The Barriers of Using Video Games as a Media for Teaching and Learning Purposes: A Case Study in Indonesia

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Abstract

The 21st century has seen the remarkable growth of the video game industry, which has surpassed other entertainment sectors in terms of financial value. The COVID-19 pandemic further emphasized the importance of video games as a means of socialization and entertainment. However, despite their potential in education, the adoption of video games as a learning media faces numerous barriers. This study explores these barriers, particularly in the context of Indonesia, a country with a burgeoning video game culture. The research uses a mixed-methods approach, including qualitative interviews and quantitative surveys with stakeholders such as parents, teachers, students, and government officials. The findings reveal several key barriers to adopting video games in formal education in Indonesia. There is an inherent mistrust of video games among Indonesians, which makes the use of video games as a learning media challenging. There is a lack of video games designed for educational purposes suitable for Indonesia’s formal education system. The lack of government support for video games as learning media also becomes an issue. We suggest collaboration between local game developers and education practitioners could help design video games that balance gameplay mechanics and educational content. Successful case studies of video games in education can potentially change negative perceptions among teachers, parents, and students. In addition, government support and recognition of video games as valid learning media are essential for wider adoption in Indonesia’s formal education system. Future research should focus on developing and adopting video games specifically designed for educational purposes to address these barriers effectively.

Keywords: Video Games, Formal Education, Learning Media, Barrier

I. INTRODUCTION

Since the beginning of 21st century, the video games industry has expanded into an industry that outperform other entertainment industry in growth and financial values (Shi et al., 2020). Especially during 2020 global pandemic, where majority of population have been following a strict social distancing policy that are adopted almost globally, video games, and especially social video games have been considered as healthy way to socialize by World Health Organization, despite of enlist “video games disorder” to its list of addictive behaviors (Canales, 2020; Maddox, 2020). The popularity of video games are undeniably significant and it is projected will expand further with the rise of eSport recognition as a sport (Kane & Spradley, 2017; Laksamana, 2019), emergence of international video games developer (Chung & Kwon, 2020; Cohendet et al., 2020; Raharja & Dewakanya, 2020), and the usage of serious video games (Anolli et al., 2010; Lim & Jung, 2013; Neset et al., 2020; Tiltvawa et al., 2019). Video games have become one of important cultural aspect that will shape our future generations and leaders.

Gamification is the act of using game-like elements as a part of existing business problems. It has been studied rigorously in the past and implemented in various field (Aziz et al., 2017; Saha & Pandita, 2018). One of the said fields are education, where teachers have been using gamification before it’s called gamification, element of games and later, video games have incorporated in teaching method in order to keeping up with millennials and Z-generation that born and mold during the rise of video games. Profusion of studies had been done to understand how gamification can be incorporated with education. A study by Dicheva et al., (2015) shown that many studies and articles mention gamification as a promising way that potentially improving learning experience, but lack of empirical studies and technological aptitude of teacher as barriers show that much more study need to be done. Meanwhile (Alhammad & Moreno, 2018) mentioned that even in 2018, the usage of gamification in computer science education field still in its infancy and still used to having a strong engagement with students and show lesser and superficial influence towards improving student knowledge and expertise. Another study conducted by (Swacha, 2021) show that hundreds of publication on the subject of gamification in education have been published since 2010 and the topic itself is still relevant but still shown some constraint in usage of gamification in computer science education. This shown there is a problem in adopting gamification in general education that have not solved by rigorous studies in the past. This study aims to identify such barriers in adopting gamification in education, especially usage of video games as learning media, in Indonesia.

