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Gamification –Doing Things With Fun: A Broader Perspective

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Abstract: *Games are known to be one of the best source of entertainment and when it comes to improve the effectiveness and productivity in different functional areas, the induction of games in these arears play a significant role. Gamification is a pioneering approach thathas proven to be the best sought after technology today and is widely being adoptedin diverse domains across various sectors or disciplines. The sole purpose of Gamification is to add fun and joy to make different types of processes and practices more effective and more productive that include education,healthcare systems, tourism, business, etc. The present article intends to shed light on the findings and analysis of the literature review on gamification being explored by sundry researchers in different disciplines and in different contexts. The findings of this study introduce the concepts of gamification, gaming aspects, and different application domains where gamified scenarios are being explored by adding fun in order to achieve specified goals. Apart from that, the paper also highlights the recent trends and further research pointers to prospective researchers keen to pursue their research in the area of gamification.*

Keywords: Gamification, engagement and motivation, game mechanics, game design elements, andgamified domains.

1. Introduction

Gamification provides the means to engage users in fun activities to achieve some challenging goals.The term gamification is generally used to represent a situation when the game elements are used in non-game scenarios [1]. For example, star ratings for eBay vendors and shoppers, progress bars used by PayPal to motivate users for their profiles completion, gamified environment by Cisco for social media training [2].Gamification has gained significant response from a large community of researchers and practitioners in various sectors. These sectors include education in major (where hard subjects such as math, science, computer programming etc. can be taught by inculcating the spirit of learning with ease [3-6]) while others include healthcare systems [7-8], business [9-10], household chores [11], television advertisements [12], tourism [13],personalization [14], online surveys [15],etc.

Gamification assumes the elements into contexts that are of no concern to the game with a clear objective to attract the attention and to enhance the engagement and motivation of the user. Gamification in general is viewed as a tool to improve the level of participation and motivation among users in performing the routine tasks that generally don't seem to be so attractive [16]. Itaims to add fun and joy to make different types of processes and practices effective and more productive.In particular, gamificationismore usefulin monotonous and repetitive tasks as playful experiences make non-game scenarios more engaged and motivating [2].

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Thepresent article intends to present the findings and analysis ofthe literature review on gamification being investigatedby several researchersin different contexts.In broader sense, the purpose of this study is twofold: First, to introducethe concepts ofgamification, gaming aspects, and different application domains where gamified scenarios are being exploreded by adding fun in order to achieve specified goals. Second, to present the trends and further research directions to prospective researchers keen to pursue their research in the area of gamification.

This study has the following structure: Section-2 presents the synthesis of previous studies available in the literature of gamification. Section-3 introduces the game design aspects along with various gaming elements. Section-4 highlights the diverse application domains of gamification. Sections-5 sheds light on the major gamification hitches that cause hindrances in efficacious gamified applications. Section-6 exhibits the limitations of the present study. The paper ends with concluding remarks and further research pointers in Section-7.

2. Synthesis of Related Research on Gamification

This section presents the summarized view of the key researches relating to gamification performed in the recent past.

The authors in [17] presented a comprehensive review of gamification in educationalcontext with an emphasis on gamification mechanisms, the kind of gamified learning activities, the study goals and the gamified subjects focusing on the validity and reliability of the reported learning outcomes.Nah et. al[18] also studied the literature on gamification in the context of education and learning by conducting a review focusing on game design elements and application of gamification principles in education.Another studyby Caponettoet. al [19] highlighted the review of gamification literature in education sector and conducted the analysis based on different criteria such as type of research (theoretical vs. experimental), target population, the kind of tools deployed, and the educational content delivered.

The study [7] presents a survey based on gamification from a healthcare perspective. The findings show that the induction of gamification in healthcare systems is at preliminary stage and at an advantage to improve the overall working experience. This article touches three major problems that include quality of literature, research topics and design elements based on gamified healthcare systems. In the tourism industry [13], gamification affects tourists, the travel places and the managing these attractions. It can likewise be applied to manage workers in the tourism sector. The repercussions of this investigation are that the use of gamification in the travel industry can be gainful, extending from tourists, managers to networks around tourism spots.

3. Gamification Basics

The main objective of gamification is to enrich users' learning experience and to enhance engagement to achieve better outcomes.Gamification [2] helps create ethics among users in different ways:

- **Motivation:**Gamification fosters intrinsic motivation of game players.The players are expected to put hard efforts to collect information and explorethe new ways to complete the desired actions.

