Technology adoption as a change agent in learning culture;
Virtual Reality and Gamification: A Blend for Better Learning Outcomes and Performance on students

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Abstract—**Information technology is transforming the life & culture in all its facets. This has led to disruptions in the world of learning. The learning styles and pedagogies of learning has been disrupted by the evolution of internet in its own time line. Different generations have accepted technology in varying degree, form and context. The future generation will be experiencing intelligent empowerment by using advancements in technology. This means the world of learning is to be disrupted more & more that too rapidly. Digital disruption has been accelerated by a decade due and the new normal. The disruption has been leap frog than marginal or incremental. The academic ecosystem witnessed a significant transformation by adopting technology led learning platforms. The academic community needs to be watched carefully for acceptance, adoption and experience they get by using the education technology led platforms.**

A multidisciplinary model, building on the technology acceptance model and relevant literature on acceptance, adoption, trust and intelligent empowerment, has been devised. The study is expected to demonstrate the role of technology in transforming students from passive learning styles to active learning styles. Gamification has been moderated by these Edutech platform which has developed new learning curves in the academic community.

The tradition approach towards teaching-learning styles underwent transformation which is more learner centric and collaborative. These changes would disrupt the world of learning using the extensive possibilities of Digital Disruption. In order to understand the effect closely, a conceptual paper is written to explore theoretical frameworks and observed changes in the learning environment prevalent in new normal

Keywords— Learning Styles, Active Learning, Passive Learning, Gamification

I. INTRODUCTION

In today's digital generation gamification has become a popular tactic to encourage specific behaviors, and increase motivation and engagement. Though commonly found in marketing strategies, it is now being implemented in many educational programs as well, helping educators find the balance between achieving their objectives and catering to evolving student needs. Using new technology in education the students became active learners than passive.

Virtual Reality (VR) and gamification can be effectively combined in the world of learning. VR offers the ability to explore unchartered territories and locations that are difficult to explore physically. Adding game-based elements, such as scoring, timed activities and rewards, can help improve motivation and learning. In this paper we focuses on gamification.

Traditional schooling is perceived as ineffective and boring by many students. Although teachers continuously seek novel instructional approaches, it is largely agreed that today's schools face major problems around student motivation and engagement. The use of educational games as learning tools is a promising approach due to the games' abilities to teach and the fact that they reinforce not only knowledge but also important skills such as problem-solving, collaboration, and communication. Games have remarkable motivational power; they utilize a number of mechanisms to encourage people to engage with them, often without any reward, just for the joy of playing and the possibility to win. In addition, their effective classroom adoption requires certain technical infrastructure and appropriate pedagogical integration. As opposed to using elaborate games requiring a large amount of design and development efforts, the "gamification" approach

suggests using game thinking and game design elements to improve learners' engagement and motivation.

Gamification, defined by Deterding as the use of game design elements in non-game contexts, is a fairly new and rapidly growing field. The concept of gamification is different from that of an educational or serious game. While the latter describes the design of full-fledged games for non-entertainment purposes, "gamified" applications merely employ elements of games.

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II. LITERATURE REVIEW

E-learning networked information and communications technology is a modern process in the teaching and learning of high school student, undergraduate and postgraduate students. There are a number of provisions that are used for the purpose of describing this online mode of teaching and learning. The technique most widely uses online activities, virtual learning, and a web based e-learning network and distributed teaching [1]. In this type of learning delivery, information and communications technology are followed in synchronous and asynchronous modes. It is clear from the information available, the role of communication and information technology is to provide

opportunities in the areas of storing, capturing and distributing information [2]. With the event of media software tools and equipments, radio and television are areas that could be used for debate [3]. Video clips used for role-play based learning have made the learning and teaching experience more appealing and revolutionary [2].It has been seen that students who generally want to stay

away from school are highly motivated by innovative teaching methods. Moving images and educational instructions given through multi media have aided in increasing the ability of instructors to represent information, in many ways within the school or college [3] With the popularity of radio and television and such other media, it is assumed that every media type has the capability and potential to increase, direct, and shape individual's abilities to communicate and

instruct. Computers are second in line to provide technological innovation, both with the help of the latest software and hardware, in the area of valuable e-learning process.

