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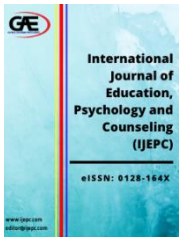

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DISRUPTIVE INNOVATION IN TEACHING AND LEARNING: THE POST COVID-19 ERA IN CHINA

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Abstract:

The far-reaching effects of the Covid-19 pandemic extend a multitude of concerns globally, including its impact on higher education. Many institutions have now turned to technology to adapt to the continually changing environment and have moved their classes online. However, technology adaptation brings a new set of challenges for higher education. Thus, this on-going research contributes to the understanding of gamification as a practical approach for stimulating students' online engagement and participation in higher education. It specifically explores students' experiences in the context of China. Online questionnaire was distributed to 200 undergraduate students in 2019 to gather preliminary information regarding students' perception of the gamification of learning system. It was found that undergraduate students have somewhat positive perception of the application of game elements to the teaching models of their universities. Thus, we suggest that it is time for higher education to engage in radical technological change to be adaptable in the changing environment.

Keywords:

Gamification, Higher Education, Engagement, Participation

Introduction

Continuous innovation in higher education is unquestionably enabled by the high influx of diversified students aiming to acquire unique educational experiences (Ying, 2016; Kurshan, 2016). However, the global COVID-19 pandemic has arguably triggered a new era of learning revolution, which has proved to be transformative for most educational institutions. According to Christensen et al. (2008), the idea of disruptive innovation could be a powerful way of thinking about innovation-driven teaching in higher education. Disruptive innovation in

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education is about redefining quality in a much more complex world of knowledge than that from which most current educational models were designed. In other words, it is changing the status quo to adapt to the changing institutional environment (Christensen et al., 2008). With Covid-19, we are seeing how yesterday's disruptors have become today's lifeguards. To survive in the post-COVID-19 era, higher education institutions must also see themselves as disruptors by showcasing their innovativeness and technological adaptability.

While each education institution faces unique challenges during this time, higher education is facing rather distinctive challenges, mostly because the students are mature enough to handle the rigours of online work and are technologically savvy to navigate the plethora of platforms used. Despite the efforts to contribute positively to students learning experience, technological innovation such as smartphones has made it increasingly challenging to capture students' attention in the classroom. In China, for example, each day young people check their phones over 100 times and spend up to 10 hours on social media, gaming, and texting (Ying, 2016). Research conducted by Emarketer (2014) suggests that mobile phone subscription in China will have increased to 1.4 billion by the end of 2018 with 91 per cent of the subscribers between the ages of 18 to 24 years of age. This increase in mobile subscription could spell doom for educators in higher education in China as most of the young people within the age bracket are either in universities or colleges. The real challenge for higher education lies with the ability for traditional campus-based institutions to adopt the right technological approach for educating and engaging their students (Kandri, 2020). By posing the question - *Can gamification be a useful tool in stimulating students' engagement in the online learning environment* - this research aims to contribute to existing research focused on fully understanding the applicability of gamification to online learning in higher education in the context of China.

Literature Review

Gamification is the use of game mechanics, such as video games, points, leaderboards and badges in a non-gaming context (Deterding et al., 2011). In the educational environment, it could be applied as a mechanism to bridge the generation gap between students and teachers (González & Area, 2013) or to take elements of the games and use them to better engage the learner and allow for elements of customisable learning (Davis et al, 2018). Gamification can be considered to have various positive effects on individuals. It provides challenges and reward for users, as well as, motivates, enhances the understanding, interest, boosts engagement and satisfies fundamental human desires (Faiella & Ricciardi, 2015; Muntean, 2011; Cheong et al., 2014). For example, Lee and Hammer (2011) found that games offer the possibility of 'reframing failure as a necessary part of learning" since error becomes an opportunity to try, to practice and to improve. Thus, allowing the player to learn something new based on repeated failures. However, they also found that the effects of gamification were dependent on the user using it. The use of gamification can strengthen students ability to communicate and co-operate with each other in ways that are academically enticing (Rodrigues da Silva et al, 2019) however at times it's use can bring out competitiveness and rivalry in students which while it can provide motivation can also produce a negative effect (Rodrigues da Silva et al, 2019). Additionally gamification stimulates the ability to comprehend digital content and enhances problem-solving skills (Deterding et al., 2011).