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- **Usability:** Generally, a game is designed keeping in mind the different levels of increasing difficulty. These increasing levels of difficulty makes the journeyof new users smooth whether it is learning by a student or working on some complex software platforms by an employee. As the users keep on moving to higher levels, they acquire more and more understanding and knowledge.
- **Trust:**When the users clear a level in a game with collaborative efforts, they feel it as a proud moment about shared ownership. This in turn helpsboost social relationship among users and when the social interaction getsimproved, definitely the trust among users will go up.

Authors in [20] broadly classifies the game elements into three aspects of game design:

(i) **Mechanics:**Those gamingelementsthat are related to data representation and algorithms such as levels, points, leaderboards, badges, etc.

(ii) **Dynamics:**Those game components that represent runtime behavior of mechanics related to inputs and outputs of players over time such aspacing, reward scheduling, social and personal dynamics, completion and choices, etc.

(iii) **Aesthetics:** Those emotional reactionsinduced in users during their interaction with gamified environmentssuch as feeling of being challenged, love, delight, honor, surprise,comedy, feeling of community, etc.

It is not mandatory that all the game elements have to be deployed in every gamified environment, rather it depends on many factors like the environment, the situation etc. Thus, the game elements are used differently in different gaming works. There is another classification of game elements that includes competitive and collaborative game elements [21]. The competitive game elements help build the feeling of competition among students whereas the collaborative elements help build the senseof cooperation among players within the gamified system.

4. Gamified Domains

Gamification has now become a prominent technology that is widely being adopted in diversity of domains. A gamified domain is an applicationdomain where game design elements and game mechanics are employed to achieve some specified objective. These gamified application domains include education, training, healthcare systems, tourism, marketing, TV advertisement, and personalization where gamification has shown promising results. These domains are exemplified as follows:

Education: In the context of education,game mechanics are increasingly being embedded in teaching-learning process where they play a significant role. The review findings help identify many populargamified scenarios where gamification has proved its worth. To alleviate the problem of programming incompetency among students pursuing higher education, an online learning mobile application known as *ProLounge* (Programming Lounge) [22] was introduced with gamified approach which has shown promising results.In order to improve the coding skills of students by enhancing the motivation and engagement in classroom teaching, the authors in [23] introduce the gamification techniques in education practices. Then a questionnaire based survey exhibited a strong favor in support of the incorporation of gamification elements in teaching-learning process.[24]examined the effects of a gamified scenariowith a focus on user engagement in Massive Online Open Courses (MOOCs)with an aim of developing sense of

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community and social presence. For this, in MOOCs7 game design elements were identified and implemented and the authors got a mixed kind of response in this scenario.

In another study [5], when gamification is used as a pedagogical strategy in a programming course, its foremost emphasis is on motivation only, but it ignores the level of challenges design that must match with learner' interest and skills. Thus, there must be constant refinement in the strategy as well as the possible learning outcomes based on the past experiences. The authors in [25] attempt to analyze in a gamified MOOC environment the attitude of students and their engagement towards earning badges. The findings of the study observed quite positive response.Also, authors in [26] endeavored to show that gamification technique and individual feedback can be very useful in stimulating coders for paying more attention to good programming practices.

Healthcare Systems: In this sector, gamification is also getting very popular and attracting the research community for the possible benefits itis offering. The article [8] presents a novel gamified e-therapy framework which is useful for building adaptive serious games to help those patients having hand disabilities. The purpose of this study is to facilitate rehabilitation concerns and deliver a patient-adaptive environment with the incorporation of the gamification techniques for hand therapies. The study [7] presents a survey based on gamification from a healthcare perspective. The findings show that the induction of gamification in healthcare systems is at preliminary stage and at an advantage to improve theoverall working experience. This article touches three major problems that include quality of literature, research topics and design elements based on gamified healthcare systems.For better engagement, gamification has also played a significant role with the implantation of leaderboards and tournament awards in medical education [27].

Business: Researches are showing promising results when the gamification elements are introduced in business processes. The authors in [26] attempt to identify the possible benefits by introducing the game elements in shopping processes. This study presents exciting results in the form of increased participation in the shopping process and shopper encouragement in purchasing eco-friendly products.

Advertisement: In order to improve the engagement between TV audience and advertisements, the authors in [12] designed a game (involving TV ad and smartphone) by incorporating a well-thought out gamification strategy to boost the marketing memorability and viewers' engagement and finally got the amazing results.Advertisers and broadcasters can exploit gamified approaches and techniques to get the maximum benefits such as engagement and motivation.

Tourism: The addition of gamification in geolocation methods and augmented reality can boost the profession of tourism industry and better employee management at tourism places. In the tourism industry [13], gamification affects tourists, the travel places and the managing these attractions. It can likewise be applied to manage workers in the tourism sector. The repercussions of this investigation are that the use of gamification in the travel industry can be gainful, extending from tourists, managers to networks around tourism spots.