While the concept of gamification may be simple, effectively gamifying a concept isn't. However, it can be simplified, by following a five-step process:

Fig 1: five-step process of applying gamification in education

Step 1: *Understanding the Target Audience and the Context Who is the target audience, and what is the context that surrounds the education program?*
A key factor that determines the success of an education program, is a good understanding of who the student is. This combined with the context in which the program is being delivered, will help in designing a program that empowers the student to achieve the objective of the program.
Step 2: *Defining Learning Objectives What does the instructor want the student to accomplish by completing the education program?*

Every instructor should have an objective that s/he wants the student to achieve at the end of the learning program.
Step 3: *Structuring the Experience How can the learning program be broken down and what are the pain points?*
Stages and milestones are powerful tools that enable instructors to sequence knowledge and quantify what the students need to learn and achieve by the end of each stage or milestone. These milestones work well for students as well, as it makes the ultimate objective seem more achievable and measurable, while ensuring that obstacles within and between each stage are easily identifiable
Step 4: *Identifying Resources What are the resources needed to gamify education?*
Once the stages/milestones have been identified, the instructor can more easily judge which stages, if any, can be gamified, and how. Questions an instructor should think about while considering gamification include:
• Can a tracking mechanism be applied to this specific stage?
• What would be the currency and what determines the accomplishment of a level?
• Are there clear rules that can be implemented?
• Does the overall system give the student and/or instructor feedback?
Step 5: Applying Gamification Elements What gamification elements should be applied? The gamification process in education comes down to the elements that are applied to the learning program. As mentioned earlier, gamification is the addition of game-like-elements, also called game mechanics, in non-game settings. Game mechanics can be classified as self-elements or social-elements.
We can state our problem are analysis student performance based on conceptual understanding, actual learning and their logical ability based on gamification methods.

III. RESULTS AND DISCUSSION

The specialist utilized both quantitative and subjective philosophies to consider the view of partners dependent on the web based showing learning measure in HEIs . This examination is delimited to Kerala. All the example respondents broadened their full co-activity by reacting to the poll. Significant input and ideas were accumulated while meeting. Information got from the different sources were broke down by utilizing the engaging insights for quantitative information and substance examination for subjective information.
Gamification has been directed by these Edutech stage which has grown new expectations to absorb information in the scholastic local area. On the off chance that you are searching for an approach to transform learning into a better time and connecting with measure, gamification is the most appropriate instructive innovation pattern. There is no purpose behind understudies not to be effectively associated with study hall games. Understudies can learn and rehearse while they are participate on energizing game exercises. Gaming components help establish an interesting and positive learning climate for learners. The educator's anxiety that they can't follow the learner's movement while their whole showing meeting and the learners question about the legitimacy and dependability of the substance conveyed in the e-learning measure [1,2].
The graphs below show that e-learning techniques are first choice of all the user groups as compared to traditional teaching methods.
For conceptual understanding using some gamification e-learning techniques
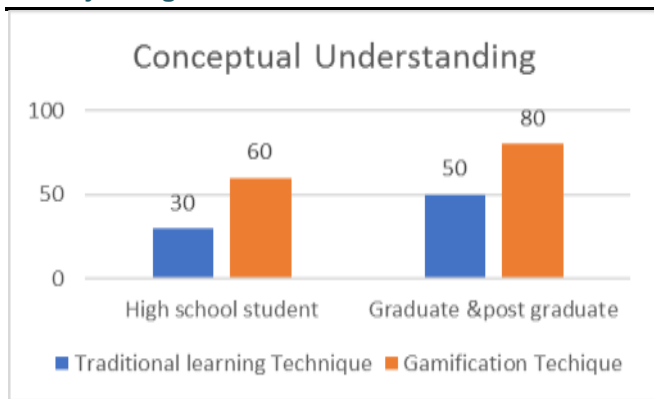were first choice for all student groups:

Fig. 2. Graph showing conceptual understanding for both learning techniques

Discussion: This is a question that was asked to all user groups –high school student, Graduate and Post Graduate students that conceptual understanding is enhanced by traditional teaching techniques or gamification-based teaching techniques. As the graph indicates, from the three groups: in case of students 60% conceptual understanding is developed by e-learning techniques whereas only 30% of conceptual understanding is developed using traditional teaching techniques. Similarly other groups also offered more points to conceptual understanding through E-learning techniques as compared to traditional techniques.

