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Massively Multiplayer Game-based Education

Abstract

Technological advancement progressively affects games quality and availability, provides opportunity for new types and genres of games. In this regard – while there is strive to harness games effectiveness for educational purposes through those use and gamification process – those might not appeal, reach expectations and meet needs of modern gamers. With increasing role of networking in daily life – it is possible that use of the massive multiplayer online (MMO) games approach could further enhance educational experience in comparison to non-massive games. Through critical analysis subjective game usage traits have been sought that would falsify such generalizations. It has been reasoned that game use and gamification in education is highly subjective and its effectiveness cannot be generalized for specific group. Use of the MMO approach has been concluded to indeed provide further possible enhancements, however presence of any social aspect in an intended educational use – either competition or collaboration – is required. It is suggested that turning education system into massive game could be most promising research direction, due to it already sharing massivness trait with the MMO.

Keywords: *gamification, massively multiplayer online, massive education, video game culture, game-based education, edutainment, pervasive games*

Introduction

Not limited to humans – playing is significant part of one growth – and games are one of its realizations. Without a doubt, games hold educational

value and relation to the educational theories (see Becker, 2005, passim) and while those theories might still evolve along with a means of application – use of games (and likewise playing itself) for educational purposes continues – in a various forms and to a various extent – further refining concepts of game based pedagogy.

Intertwined with technological progress – game based pedagogy gains new areas of academic inquiry and opportunities of application – with each new advancement being made. Be it only for so called edutainment: educational entertainment – as it is today, it has been redefined by emergence of new media means of video games and the Internet. Notably, the same technological progress gave rise to those branches of edutainment – also caused them to either merge or further evolve; what was once considered to be separate – now is more or less the same; difference between video and computer games blured and those became synonymous (Tang, Hanneghan, & El Rhalibi, 2009, p. 2) – game that once could be played only at arcade store, nowadays can be emulated on cheapest smartphone; technology that was once expensive and out of reach or simply limited due to technological limitations continues to become more and more accessible.

Along with increasing technology accessibility and overall quality – their players – gamers – also change, or at least their expectations towards those. As for games, those can be more advanced and complex, providing gamers with richer experience.

This does not only limit to – disputably – better multimedia experience, due to higher visual and audio quality – that is becoming more realistic, artistic, fluid and so on – or overall better gameplay – due to improved game mechanics in areas like input handling, physics or artificial intelligence used to enrich gameplay – which in a past were more limited because of hardware limitations like available processing power and memory as well as storage device, sound or graphic chip performance and capabilities – not to mention at very least available display technologies and those resolutions – but also and most importantly – due to connectivity and multiplayer features, from which reasonably some might even not have been available to such extent back when video games first emerged. For this reason, older type games that are less featured – might not be appealing to the modern gamers.

One of the types of games that emerged along with technological advancement are so called massively multiplayer online games (MMOG or shortly MMO without evident game relation part distinction), where multiple gamers can play same game simultaneously – typically via the Internet – thus online part of those name. As the Internet is rather nothing uncommon nowadays – being more a part of one daily life, not to say a necessity required for one to function and exist in the modern world, increasingly relying on digital technologies – and in a perspective of MMO since the year 1996, its emerging (even if multiplayer massiveness factor was not to such scale as well as general connectivity) and popularization, especially in popular culture, similarly to the games as a whole, yet in more self-related context – it is difficult to ignore and exclude MMO from wide pedagogical interest.

Although strive to study and harness games for educational purposes still continues with new findings being progressively made – games are already being used for various educational purposes. In this regard and described context – following hypothesis are formulated and verified:

- current education with its use of games might not appeal, reach expectations and meet needs of modern gamers – students;
- MMO approach provides gains that could further enhance educational experience in comparison to non-massive games.

Research methods

Critical analysis has been performed – in search of distinguishing game usage traits that would be subjective, which presence would falsify formulated hypothesizes due to presence of this subjectivity – on sources exploring various aspects of gaming, games design and using games in different contexts – with special attention to a cultural aspect of games and MMO type games.

