategies and educational activities guiding students in mGBL environments,
(ii) personalised functionalities used to improve student learning experiences,
(iii) considerations around security and privacy pertaining mGBL,

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(iv)   pedagogical aspects including learning theories and the philosophy informing the design of mGBL, educational benefits, and mGBL evaluation methodologies,

(v)   mobile characteristics engaged in this approach,

(vi)   main development and implementation trends,

(vii)   the extent to which the affordances of mGBL are utilising context-aware characteristics.

Giannakas et al. (2018) consider a range of key studies published during the review period, present their findings in consistent ways and discuss them from multiple perspectives, enabling the reader to develop a sound understanding of the topic of mGBL. Given the current shift to digital technology to support education, the practical implications of this paper provide important insights on how scholars, practitioners and designers can benefit from considering this review and its arguments when researching, designing or employing mGBL approaches to support education. Especially with the disruptions in learning caused by the Covid-19 pandemic and the sudden transition to remote education, the use of technology assisted learning methods can have a significant impact when utilised appropriately (Ferdig et al. 2020) and mGBL is one of the methods that can be used to support and enhance education.

While mGBL has been identified to benefit education, it has not yet been utilised extensively (Van Roy and Zaman 2018; Papadakis et al. 2018). The community of mGBL practitioners, designers and researchers can immediately benefit from reading Giannakas et al. (2018) as it provides a comprehensive review of the state of the art, and it is a repository of key bibliographical resources. It can help understanding the field of mGBL, the current and future challenges, and develop a holistic understanding of the important elements that need to be considered when designing mGBL applications and associated learning strategies.

Giannakas et al. (2018) provide an in depth study of recent trends in mGBL applications, and consider important aspects such as number of learners, types of services, technology utilised, learning theory/ies implementation, and the extent to which each specific application supports collaboration during learning activities. Detailed evaluation of the educational and pedagogical benefit(s) of some existing mGBL apps according to their target group and evaluation method is also provided. A list of these apps is outlined, and examples are grouped in chronological order, by field, type of publication, game type, and mobile platform. Practitioners can review this list when looking for tools to support and enhance their educational practices. They can also use the findings of this paper to understand important issues pertaining mGBL and learn ways to utilize the technological affordances of mGBL to develop innovative and efficient learning environments. Moreover, from the holistic review provided by Giannakas et al. (2018), practitioners can also find examples to effectively support the development of social dimensions in learning and how mini games can be used to engage learners.

The findings of Giannakas et al. (2018) can inform the design and development of context-aware mGBL environments and educational activities, and provide a summary of some of the challenging issues designers are experiencing and have to address when designing such environments. These issues can also inform practitioners about several difficulties hindering the immediate implementation of mGBL. Furthermore, some papers from the literature, such as the work of Zaibon and Shiratuddin (2010) which is providing information on using learning theories and approaches to develop mGBL, and the systematic mGBL review in STEM education from 2010 to 2019 by Gao et al. (2020), can also be used in conjunction with Giannakas et al. (2018) to obtain additional insights on the development and utilisation of mGBL in education.

Envisaging future research and practice, the review of Giannakas et al. (2018) can help exploiting the use of emerging technologies to develop innovative applications that can support and enhance the current and future field of mGBL An emerging learning technology which can be discussed in the context of Giannakas' et al. (2018) findings is the implementation of smartphone enabled Virtual Reality (VR) to support learning. While in previous years VR was an expensive technology hindered by technological challenges, it is now a mature and customer ready technology (Fradika and Surjono 2018) which can be adapted to smartphones and experienced through affordable head-mounted displays. Especially the recent reduction on costs of smartphone technologies and head mounted displays allows a wider implementation of VR in educational settings and provide opportunities for immersive learning (Long and Eutsler 2020), and therefore this suggestion could expand the findings of Giannakas et al. (2018).

In conclusion, the findings, suggestions and consideration proposed in Giannakas et al. (2018) can be further reviewed to include information and updates on the latest technologies and educational methods introduced since its publication date.

Compliance with ethical standards

Conflict of interest The author of this review indicates that there is no conflict of interest.

Research involving human participants and/or animals N/A.

Informed consent N/A.

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