One significant learning boundary was taken as genuine learning. The chart underneath shows how unique client classes decided in favor of real learning concerning E-learning methods just as conventional instructing procedures.

One important learning parameter was taken as actual learning. The graph below shows how different user categories voted for actual learning with respect to gamification-based learning techniques as well as traditional teaching techniques.
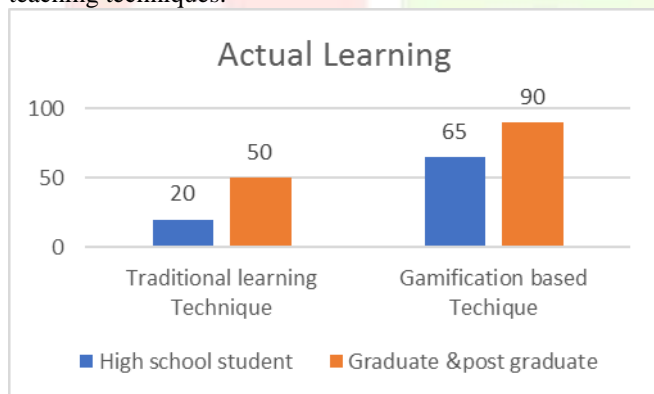

Fig. 3. Graph showing actual learning ability with Gamification based learning techniques and traditional teaching techniques

Discussion: The question about what was the actual learning of a subject or topic with the two types of techniques in the context was asked to all user groups –High school student, ug and pg students, As the graph above indicates, in case of high school students 65% of actual learning is developed by gamification learning techniques whereas only 20% of actual learning is developed using traditional teaching techniques. Similarly other groups also offered more appreciation to learning techniques for actual understanding as compared to traditional techniques

IV. CONCLUSION

The investigation made showed the viability of gamification procedures over traditional educating techniques. The investigation showed that gamification methods achieved high reaction when contrasted with conventional showing techniques for all the user classes. At long last criticism of customary instructing strategies and gamification procedures from all user classes are appeared by the diagram beneath.
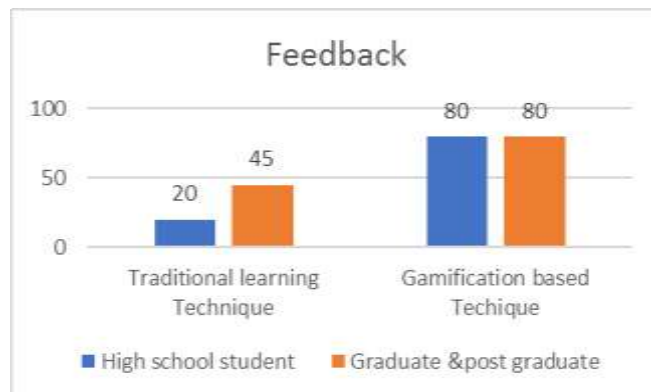

Fig.4. Graph showing the feedback of E-learning techniques and traditional teaching techniques

It is obvious from the diagram over that gamification procedures have great input from secondary school understudies, ug and pg understudies and researchers. It is obvious from the above diagram that 80% of secondary school understudies gave positive input for gamification procedures and just 20% of understudies favored customary techniques for instructing.

New advances like virtual and increased reality can profoundly improve proficient preparing and make learning more powerful. Stages make it simpler to interface individuals of varying degrees of information, permitting distributed instructing and tutoring. Utilizing computer generated reality for all the more genuine encounters has the capability of taking learning experience to an unheard-of level. Augmented reality (AR), an innovation for overlaying advanced data on objects in reality seen through a cell phone camera or headset can make learning more vivid and fun. Gamification advances and methods are in effect progressively embraced to keep students included and intrigued. The Gamification based block code learning make 1dramatically increase the students logical thinking ability. Logical thinking is the act of analyzing a situation and coming up with a sensible solution.

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