Rationale has been taken that state of art and knowledge expressed in scholarly sources – is unified and presents generalized view on subject from academic perspective. Due subject relation to the digital world – digitally available sources have not been unfavored, as possibly presenting more accurate and up-to-date view on the subject, than the printed sources – as well as indicating that authors might have deeper understanding of digital world by considering such publication media as the Internet.

Games and gamification

The Principal term in regard of using games in education is gamification, which is – greatly simplifying – a process of applying game elements to otherwise non-gaming contexts. As noted earlier in the introduction – games remain subject of academic interest and effectively – there are uncertainties about gamification as well; being closer in a knowledge application chain, it is rather a subjective matter: context, intentions and enactments should be taken under consideration when classifying as game (Deterding, Dixon, Khaled, & Nacke, 2011, passim). However, this does not exclude possibility of gains from simply framing into being labeled as a game (Dichev & Dicheva, 2017, passim; see also Hamari, Koivisto, & Sarsa, 2014, passim) – be it only even those resulting from community emerging around a game, which alone promotes social interaction and peer activities within (Kirriemuir, McFarlane, & Futurelab, 2004, p. 15) – that can have positive influence on socialization process, not to mention wider uses in context of for example pedagogy of free time.

Considerably games can enhance social problem-solving skills and abilities as well as be helpful for academic achievements (Kim, Park, & Baek, 2009, p. 809) making those appealing for therapeutic and intervention purposes. Furthermore, it is commonly accepted that games are a new form of popular culture – subculture, one that is extremely engaging (Connolly, Stansfield, & Hainey, 2007, p. 416) and that games are capable of tremendously increasing motivation (Cózar-Gutiérrez & Sáez-López, 2016, p. 9) – especially be it increasing intrinsic motivation and decreasing focus on getting grades (Tüzün, Yılmaz-Soylu, Karakuş, İnal, & Kızılkaya, 2008, Chapter 6) – as well as with provided positive feedback those may encourage further studying (see Muntean, 2011, p. 328); in this regard using games for wide scope of educational purposes can be viewed as providing opportunity for healthier education, one being oriented towards self-driven personal development with actual relation to what might interest students – for whom popular culture is their mainstream.

Most importantly – playing games can cause one to get into a flow state of deep engagement to the task and enhanced performance (Kirriemuir et al., 2004, passim; Simões, 2015, passim). This possibly dangerous characteristic

– which can lead to a negative addiction type consequences – when properly utilized is what can make using games easily outperform and overshadow any other classical pedagogical approaches. It can be summarized that in a way game actually plays a gamer – while maintaining high engagement almost unknowingly delivering content and making gamer internalize it (Crocco, 2011, Chapter "Gaming-to-Work").

Reason for this might be that: games work as instructional technologies (Becker, 2008, passim) – adaptively guiding through their content, even if not directly. In a customary manner – there is almost always a learning curve in the games, an intended allowance for trial and error (Parks, 2008, p. 237; Willett, 2007, p. 17) – for an instance: introductory first stage, on-demand hints, gaming saving or waypoints of some sort allowing to resume a game after failure or need to stop playing it. Gamers as learners are allowed to make mistakes and correct those (Tang et al., 2009, p. 11) with game working like a sort of sandbox to run simulations inside without consequences (see Becker, 2008, passim) – allowing gamers to gain mastery (Gee, 2003, passim). Interestingly, hiding behind created game character encourages risk-taking and reduces gamers anxiety (Peterson, 2012, p. 377). Negatively, this also adds to mentioned addiction danger part of the games in a form of gambling type trap – giving premise of being able to win a game in the next try, encouraging it. At the same time this is necessary to balance a game difficulty, make it enjoyable and playable for a wider audience – too high difficulty can rise anxiety and too low can cause boredom (Jong, Dong, & Luk, 2017, p. 13), thus reducing game appeal.

Other aspect of games is whether those are oriented towards an individual or a team based gameplay, which depending on game use context affects its use efficiency (Vlachopoulos & Makri, 2017, p. 25). Nonetheless – unless completely individual achievements are preferred and a game allows such gameplay by its design – there is clearly a major benefit with at least two gamers playing a game – reasonably even with only one gamer playing the game at a time and second acting as a support or commentator providing feedback – as a more experienced gamer can teach a less experienced gamer with both the parties benefiting from encouraged knowledge retention (Jong et al., 2017, p. 13). Additionally, playing games with the other gamers and

interacting with them promotes development of various socio-emotional skills (Hromek & Roffey, 2009, passim).

