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IMPACT OF GAMIFICATION ON STUDENTS' PERFORMANCE IN HIGHER EDUCATION

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Abstract:

The term "gamification" is used to describe the practice of incorporating game elements into non-game contexts for the purpose of improving performance. It has been demonstrated that using gamification to improve students' learning outcomes is both an effective and motivating strategy. In this paper, we assess how well the online gamified application Kahoot helps students learn and retain information. Kahoot encourages students to participate actively in a topic test, leading to higher scores on successive assessments. Students in a Python for Data Science class took two Kahoot! quizzes, and the results showed that, overall, the technology helped them learn and improve their performance.

Key words: *Student Performance, Gamification, Higher Education, Engagement, Success*

Introduction:

Data Science is a course that might present significant difficulties for pupils. The goal of this effort is to use gamification to improve students' grasp of Python for Data Science and to make the language and its application to data science more enjoyable to learn. The relationship between instruction, objectives, feedback, and interaction is similar in effective and efficient educational applications. Sadly, many teachers struggle to discover effective ways to include ideas into the curriculum that can compete with the excitement of video games.

There has been a period of accelerated transformation in higher education leading up to the 21st century. Students' attention has shifted away from traditional schooling in favour of their own personal pursuits, such as using mobile apps, social media, and video games. Even though today's students have always had to contend with diversions and time wasters, the constant stream of stimuli offered by their cell phones, tablets, and laptops presents a significant new obstacle to concentration and education (Richtel.M., 2010).

For some time now, gamification has been recognized as a promising strategy for boosting student engagement, efficiency, and performance (Barata. G., 2013). Gamification is an effective strategy for attracting and retaining users, as it encourages them to collaborate with others and take part in enjoyable activities to achieve goals. Despite the fact that its name seems like a game, it is in fact a game, and gamification is a separate phrase (Gok, 2016). Gamification is defined as the application of typical elements of game playing (rules of play, point scoring, and competition with others) to other areas of activity, specifically to engage users in problem solving

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(Oxford Dictionary, 2018). According to (Kapp, 2012), To engage people, get them to take action, get them learning, and solve issues, gamification makes use of game mechanics, aesthetics, and game thinking. Meanwhile, (David L., 2016) Game theory and principles for education, motivation and engagement design, and other gamification-related concepts were discussed by the writers. To gamify means to transform the entire instructional process into a game, while game-based learning refers to incorporating a game into the instructional strategy (Al-Azawi. R., 2016).

Literature Review: The effect of gamification on students' motivation, engagement, and classroom participation has been the subject of numerous studies.(Thamvichai, 2012) The author attempted to introduce game mechanics into an engineering curriculum by implementing a points-based system. The researchers discovered that students were enthusiastic about participating in the assigned activities through the use of a brief questionnaire. At the same year, (Cronk, 2012) The author also incorporated gamification principles, such as a reward system in the shape of a growing virtual tree dependent on the students' performance. Moreover, this research demonstrated an increase in students' active participation throughout class. The author also used the idea of gamification in the classroom. In his studies, pupils compete with one another by joining different guilds and earning experience (XP). Final letter grades are assigned based on accumulated XP at the end of each semester. According to the findings of this survey, students appreciate the opportunity to actively participate in class. Multiple forms of reinforcement are more likely to be used when participants are encouraged to view the testing process as a game. A gamified exam or test has a more organic flow, which keeps students engaged and moving forward in the material. The desire for acknowledgement is met in video games via the immediate feedback players receive on their play. Gamification motivates students by appealing to their competitive natures through a system of constant quantification and reward for their efforts.

Objective of the Study: For this study, we asked specifically whether or not students' academic performance improves in a gamified learning environment based on points and leaderboards. Therefore, the following study aims have been established.

☐ To study the concept of Gamification through Kahoot.

☐ To evaluate the impact of a gamification approach on student performance.

Research Methdology: This work is grounded entirely in empirical research on the efficacy of gamifying instructional practices. Roughly eighty-five participants from the Data Science and AI workshop were surveyed. Kahoot, an online platform, was used as the gamification tool for this research.

Concept of Gamification through Kahoot: Kahoot is an interactive game that may be used as a GSRS in the classroom. It is played in a web browser on a computer with a projector. Students respond with their answers

by selecting the color and symbol they think best represent the correct choice. A scoreboard displaying the top five scorers appears between each set of questions, along with a distribution of students' answers. Each student receives personalized feedback on his or her questions, including whether or not the answer is accurate, the number of points earned, the student's overall ranking, the student's distance from the person ranked above them, and the correct answer if the student is incorrect. When a session ends, the winner's name and total points are displayed on a massive screen. Kahoot simulates the lively and competitive atmosphere of a television game show with the use of a colorful graphical user interface, music, and sound effects during the quiz. At the end of the quiz, the teacher can download the results in an Excel spreadsheet, a feature made possible by Kahoot.

Data Analysis and Interpretation:

Multiple choices Test based on '*Python for Data Science*' subject was taken with 50 questions. There was a certain amount of time allotted to answer each question. The students took the test for the very first time in an online setting that included elements of gamification. Everyone had fun with the Test, but some were more excited than others. Not only do today's classrooms emphasize the value of hands-on learning and teamwork, but they also place a strong emphasis on the need for students to be actively involved in their education. To determine the level of improvement brought about by the use of gamification using Kahoot among the students. Students were given a Kahoot quiz comprised of multiple-choice questions on the subject of "Python for Data Science" appropriately.

Student name	POINTS GAINED		RANK	
	Test 1	Test 2	Test 1	Test 2
Shirshak	13218	13285	13	1
Vaidehi	10754	11046	30	2
Aniruddha	13447	10900	12	3
Veebha	13725	10707	10	4
Rajesh	10214	11470	21	5

Table 1. Student Result for Kahoot Test

From the table above, it can be seen that the top five students on Test 2 are all ranked higher than 10th place. It is evident that students have found success with Kahoot and fostered a healthy competing environment. Students are becoming increasingly motivated to study and take exams in order to achieve a high rank. With the principle of game-based learning, researchers have discovered that Kahoot has helped students improve their academic performance.

This investigation demonstrates that teaching techniques already exploit the fundamental factors that make games interesting. This research yields two significant recommendations. Utilize a gamified learning scenario as an exercise to inspire students to attempt new things and to overcome their fear of making mistakes. Second,

for gamification to maintain its game-like quality in a classroom setting, students must actively engage with it.

Conclusion:

The rate of technological progress is accelerating, which has resulted in an office environment that is in the process of being continuously reshaped by digitalization, automation, and artificial intelligence. Because of the ongoing change that is going on around us, the prerequisites for the information and abilities that students need to have are always evolving. The correct strategies, which can be provided by gamification, can make learning and performing well on the exam with a greater sense of enjoyment and engagement, leading to results that are ultimately more efficient and effective. According to the findings of the research, the use of the gamification method led to an increase in both the level of interest that students had in the subject matter being taught as well as the students' aspirations to perform well in competitive situations. In addition, the outcomes of the study show that using Kahoot has a positive impact on the overall test performance of students.

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