Indonesia, as a developing country is one of the fastest in adopting video games cultures, especially among students and young adults. As a country with diverse culture, combined with a large influence of internet, making Indonesia an interesting mix of traditional, adaptive, and progressive mindset. Studies of perspective of parents on educational games have been studied by (Pramuditya et al., 2020) that surprisingly shown a diverse opinion regarding educational video games with majority is actually agreed and supporting usage of educational video games in learning process, However, concerns like loss of learning focus, inability of teacher to integrate video games with learning materials and lack of discussion as part of learning process due to usage of video games are also generated by parents. This study aims to expand the studies to not only including parents, but also teachers, students and the public in general. Gamification in education is considered as a good idea, but its applications are case-by-case at best, incidental at worst, with such questionable application of a good idea, we need to understand how to incorporate education with video games and video games’ element. Before we can do that, we need to really understand the barriers of adopting video games in education.

II. LITERATURE REVIEW

Study regarding barriers of using video games in education is not a new avenue in gamification study. One of the earliest research (Rice, 2009), mention one of barriers is negative perception toward video games as a learning media. During the past decade, the notion of negative perception are beginning to change to the more positive perception. Pramuditya et al., (2020) mention that more parents agrees that educational games can be instructional media for their children. Baig & Alotaibi, (2020) mentions student are more alert and interactive in classroom that taught using video games. Albeit the changing notion are also studied in Indonesia, there are some inconsistencies. Even though there are research and cast study to attempts using video game as learning media such as shown by Ng, (2019); Pane et al., (2017); Sijabat & Grahita, (2022); Tamtama et al., (2020), negative sentiment still prevalent in Indonesia. Research by Aisyah et al., (2021) blame online video games as the main reason why students drop out their education. Another research by Muslem et al., (2018) mention that albeit teacher agree that ICT support the learning process but refuse to remove the role ‘teacher’ because of using ICT is considered less important that how the teacher teach the
The negative sentiment of video games is not also towards video games in education, but moreover to the video games itself (Sanjaya, 2020). This inconsistency not only among parents and teachers, research by Salsabila et al., (2020); Zhonggen, (2019) even show that student have mixed reaction towards usage of educational games in education. This proves that perception towards video games is still one of the main barriers of usage of video games in classroom as education media. We aim to validate that sentiment with this study by gathering ideas and perceptions from students, parents and teachers.

Other barriers that are determined by previous studies are infrastructure of implementing video games. This barrier, unlike the previous one, are quite consistent. Research by Rice, (2009), Justice & Ritzhaupt, (2015), Watson et al., (2016), Muslem et al., (2018) and Pramuditya et al., (2020) all mention the technical difficulties as barriers of implementing video games in education. Lack of video games that aim as learning media is also identified as potential barriers. Study by Watson et al., (2016) mention that the biggest concern of implementing video games in education are inability to use video games effectively. Not many teachers have experience in video games, moreover the possibility of using video games as learning media. Study by Muslem et al., (2018) also mention the lack of knowledge and experience could hindered the future usage of video games in education.

In 2020, a global pandemic emerges and somehow jump start the usage of ICT in all aspect of human’s life almost a decade into future. Teachers and students alike are forced to adopt technology in learning process. Study by Rusli et al., (2020) mention the acceptance and adoption of online learning as new normality of learning process is reaching 75%, proving that adoption of ICT in learning process is elevated compare to previous years. Video games as learning media is one of the logical leaps in terms of innovation in online learning and with less technological gap due to covid-19, we aim to validate this barrier with this study.

III. METHODS

In this study we will use mixed-method approach (Muslem et al., 2018) by first using qualitative approach to gather the perception of barrier of video games usage in education from their perspective using in-depth interview. We will interview parents, teachers, students, and employees of Education Ministry regarding the perception of video games as learning media and the thought on its current implementation barriers. In our interviews we will mention all the previously identified barriers from previous study (Justice & Ritzhaupt, 2015; Muslem et al., 2018; Pramuditya et al., 2020; Rice, 2009; Watson et al., 2016). Questions for Interview are as follows:

1. What do you think about the idea of using video game in formal education?
2. Do you agree that using video game is formal education is a good idea? What makes you agreed/disagreed with that statement?
3. How do you compare video games to other learning media like poster, video, and animation?
4. Have you had any experience or heard cases about using video game in education? Please elaborate.
5. Do you believe our current education system, educators and students ready with using video game in formal education? What make it difficult to do so?
6. in your opinion, the problems of implementing video game in formal education stems from technical issue or non-technical issue? Please elaborate.