The primary goal of gamification is to stimulate engagement and participation of users by using techniques such as scorecards and immediate feedback to motivate, enhance understanding,

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boost interest and increase engagement (Faiella & Ricciardi, 2015; Muntean, 2011). The aforementioned implies that applying game elements in the online classroom could have a significant positive impact on students who are already technologically savvy (Yang, 2016). More so, it suggests that applying game elements in the classroom could have a significant positive impact on Chinese students who are already technology savvy, as suggested by Yang (2016). However, to effectively apply the concept in a higher institution context, Christensen et al., (2008) emphasises the consideration of student centricity and customisation of learning to fit the context. Overall, understanding the context and customising the game elements to fit the environmental context could be essential in defining how technology implementation in higher education.

Although the review of existing research reveals the potential of gamification to improve students engagement, learning outcomes and achievement (Davis et al, 2019), there is limited research exploring how to use gaming elements in the educational process. The overall argument on gamification seems to be around two main core areas - the context and the ability of gamification to meet students needs. Furthermore, methodological evidence is limited. According to Faiella and Ricciardi (2015), existing research suffers from small sample sizes. They suggest that existing research lacks well-validated psychometric measurements and clarity and that the quality of research needs to be improved. Deterding et al. (2011) suggest that research exploring the potential risk of students overindulging in the game elements itself rather than the educational content and the impact of gamification on the overall student learning experiences in higher education is not fully established (Faiella & Ricciardi, 2015; Muntean, 2011).

Future research could explore the consequences and effective ways to minimise overindulgence. Nevertheless, Cheong et al. (2014) suggested that gamification could be a powerful tool to boost students' extrinsic and intrinsic motivation when the mechanics are effectively combined. Davis et al (2019) further suggest that the games can align with the different views of learners such as Cognitivist, Sociocultural or behaviourist. Their research further views gamification to be an effective way to engage university level students regardless of any prior gaming experience. Based on the literature review, this research adopts a 3-step framework that is consistent with Christensen and colleagues (2008) proposition. The framework suggests that the effective application of the idea of gamification in higher education involves three significant steps: having an understanding of the target audience and context, evaluation of the existing learning materials and customisation of learning to fit the context.

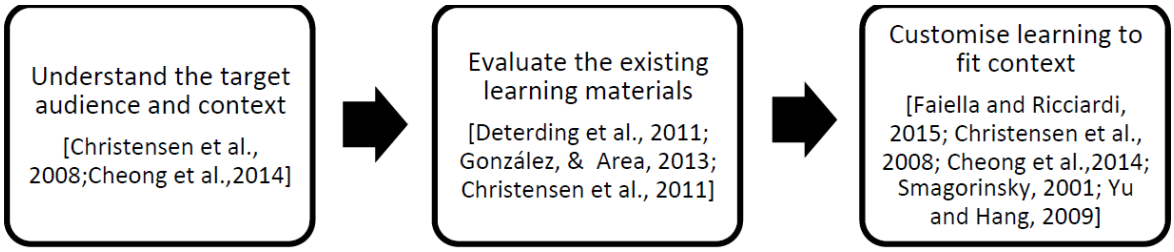

Figure 1: Applying Gamification in Higher Education

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Understand The Target Audience and Context

A key feature of disruptive innovations is the environmental context within which they take place (Christensen et al., 2008). In other words, the community confronted by technology is the centrepiece to the success of disruptive innovations. To utilise the full potential of technology-enhanced learning, higher Education institutions need to assess the context - what technology can do, students and academicians' perception of technologies and then matching these practices to the development of the course content, assessment and delivery. So understanding the context is more critical for the successful implementation of technology, and if ineffectively implemented, would have a less significant impact.

Evaluate The Existing Learning Materials

Evaluating the existing learning materials requires a fundamental rethink of the role of technology in learning and teaching. However, Christensen et al. (2011:83) argue that "traditional instructional practices have changed little despite the introduction of computer and other modern technologies. Therefore, instead of adding technology to existing pedagogic models to sustain existing practices, higher education institutions need to disrupt and displace existing teaching practices.

Customise Learning Materials to Fit the Context

Customisation of learning materials to fit the context implies using different technologies both structured digital contents and gamification materials to provide students with a flexible and varied learning experience to formal teaching practices (González, & Area, 2013). However, Yu and Hang (2009) argue that structural features of organisations can mitigate disruption; therefore, a structure business model is a requirement for effective implementation. Consequently, disruption of educational materials by customising them to fit the context is possible but not without structure (Smagorinsky, 2001).

