**1.1 INTRODUCTION:**

Technology has played a crucial role in transforming the education sector as it evolves rapidly. Its integration has significantly impacted the way learning takes place. With the current generation of students being digital natives, traditional teaching methods face difficulties catering to their diverse needs and preferences. As a result, there is a rising demand for creative and interactive educational solutions. In response to this call, this study proposes developing and implementing a cutting-edge Gamified e-Learning Portal for Signal Village National High School, enriched with interactive features designed to aid learning and serve as a reviewer.

The concept of gamification in education has gained considerable attention due to its potential to enhance student engagement and motivation. By infusing game design elements into the learning process, such as rewards, challenges, and points systems, gamified e-learning portals have shown promising results in fostering active participation and student knowledge retention (Deterding et al., 2011). Moreover, the incorporation of interactive features not only makes learning more enjoyable and encourages self-directed exploration and a deeper understanding of the subject matter (Hanus & Fox, 2015).

It is crucial to recognize the significance of incorporating technology in education, especially as the digital age continues to influence how we gain and exchange knowledge. By developing an innovative Gamified e-Learning Portal for Signal Village National High School, we aim to empower students with a personalized and dynamic learning experience. The portal's interactive features will allow students to actively engage with the educational content actively, reinforce their understanding, and assess their progress through interactive assessments and quizzes. The portal includes gamified features that encourage students to take control of their learning journey and feel a sense of accomplishment as they advance through different levels and challenges.

With this study, our goal is to provide valuable insights to the educational community by highlighting the potential of gamified e-learning platforms as practical tools for modern education. By bridging the gap between traditional teaching methods and innovative technology, we aim to create a platform that not only aids in learning but also serves as a comprehensive reviewer, preparing students for academic success.

**1.2 BACKGROUND OF THE STUDY:**

According to Rowe, Matt (2016) The traditional classroom setup has been the primary mode of education for centuries, with students sitting in rows facing the teacher at the front of the class, primarily relying on chalkboards, textbooks, and lectures. However, as technology advances and educational research evolves, educators are increasingly recognizing the benefits of modernizing the classroom setup to better meet the needs of today's learners.

To modernize the classroom, we need to incorporate technology, active learning strategies, collaboration, and create a learner-centered environment. The goal is to engage students more effectively, cater to diverse learning styles, and prepare them for the challenges of the 21st-century workforce.

The researcher has been taking creative measures to address the challenges they face in engaging students and improving their learning experiences. E-learning, which leverages digital tools and interactive platforms, has appeared as an excellent solution to create a more engaging and effective learning environment.

The study focuses on Signal Village National High School, where teachers recognize the potential of technology to transform the educational landscape. The school aims to develop and implement a gamified e-learning portal with interactive features to promote an interactive and dynamic learning environment. By incorporating gamification elements, such as rewards, challenges, and achievements, the platform aims to capture students' interest and motivation, encouraging them to participate in their education actively.

**1.3 STATEMENT OF THE PROBLEM**

This study aims to improve traditional teaching methods at Signal Village National High School by addressing challenges such as limited student engagement, lack of interactive resources, inadequate review materials, and progress-tracking systems. Implementing a gamified e-learning portal with interactive features aims to enhance student engagement and promote meaningful collaboration with other students. The goal of this study is to improve the overall learning experience and academic performance of students.

**1.4 OBJECTIVES OF THE STUDY:**

**GENERAL OBJECTIVE:**

* The system's general objective is to give students useful resources and tools that improve their educational experience, with a focus on supplemental learning materials that can be used as reviewers or as a learning aid. The approach works to provide supplemental materials that enhance the present syllabus by offering more explanations. illustrations, and practice problems to improve understanding. Additionally, it aims to offer interactive tools and features that actively engage students, encouraging involvement and memory retention. The system also wants to act as a reliable reviewer, providing tests and comments to aid students in assessing their progress, identifying areas for growth, and establishing their comprehension of the material.

**SPECIFIC OBJECTIVES:**

* Develop a user-friendly online platform specifically tailored to the needs of grade 11-12 STEM students at Signal Village National High School.
* Provide a range of STEM-related learning materials and interactive modules that cover various topics from Applied and Specialized subjects of STEM strand taken by grade 11 and 12 STEM students.
* Implement gamification strategies to enhance participant engagement and motivation throughout the learning process, such as points, badges, e-certificates, and leaderboards.
* Promote collaborative learning environment by integrating discussion forums and peer-to-peer interaction features, allowing students to share insights and learn from each other.
* Ensure the e-learning portal is accessible across mobile and web platforms, allowing participants to learn at their own pace and convenience.

**1.5 SIGNIFICANCE OF THE STUDY:**

This study creates online platform for enhancing educational experience with supplemental learning materials. The results of the study would be a great benefit to the following:

**Students:**

The primary beneficiaries are the students; because of this study, the students give valuable resources and tools that improve their educational experience, focusing on supplemental learning materials that can be used as reviewers or as a learning aid.

**Teachers:**

This study improves teachers' ability to track and assist students' learning progress using e-learning portal analytics.

**Signal Village National High School Community:**

The study aims to enhance the school community's learning experience and academic performance using gamified e-learning portal, promoting a positive environment and continuous improvement.

**Future Researcher:**

The result could be a basis for other researchers conducting future research. This study may assist individuals in delving deeper into the system, producing fresh concepts, and advancing knowledge.

**1.6 SCOPE AND DELIMITATION**

The Study is developing a system for Signal Village National High School's STEM students in grade 11 and 12 is to create an online platform that provides supplementary learning materials, supports learning, and acts as a reviewer. Including interactive tools, assessment features, and progress tracking capabilities are just a few of the things it involves. The method wants to promote collaboration, improve comprehension. However, it is limited to the STEM fields, the intended grade levels, and subjects specifically, the applied and specialized subjects of STEM strand only. It functions within the limitations of Signal Village National High School's policies and technology infrastructure while completing the curriculum without replacing classroom instruction.

**1.7 SWOT ANALYSIS:**

**STRENGTHS:**

* Gamified approach enhances student engagement and motivation in learning activities.
* software offers flexibility, accessible from anywhere, anytime.

**WEAKNESS:**

* E-learning portal success relies on stable internet connectivity, but inconsistent or unavailable access may affect students.
* Reliable technology infrastructure is crucial for e-learning platform development and maintenance.

**OPPORTUNITIES:**

* Interactive features promote student collaboration, peer learning, and knowledge sharing.
* Signal Village National High School's successful implementation may lead to widespread adoption.

**THREATS:**

* Technical issues can disrupt learning, affecting student satisfaction.
* Online platform data storage raises security and privacy concerns.