After gather data qualitatively, we will validate the data gathered quantitatively. We will form an online survey based on interview result in qualitative approach and then we will compare the findings from both data gathering and present the result. Respondents filled each item survey with 5-likert scale Items on survey are as follows:

1. I believe VIDEO is a good learning/teaching media.
2. I believe ANIMATION is a good learning/teaching media.
3. I believe COMIC/WEBTOON is a good learning/teaching media.
4. I believe INFOGRAPHICS/POSTER is a good learning/teaching media.
5. I believe AUGMENTED REALITY/VIRTUAL REALITY is a good learning/teaching media.
6. I believe VIDEO GAMES is a good learning/teaching media.
7. I believe VIDEO GAMES will make an interesting learning experience.
8. I believe VIDEO GAMES will make students pay attention more to the lesson.
9. I believe VIDEO GAMES will not distract students from the lesson.
10. I believe there are VIDEO GAMES that are designed for learning/teaching purpose and still retain the video game aspects.
11. I believe VIDEO GAMES can be used to substitute other media.
12. I believe VIDEO GAMES can make student learn more than in conventional way.
13. I believe VIDEO GAMES can measure/assess learning progression.
14. I believe infrastructure at school and/or students is viable to run VIDEO GAMES as a learning/teaching media.
15. I support the notion of using VIDEO GAMES as a learning/teaching media.

In the survey, we also put some open-ended question to gather more insight on perception on video game as learning media, those items are as follows:
1. According to your perception, video games are best used to teaching what material and what grade
2. According to your perception, how video games can disrupt one's study
3. According to your perception, can video games become a learning/teaching media in online learning? why?
4. According to your perception, is it necessary for the Indonesian Government to regulate video game in the education
5. Finally, according to your perception, can video games be accepted in education based on Indonesian culture? Why?

Analysis on survey consists of 2 parts: means of all the 5-points Likert items, and content analysis on open ended items. Then we compared the result on qualitative and quantitative approach to have a more holistic and comprehensive understanding on barriers of using video game in formal education in Indonesia.

IV. FINDINGS AND DISCUSSION

In the qualitative phase of this study, we interview 6 Parents, 9 High School Teacher, 21 High School Students and 2 Employee of Bureau of education. All of respondents are asked about their perception of having video games as learning media in formal education. We are using probing questioning lines to confirm their perception of the barriers in implementing video games in school as viable learning media. From all 38 interviews, the biggest barriers identified as distrust of video games as a learning media. Almost all of them do not realize that video games is a viable media. 1 teacher who is known to use unorthodox media to teach, only view video games as for children education and do not consider using it for much older students. All parents and teachers unanimously mention their distrust come from bad stigma of video games which often associated with online gaming and being blamed for student exodus from school in the 90s. 8 teachers even claimed adamantly that playing video games often leads to academic achievement declines. One of the parents have a bad experience regarding this, his son is addicted to video games and drop out from university at 4th semester and want to pursue career as ‘eSport Athlete’, which failed miserably after 2 years and now working as a part-timer in convenience store and do not want to continue study. His parents claim that he used to be a bright and smart child and always obtained first rank at primary and junior high school.

One interesting opinion from employee of Bureau of education mention that video games is a viable media but for kindergarten to help them focus more, interest more to education, but when its older, there are better media like video, animation, 3D animation, Virtual Reality (VR) and Augmented Reality (AR) that are more effective to create the optimal environment of learning which can be moderated by teacher on class. Furthermore, he also mentions that video games that are designed for high school education material is non-existent, there are no video games about trigonometry, Indonesian history or even civic studies that are suitable to even primary school level. Students also have a similar standing albeit not to the extremes of rejecting the notion of video games as a viable learning media. They are curious to see how the learning experience that are moderated by video games and asked for example, is there any video games that can teach school materials, which if it existed, they expressed their eagerness to try the video games. One of the students who are avid gamers mention that Assassin’s Creed III is viable to teach about American history.
and Beyond Blue, a video game that is suitable to learning marine biology and ecosystem, but the learning content is too masked with the gameplay so a more “gamer” attitude might skip the learning phase and go to the gaming session.