Research Methodology

The section describes the research design, the online survey we employed and the participants' demographics. The research design is in four phases. The first phase is to collect preliminary data regarding students' perception and applicability of game elements in the learning materials. The data retrieved at this stage will give a clearer understanding of the target audience and the context suggested by Christensen et al. (2008). In 2019, we developed the initial questionnaire (Likert Scale - see figure 2 to figure 6) based on the review of existing literature on gamification and disruptive innovation in teaching and learning. We built the questionnaire to gather some general information regarding students' perception of gamification and its applicability to course content. The questions were multiple-choice questions, and participants were to select the best answer. The questionnaire was sent to 200 undergraduate students; so far, 80 responses have been obtained. Undergraduate students were targeted because we believe that they are more likely to play games and have a better understanding of game concepts than postgraduate students. All 80 responses were usable.

Although the sample is small, it captures the demography that we are interested in, which are undergraduate students aged between 18 – 24 years old. Moreover, similar studies e.g. Cheong et al. (2014) have successfully observed smaller sample size, which provides justification for the sample size of our preliminary survey. The demographic details of the participants are presented in Table 1. Using the information and responses received, we refined and modified the questionnaire. The second stage will entail the evaluation of the current teaching materials

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from a variety of higher education institutions, with a preference for these in different geographical locations. Currently, we have access to two universities in China; getting access to other universities could be problematic and therefore, a potential limitation of the study. The final stage will entail the customisation and collaboration with other departments (e.g. IT, engineering) for the implementation of games elements to online teaching materials.

Table 1: Participants Demographics

Characteristics	Count	%
Gender		
Male	37	46.25%
Female	43	53.75%
Age group		
18 - 21	38	47.5%
22 - 25	38	47.5%
26 - above	4	5%
Major		
Management	28	35%
Medicine	21	26.25%
Engineering	9	11.25%
Law	4	5%
Others	18	22.5%
Total	80	

选项	小计	比例
A. Boring 无聊的	9	11.25%
B. Complicated 复杂的	17	21.25%
C. Engaging 引人入胜的	12	15%
D. Requires innovation 需要创新	37	46.25%
E. I don't care 不在意无所谓	5	6.25%
本题有效填写人次	80	

Figure 2: The Current Teaching and Learning Model of My College/University Is?
我的学院/大学目前的教学模式是？

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选项	小计	比例
A. Irrelevant 无关紧要的	3	3.75%
B. Relevant 有关	37	46.25%
C. Very relevant 非常相关的	24	30%
D. Extremely relevant 极其相关	12	15%
E. I don't care 不在意	4	5%
本题有效填写人次	80	

Figure 3: How Relevant Is Technology in The Higher Education Teaching and Learning Model Nowadays?
技术与当今高等教育教学模式的相关性如何**?**

选项	小计	比例
A. Don't even bother 白费力气	2	2.5%
B. Stupid idea 愚蠢的想法	10	12.5%
C. Maybe 可能会	51	63.75%
D. Very necessary 十分必要	12	15%
E. I don't care 不在意无所谓	5	6.25%
本题有效填写人次	80	

Figure 4: Do You Think Incorporating Elements of Games in The Higher Education Teaching and Learning Model Will Encourage Students' Engagement and Participation?
你认为在高等教育教学模式中加入游戏元素会鼓励学生参与吗?

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选项	小计	比例
A. Card games 纸牌游戏	25	31.25%
B. Quiz games 问答游戏	32	40%
C. Board games 棋盘游戏	21	26.25%
D. Video games 电子游戏	35	43.75%
E. I don't care 不在意	22	27.5%
本题有效填写人次	80	

Figure 5: Which Game Material Is Likely to Make You More Participate in The Classroom?
哪些游戏元素可能会让你在课堂上更加投入?

选项	小计	比例
A. 导 Games in tutorials 结合导师辅	10	12.5%
B. Games in lectures 结合导师讲授	19	23.75%
C. Games in both tutorials and lectures 结合导师辅导与导师讲授	36	45%
D. Games as homework 结合课后作业	10	12.5%
E. Games as part of module assessment 作为期末模块评估的一部分	5	6.25%
本题有效填写人次	80	

Figure 6: What Are the Features of Your Ideal Gamified Learning Experience?
您理想的游戏化学习体验有哪些特点?

Conclusion

The initial questionnaire responses were analysed along the line of students' perception and the usefulness of gamification in learning. The preliminary analysis suggests that it is indeed time for higher education to break the rules, go beyond traditional teaching and engage in radical technological change to be adaptable in the changing environment. The data showed that 46% of the respondents agree that technology is relevant and that the teaching and learning model of their university requires innovation. Additionally, over 40% of the respondents showed a

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preference for game elements to be incorporated into both lecture and tutorial materials. However, over 60% of the respondents appeared to be unsure of the applicability of game elements in course contents. The response could be as a result of their inability to separate playing computer games and studying or it could be as a result of cultural learning norms since the preliminary research took place in one country. Nevertheless, over 40% seems to suggest that having video game elements would increase their participation in the classroom.