Not to be forgotten in this context, there is also a competition aspect of games in the area of assessed gamers performance. Achieved score or other measurable indicators like a game character level or statistic, possessed items, experience points, badges or even a gamer oriented metrics like actions per minute (APM) – can be used for a comparison and by so promote competition, which can be utilized for the educational purposes. Notably, this assessed performance can also be used to measure engagement (Barata, Gama, Jorge, & Gonçalves, 2015, passim).

Harnessing games effectiveness

While there is strive to harness games effectiveness with gamification, which can be praised – that is tried without a deeper understanding on what exactly games are, which might cause unbalanced result of something being game alike, yet exactly not truly a game (Bogost, 2014, passim). There are different approaches about how to proceed with gamification – how to apply it and what type of game choose. Primary and crucial issue is selecting type of game – as there is difference between the entertainment games oriented towards playing and the educational games oriented towards rules (Tang et al., 2009, passim). For example there are the pervasive games, where a game itself is intertwined to some degree with real world (see Deterding et al., 2011, passim) – like the augmented reality based games – and games like the serious games – like a various simulations and tycoon style games – that are not fully meant for an entertainment purposes. In terms of implementing there are only two possibilities, each with own pros and cons: either use a commercial of the shelf games (COTS) – likewise any freely available game – or design a game from the scratch.

As games efficiency can be enhanced by utilizing strategies optimized to a given game genre and use purpose (see Kim et al., 2009, p. 809) – choosing COTS is possibly the most straightforward approach for applying games for the educational purposes – requiring only market survey, thoughtful selection and later pedagogical expertise in tweaking a game for the intended use purposes – this includes trying to understand an educational value in the

given game and method of utilizing it (Kim et al., 2009, p. 808), while being aware of depth of its content (see Shaffer, Squire, Halverson, & Gee, 2004, pp. 8–10), possible hazards related with it – the side effects – which might not be wanted for the given educational application purpose.

Unfortunately for the last possibility there are more technical issues and steps in the implementation process. Major issue is actually a highly subjective matter presented earlier of how educational games should look like and what should those design be, because – regardless from taken rationale behind made choices, be it for example the motivational, cognitive or socio-cultural perspective – there is undoubtedly a logical equivalence: that better the design, the more engaging and the educative game can be (see Jong, Shang, Lee, & Lee, 2008, passim). Second issue to follow is that: creating a game benefits from having talented people (Becker, 2007, passim) – which might be a difficult to meet as their count is limited and subjective – especially those who also specialize in the pedagogy.

This partially gives a rise to other problem related to the games design, which is that games tend to be rather similar – that can lead to accusing those of being uniform and a showing limited creativity (Seaborn & Fels, 2015, p. 28). However, it has to be taken under consideration that gamers past experiences with the games – experienced game quality and features – affect their later expectations and attitude towards those (Christou, 2013, p. 14; Tüzün et al., 2008, p. 2), which encourages taking the same design choices by game designers, rather than completely redesigning and risking a game failure in a result. Additionally, this strategy also helps to keep consistency across the games, which is important – as for example: gamers might expect some parts of a game to be playable and behave in a given way (Tüzün et al., 2008, p. 7).

Seeking further justification and wider context – it has to be remembered that games being form of the popular culture will have to use and share the same cultural codes respectively. Nonetheless, mindlessly following this approach is not advised – as gamers experiences might bias the design choices, where less experienced gamers feedback could be more relevant (Christou, 2013, p. 14; see also Suh, Kim, & Kim, 2010, p. 377).