Most of them never heard of gamification but ironically have experience it in some capacity. All teachers claimed to use some gaming element like point system, leveling in learning and tasking, and group dynamic activity in learning process. All students claim to have experience gamification in class and enjoy the experience, one student even claim her parents practice gamification in random generating test while teaching her Chinese character. All parents expressed eagerness to know more about gamification, one of them have a baby who are put in playgroup and mention teacher corporate game and sometimes, video games in learning process there. However, in the learning process at school, parents give the main responsibility to teacher to use whatever method they want to teach, include gamification. The employee of Bureau of education is an advocate of gamification and actually encouraging more and more teacher to practice gamification in education. He also mentions the resistance come from a more ICT challenged teachers, most senior teachers, because of the distrust of gamification as methodology, while younger teachers embrace its usage and learning to use tools of education using ICT like Kahoot and Schoology. But when asked about the best practice of gamification, especially in high school, he mentions that currently in Batam, the practice still in infancy phase and are unable to measure its success until more and more teacher practice it and from there a more study will be implemented to assess the methods.

Another interesting take from student’s perspective is that as students they might not be able to understand the subject delivered in a video games format. They mention, using a linear media like video and animation is already a challenge to understand the subject, and they usually expecting teacher to explain the video to them before they have confidence and understand the subject fully. Without some guidance from teacher, using video games as a learning media is unthinkable. This is a very interesting insight here, the situation after global pandemic happens is every learning experience from any level are being delivered online. Due to lack of infrastructure and internet access, usage of synchronous learning approaches are rarely being done and more asynchronous approaches are being employed. After more than a year, in this stage, students are still incapable of learning independently and still wish for some semblance of traditional class approach. If high school students are able to mention their inability to learn independently from media like video and animation, younger students will have worse situation. This creates a dilemma for educators, the learning process is certainly lacking but due to prolonged pandemic, it creates another issue: online learning fatigue. This phenomenon already mentioned by students and teachers scarcely, but we believe this will be an issue that needs to be solved to carry on education effectively in the future during pandemic.

The Employee of Bureau of Education also added comments about regulation. In Education Standard, it does not state video games as a viable learning media, but it also does not said that it does. The usage of “innovative and creative media” which mentioned in the regulation, followed by examples of now familiar medias: video, animation, 3D animation, AR, VR, comic and webtoon, smartphone apps, but do not state video games as a viable media. Based on High School National Accreditation Instruments, the mention of using learning media only shown in ability of teacher to use ICT in learning process, which is referred as “Teacher’s effort to use Information Technology (Computer/Smartphone) to support learning activity such as usage of internet to search and identified learning source, like books, scientific works, scientific articles, learning video; usage of various learning apps; or usage of online learning”. This statement is elaborated more in the assessment into 2 categories: 1) usage of internet as learning sources (example: e-book, e-library, scientific works and articles, video, or social media); and 2) usage of internet as learning media (example: LMS, e-Learning, blended learning, distance learning, google meet, zoom, or google classroom). This is the same accreditation instruments that incorporate and acknowledge the usage of Tik Tok apps as sources of cyber bullying. The lack of video games in this instrument show that video games is not considered as learning media whatsoever in Indonesia.