In conclusion, the overall take away is that gamification does not imply creating a game per se. It means making educational materials more varied and engaging without undermining its quality and credibility. Our main recommendation is that gamification could be implemented across all aspects of teaching, for example, the delivery, course content, assessment and also the way feedback is provided. We argue that in the 21st century, especially the post Covid-19 era, the use of both structured digital contents and game elements is useful to motivate students' engagement and participation, in comparison to the traditional teaching process. The main limitation of this study is that the number of responses that formed the usable dataset is somewhat low. A higher number of responses could have provided an excellent view of the initial perception of game elements amongst a broader range of students. However, as mentioned in the methodology section, the sample was still a representative of the population of undergraduate students that we were targeting. Nevertheless, the research is still a work in progress as data collection is still in process. It is felt that the study will benefit further from a wider pool of respondents from within China especially taking into account a wider range of socio-economic backgrounds.

References

Cheong, C., Filippou, J., & Cheong, F. (2014). Towards the Gamification of Learning: Investigating Student Perceptions of game Elements. *Journal of Information Systems Education, 25*(3).

Christensen, C., Horn, M. & Johnson, C. (2011). *Disrupting Class: How disruptive innovation will change the way the world learns*. New York: *McGraw Hill*

Christensen, C., Horn, M. & Johnson, C. (2008). *Disrupting Class: How disruptive innovation will change the way the world learns*. New York: *McGraw Hill*

Davis, K., Sridharan, H., Koepke, L., Singh, S & Boiko, R. (2018) Learning and Engagement in a Gamified Course: Investigating the effects of student characteristics. *Journal of Computer Assisted Learning.* 34(5).

Deterding, S., Sicart, M., Nacke, L., O'Hara, K., & Dixon, D. (2011). Gamification: Using Game-Design Elements in Non-Gaming Contexts. *The Annual Conference Extended Abstracts on Human Factors in Computing Systems*.

Emarketer (2014). *Majority of China's Mobile Phone Users will Use Smartphones Next Year*. Retrieved from https://www.emarketer.com/Article/Majority-of-Chinas-Mobile-Phone-Users-Will-Use-Smartphones-NextYear/1011749 (Accessed 9th January 2018).

Faiella, F. & Ricciardi, M. (2015). Gamification and learning: a Review of issues and research. *Journal of ELearning and Knowledge Society*, 11(3).

González, C. & Area, M. (2013). Breaking the Rules: Gamification of Learning and Educational Materials, *In Proceedings of the 2nd International Workshop Interaction Design in Educational Environments*, pp. 47 -53.

Kandri, S-E. (2020). *How Covid-19 is Driving a Long-overdue Revolution in Education*. World Economic Forum. Retrieved from https://www.weforum.org/agenda/2020/05/how-covid-19-is-sparking-a-revolution-inhigher-education/ (Accessed 9th July 2020).

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IJEPC
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Kurshan, B. (2016). *The Intersection of Learning and Fun: Gamification in Education*. Forbes. Retrieved from https://www.forbes.com/sites/barbarakurshan/2016/02/11/the-intersection-of-learning-and-fun-gamification-ineducation/#9658f859c19d (Accessed January 7th 2018).

Lee J., & Hammer J. (2011) Gamification in Education: What, How, Why Bother? *Academic Exchange Quarterly*, 15(2). http://www.gamifyingeducation.org/files/Lee-Hammer-AEQ-2011.

Muntean, C. (2011). Raising Engagement in E-learning through Gamification. *The 6th International Conference on Virtual Learning ICVL*, pp. 323-329.

Rodrigues da Silva, R., Rodrigues, R, & Leal, C. (2019) Gamification in Management Education: A systematic literature review. *Brazilian Administration Review.* 16(2)

Smagorinsky, P. (2001). If meaning is constructed, what is it made from? Towards a cultural theory of reading author(s). *Review of Educational Research, 71*(1), 133- 169.

Ying, W. (2016). *Communication Barriers*. CCTV news desk. Retrieved from http://tv.cntv.cn/video/C19133/719f0035e2a6415e8a537d0d2c63a5ca (Accessed January 9th 2018)

Yu, D. & Hang, C.C. (2009). A reflective review of Disruptive Innovation Theory. *International Journal of Management Reviews*, doi:10.1111/j.1468-2370.2009.00272.x