It also has to be also accepted that a game might simply not appeal to

the all audiences (see also Groff, Howells, & Cranmer, 2012, passim; Tang et al., 2009, p. 12) and that individual gamers might have different reasons for playing the given game, strategies how they play it and what they get from it – how they are affected – and for this reason generalizations should be made carefully, including negative influence and so on (Yee, 2006, passim). This is also why there is no logical need to forcibly follow some design choices, when actually designing for a specific gamer characteristic (see Khenissi, Essalmi, Jemni, & Kinshuk, 2015, passim) can yield better results; reasonably, this – sort of design optimization – helps in creating a richer affinity spaces within the game – ground for interaction – with better relation to the gamer interests (see also Hayes & Gee, 2010, passim; see Willett, 2007, passim), which are necessary to add a kind of attachment and reason to play a game: a meaningful plot, challenge – sense of game relatedness to the gamer (Groh, 2012, p. 42; see also Nicholson, 2015, passim). Special attention to this aspect of games design should be also given if goal of using the game are long-term gains – which is considerably true for most of the educational uses – in this case given gratification should be based on engagement to the game and not rewards, because not only those efficiency decreases with each use, but also obtaining those might take precedence and nullify benefits derived from engagement (Nicholson, 2015, passim).

Massive multiplayer games

Quality of games is that those use is scaleable, understood in a wide context: most importantly, because game mechanics are unified – and game rules will not change unless intended – in general playing results should be always within a same range of expectations in the repetitive game applications; secondly, in more technical implementation oriented context – there is ease of a multiplication – with games use requirements typically depending on a widely accessible mass-produced elements (like devices or peripherals) as well as because the design is shared across games (as explored earlier) and elements already in possession might already meet minimum requirements of given game allowing to re-use those; secondly, games as instructional technologies can be standalone – self-guide gamer; finally, commonly games are designed with some scalability in consideration, be it through allowance

for customization – increasing number of possible use contexts – or having features targeted towards multiplayer gaming experience.

Outcome of this game scalability is massiveness of their reach – easiness of reaching further than typical educational situations (see Mayo, 2007, passim) – and when this massiveness is also considered in a game design process, then natural consequence is emergence of the MMO type games. Notably, especially like with the massively multiplayer online role-playing games (MMORPG) sub-genre of the MMO – those also spawned own subcultures around those (Jøn, 2010, passim) – related to the games popular culture context, yet separable.

Nonetheless, true value of the MMO type games for educational purposes – is in those community related effects on the gamers. Inseparable part of the MMO gameplay is competition – and in context of a community – it allows to introduce a concept of position within the community – centrality – importance of specific gamer to the community. Reasonably, one participation – contribution like the knowledge sharing within community affects one position in it, leaving lasting result with inertia effect (Pi & Cai, 2017, p. 14). Arguably, such can also be an altruistic behavior, not result of striving to increase one position – it is disputable if collaboration is necessary for the MMO gameplay. However, if collaboration is involved there also positive effects of it, like: one performance being more positively perceived, when reaching goal in shared effort with other gamer (Choi, Lee, Choi, & Kim, 2007, p. 594).

Conclusion

Easiness and massiveness of the games reach makes those hard to be ignored from being used in the educational context. However, explored subjective nature of the games design, those own cultural context – together with being intertwined with the technological progress – makes effectiveness of gamification and using games in the education highly dependent on one expertise in the field – poorly executed it might not have the same efficiency and appeal, which would be otherwise possible through careful implementation – accurate to the desired effects and needs – expectations – of both gamers and ones implementing. Importantly, although those cannot be ignored,

there is also need for an elasticity – to avoid repetition and promote creativity. Such openness and understanding allows to provide better affinity spaces for the gamers – further enhance their motivation and self-realization – as well as gives opportunity for healthy communities to emerge around the game.

It cannot be generalized that current use of games in education might not appeal, reach expectations and meet needs of the modern gamers – students – as it might for some of them. In this regard – advantages of the MMO games indicate that those indeed can further enhance educational experience in comparison to the non-massive games, however as long as those educational use has any social aspect to it – either competition or a collaboration related.

Perhaps, considering pervasive games – even more implementation areas can be found for application of the MMO in education. MMO already has shared trait with educational system in its massiveness – and if using games in education is still tempting with its benefits and culture around, then turning education into a massive game could be the most promising research direction, because just gamification might not suffice in the end.

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