One interesting aspect that are not proven in the interview is their view on lack of infrastructure as barriers. On the contrary, parents believe that smartphone are being commoditized and far easier to access, furthermore internet is getting more cheaper and video games, as the most downloaded apps in smartphone actually supported the notion of using video games as learning media. Students claims that gaming laptop and PC and one of their dreams and many of them compete to have better pc setting and in online learning environment, gaming pc and laptop is also getting cheaper. The employee of Bureau of Education even mention that Indonesian Network are built and gearing up as the strongest in Southeast Asia and soon rivalled Japanese and South Korea Internet capability. Albeit for now, a simple check on speed test show that Internet capability in Indonesia is still far from expected but for gaming purposes, its serve quite well. Teachers voiced their concern to a more senior teacher and a more ICT literature challenged might resist
the usage of video games and any ICT related media, but due to global pandemic, that issue are no longer a pressing issue.

From qualitative phase we see some interesting insight from those interviews. Many of the barriers of implementing video games as learning media are social and perception not practical and physical barriers, which we believe are making implementing video games in formal education will be harder because the resistance will be stronger from social and perception causes. Another problem is from legal standpoints which do not support video games as learning media, at least not yet. Video games are one of the prominent creative industries that are thriving now in Indonesia. The transition to adopting video games is just a perception of time and technology, eSport Athlete are deemed as a viable career, video games developments are being taught at universities, Indonesian game developer already make a round and acknowledged in international stage. These conclusions would be compared to findings from quantitative approaches.

For quantitative approaches, we gather data from 212 respondents, 30.7% (65 respondents) from college students, 25% (53 respondents) from professionals, 18.4% (39 respondents) from educators, 14.6% (31 respondents) from student and the rest, 5.2% (11 respondents) are from state’s employee. The age band are dominated by young adults (18-25 years old: 41%), Adults (25-40 years old: 34.4%) and seniors (>40 years old: 18.9%). 61.3% of the respondent are in education either as educator or as learner. 43.9% of them claims to have their daily life/work/study related to video games in some capacity. 79.2% claim that they played video games and enjoyed playing it, and 47.2% of respondents still actively playing video games.

The perception of video games as a learning media is surprisingly positive, even among other media such as video, animation, comic/webtoon, infographics/poster. AR/VR. Video games even scored better than Comic/Webtoon and Infographics/Poster. However, the number of people that are being indifferent or neutral is also largest among other media. This information indicates the highest number of uncertainty that video games is a viable learning media are also the highest. These findings are quite consistent with the findings from qualitative phase where people considered video games as learning media is a good idea but in implementation, there are uncertainty in people’s perception. Most respondents agree that video games will make an interesting learning experience (86.3%) and will make students pay attention more to the lesson (76.4%), but 50.5% respondents also mention that video games will distract students from the lesson. These findings furthermore established and validate the perception of Indonesian is positive about the idea of implementing video games in education but not sure about its actual implementation.

Regarding infrastructure and technology readiness, there are 60:40 split where 60 views school’s infrastructure are ready to implement video games and 40% question that readiness. Furthermore, a similar split also shown in readiness in the video games itself, 40% of respondents question the existence of video games that are designed for learning purposes. Similar split also appears in the perception of video games as substitute to other familiar media with almost 45% still favors the usage of traditional creative media (such as video, animation, and VR). Another 60:40 split shown in the perception of video games as assessment method with 60% question the assessment capability of video games. Despite of such narrow split, 78.8% still support the notion of using video games as a learning/teaching media. These are all interesting outcomes, and it shows the inconsistency between perception of supporting attitude and actual supporting behaviors, solidify our first conclusion, but also show the consistency between qualitative findings about video games as media for younger age band education and might not be able to fulfill the same role in higher education stage (See Table 1).