Housekeeping: The paper [11]presents an initial investigation and analysis of different types of apps that incorporate gamification elements and target household chores. The findings demonstrate that these apps are mostly instructive and partially manipulable and mainly emphasize on extrinsic motivation. These apps target the individual family members but not the entire family.

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Personalization: Personalization is another forthcoming pattern in gamification study. Many investigators expect that gamified frameworks should consider individual characteristics. Authors in [14] propose a machine learning based personalized content determination to address a piece of this issue and present a procedure for making customized structures that permits computerizing a piece of the usage.

Thus, the concept of gamification is being deployed in diverse application areas like education, healthcare systems, business, advertisement, tourism, housekeeping etc. Apart from these, there are many other areas also where the mechanics of gamification are heavily being used like online surveys [15], etc. Here the findings reveal that majority of the gamification literature is found in educational context with the aim to improve teaching-learning processes.

5. Gamification Hitches

This section highlights the major issues associated with gamification [28]. These issues are explicated as under:

- **One size does not fit all:**In context to education, a successful gamified approachused in one coursemay not work in another course in that the same effective manner or it may even completely flop also. It means one game element may contribute more in one context and may not have any contribution in another. Hence the game must be designed by taking into account the benefits/interests of users.
- **Lack of Expertise:** In education sector, teachers may lack knowledge or skillset to get themselves accustomed into the gamified environment.Especially the new teachers (the beginners in teaching) may face certain challenges during implementation of playful scenarios in digital mode as gamification is completely a new model of teaching-learning process.
- **Lack of Usable Games:** Gamification is the process of integration of games in the program of study. Fatefully, there are very few education-centric games existing that can be considered for inclusion in classroom teaching. Thus the scarcity of such quality and education-centric games create hindrance in revolutionizing the education sector. Shortage of commercial games is another obstacle for creating joyful scenarios to promote business.
- **No sync between objectives and games:**This is the case when wrong choice is made in games selection to achieve the learning objectives. The leaning objectives should be in sync to fit the game and not the vice-versa. Sometimes teachers decide about the games that they think are relevant for their course teaching, but in reality it may happen thatthere isno concern/match between the two.
- **Games can cause distraction:** Whena game is integrated into a course, it has to be ensured that it serves its purpose. Some learning objective must be tied to the game that is expected to be achieved by its users, otherwise it will distract the users and would be a complete wastage of time.

6. Limitations of Present Study

This study hasdefinite limitations which are elucidated as under:

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(i) The findingsacquiredin this research are not exhaustive and henceforthconfined to the research conducted.
(ii) The findings obtained so far aremerely based on the studies published in English language and non-English published literature wascompletely ignored.
(iii) The criteria followed during selection of scholarly articles was based on title of article, abstract and keywords
(iv) Another challenge to this study can be the author prejudice in article selection criteria.

7. Conclusion and Further Research Directions

Gamification is apioneering approach aiming to make the users learn by incorporating visual game design elements in different learning environments. It attempts to maximize the engagement and enjoyment of players by taking into consideration the interest of learners and motivate to continue with the learning process.The present article intends to present the findings and analysis of the literature review on gamification being researched by sundry researchers in different disciplines and in different contexts.

There are certain grey areas that need immediate attention in near future are mentioned as follows:Majority of the gamification based studies do not put much focus on motivation that is considered to be one of the educational benefits. Those studies that explored motivation, kept in view students' attendance and grades only, which are not directly associated to it. Consequently, the connection between motivation and learning outcomes is still not well understood. Moreover, From the literature review, it is learned that there was no strongevidence on points, badges, and leaderboards essential to address the pertinent motivational factors. In spite of having several benefits of gamification, it is also possible that at some point of time it can harm educational learning also and it requires the avoidance of gamification scenarios. Mostly the gamification researches claim the educational benefits such as enhancement in engagement, motivation, attendance, participation etc. but unfortunately there is no scientific evidence that confirms the educational benefits of gamification [17]. Generally, gamification is used as a pedagogical strategy in a programming course to impart logic building techniques, but it ignores the level of challenges design that must match with learner' interest and skills. Thus, there must be constant refinement in the strategy as well as the possible learning outcomes based on the past experiences [5].

There is further a lot of scope in advancing the e-therapy framework. It is very much possible that the existing games can be incorporated in this framework by exploring various approaches [8]. There is no explicit and predefined methodology available to achieve the desired outcomes particularly in healthcare domain as the purpose of gamification is to add fun in practice to make it interesting which is not the desired objective in itself [7].

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