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<tr>
<td>I believe VIDEO is a good learning/teaching media.</td>
<td>4.20</td>
<td>2</td>
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<td>41</td>
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<td>91</td>
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<td>I believe ANIMATION is a good learning/teaching</td>
<td>4.43</td>
<td>1</td>
<td>0</td>
<td>22</td>
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<td>I believe COMIC/WEBTOON is a good learning/teaching</td>
<td>3.86</td>
<td>6</td>
<td>8</td>
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<td>83</td>
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<td>I believe INFOGRAPHICS/POSTER is a good learning/te</td>
<td>3.93</td>
<td>2</td>
<td>10</td>
<td>54</td>
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<td>I believe AUGMENTED REALITY/VIRTUAL REALITY is a</td>
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<td>74</td>
<td>94</td>
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<td>I believe VIDEO GAMES is a good learning/teaching</td>
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<td>2</td>
<td>8</td>
<td>51</td>
<td>78</td>
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Table 1 Response Distribution
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<th>Question</th>
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<tr>
<td>I believe VIDEO GAMES will make an interesting learning experience.</td>
<td>4.33</td>
<td>1 3 24 81 103</td>
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<tr>
<td>I believe VIDEO GAMES will make students pay more attention to the lesson.</td>
<td>4.07</td>
<td>4 11 34 81 82</td>
</tr>
<tr>
<td>I believe VIDEO GAMES will not distract students from the lesson.</td>
<td>3.59</td>
<td>7 28 72 62 43</td>
</tr>
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<td>I believe there are VIDEO GAMES that are designed for learning/teaching purpose and still retain the video game aspects.</td>
<td>4.14</td>
<td>1 7 34 90 80</td>
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<tr>
<td>I believe VIDEO GAMES can be used to substitute other media.</td>
<td>3.87</td>
<td>6 17 44 77 68</td>
</tr>
<tr>
<td>I believe VIDEO GAMES can make student learn more than in conventional way.</td>
<td>3.98</td>
<td>2 11 47 82 70</td>
</tr>
<tr>
<td>I believe VIDEO GAMES can measure/assess learning progression.</td>
<td>3.92</td>
<td>3 12 47 86 64</td>
</tr>
<tr>
<td>I believe infrastructure at school and/or students is viable to run VIDEO GAMES as a learning/teaching media.</td>
<td>3.69</td>
<td>5 23 58 72 54</td>
</tr>
<tr>
<td>I support the notion of using VIDEO GAMES as a learning/teaching media.</td>
<td>4.12</td>
<td>2 12 30 83 85</td>
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Source: Data Gathering Analysis (2022)

For validating findings purposes, we asked some open-ended question in the questionnaire and some of the results are astounding. 51.3% respondent considered video games are suitable only for Primary school and/or kindergarten or for college students and skipped junior high school and senior high school. In fact, more respondents argue that the implementation of video games is best implemented in universities level as a learning game design and video game development. This finding is consistent with qualitative phase that show that video games is only suitable for younger age band education media, such as Kindergarten or Primary school due to their tendency to lose focus in learning. In higher band, such lose of focus are more rarely and thus no needs for video games to buffer their focus to the lessons. Regarding video games as distraction in learning process, a whooping almost 78.3% respondents agree that video games will cause loss of control, loss of focus in learning and to much focusing on video games and eventually develop addiction to video games. This is consistent with the negative stigma that we mentioned in qualitative phase. Video games have a bad reputation in Indonesia and this is the same group of respondents who supporting the idea of implementing video games in formal education and in open-ended questions 81.13% mention that it is very possible to use video games in learning media in online learning environment, some respondent even rate it as “absolutely yes” while only 8.02% still say no to video games.

Interesting shifting shown in the perception of government’s regulation regarding video games in education. A total of 70.28% agreed that government needs to regulate video games but 16.98% do not agreed of such regulation. There are particularly 3 interesting comments that we want to highlight: one show distrust of government handling this regulation and mention that other legal and regulation are still uncleared like ICT law and omnibus law; another mention that government might move too slow and the regulation might never even realized, the practitioner and game developer just move on the adoption; another mention that government might overreact and banned video games that are not suitable for education in Indonesia, and will make player of violent-heavy or sexual content video games become outlaw, which is absurd. The contents of video games are generated digitally, no one are harmed in the process, no matter how graphics the violence depicted. Violence and sexual content are two of the oldest issues of people that have issue with video games. When video games are going to be implemented in education system, these issues must be dealt with because in education setting, violence and sexual content must be controlled. But nonetheless, a 10% shifting from those who agree with video games implemented to rejecting government regulation prove that there is a tendency to exclude government’s role in the case of adopting video games in formal education. Looking at the school national accreditation instrument that exclude video games, we believe that the sentiments are not without a clear cause. Indonesian government need to work on building trust especially in managing education in this country.
The final question is to investigate the perception about acceptance of video games as learning media, considering Indonesian culture and perception of the mass result in 50:50 split. Some of the answer that support video games accepted argue that eSports already accepted, more people playing game, and the accessibility of video games is very easy nowadays. However, those who said video games is hard to be accepted refers to negative stigma of video games among parents and teachers and distrust of video games as a viable learning media. After we analyze all the quantitative findings, its support all findings in qualitative phase. We can conclusively list out definitively the barriers of video games adoption as formal education media in Indonesia:

1. There is an inherent distrust towards video games among educator and learner, despite of the high interest of using video games in formal education settings. This prejudice stems from historical issue of video games abuse among students in the 90s.

2. There are no video games developed with educational purposes that are suitable with Indonesian’s formal educational system.

3. Governments do not actively promote and support video games as learning media.

These findings are have some similar findings from previous research, negative perception towards video game as learning media are coincided with finding from prior research, despite of a more positive takes on video game as part of creative industry, the immense popularity of video games among adolescent and young adult, which make a significant portion of teachers in Indonesia (Rice, 2009). Albeit teachers, parents and students are generally having a more positive sentiment towards video game, still some believe video games are not suitable for education, similar to finding from Muslem et al., (2018). Lacking of video games designed for education also coincided with the finding from Watson et al., (2016). What differs from prior studies are technical issues are not longer prevalent, students and teachers alike are more familiar with computer environment, especially gen-z students who are born in digital abundance which make the technical issues no longer a barrier albeit this still need to be confirmed by more rigorous studies. Government as issue is new findings that are not mentioned and elaborated in previous study and should be pursue to understand its significancy and impact towards adoption of video games in formal classroom and education.

V. CONCLUSIONS

Adoption of video games as a learning media in Indonesia should be a logical continuity after adopting online learning and online learning media. However, adopting video games in all levels of formal education is still quite difficult. Technical aspects such as lack of infrastructures and lack of ability to incorporated video games in learning process can be a problem. A more deep-seated problem is the general negative perceptive towards video games among teachers and parents who make adopting video games in formal education is difficult, coupling with government are also not prepared to embrace video games as part of student’s life, perception of student that consider video games is for entertainment purpose, and the fact of lack of video games designed for learning purposes make adoption of video games in this country is quite difficult in this time periods.

We believe there should be collaboration between local game developers and education practitioners to design a video game that can be used as learning media. A balanced design between gameplay mechanics and learning contents which is suitable for today’s learning experience. The problem of negative perception and just-for-entertainment perception can be turned if there is an example of how video games can be used as learning media. Government already supporting local video games developer through Creative Economy Agency (BEKRAF), and it is a logical leap when they see the real application of video games in education stage to notify Bureau of Education. From there, we reckon understanding of governments, teachers and students will be moving towards a better mindset to accept the practice of video games adoption in education. Most of them already accepted the idea, but are inconclusive when ask about practicality, this is due to lack of successful case studies. There are some past studies about developing video games for education purposes but the usage in actual learning processes is seldom recorded. We believe future research should focus on how to develop and adopting video games that are designed specifically for education purposes. This study are limited to focusing on barrier of adopting video games in education in general, future studies should also be done in certain topics, subject or even level of education. Other limitations of this study are employed in views on Indonesia as a whole with most of respondent are from western part of Indonesia, a study focused on different part of Indonesia should be done to understand this issue in a more comprehensive manner.
REFERENCES


