

Innovative Teaching and Learning Practices

Innovative Teaching Approaches in Advanced Data Structures

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Department: Information Technology

Course: Advanced Data Structures [IT2265]

Semester/Year: 2023-24

2. Objective of the Practice

1. **To enhance Student Engagement Through Gamified Learning:** Utilize AI-driven platforms like Quizizz to create interactive and engaging quizzes that promote active learning and real-time feedback, helping students grasp complex data structure concepts in a fun and dynamic way.
 2. **To facilitate Personalized Learning Paths:** Leverage AI tools to adapt quizzes and exercises based on individual student performance, ensuring each student receives customized learning experiences that cater to their strengths and weaknesses in data structures.
 3. **To encourage Collaborative Problem-Solving:** Implement quiz using Quizizz to foster peer-to-peer learning, enhancing students' understanding of data structures through teamwork and discussion.
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3. Description of the Practice

Context:

The use of AI-driven platforms like Quizizz introduces an interactive and engaging approach to learning data structures. By incorporating gamified quizzes, students actively participate in the learning process while receiving real-time feedback. This dynamic learning environment makes it easier for students to grasp complex data structure concepts, turning a traditionally challenging subject into an enjoyable and accessible experience. AI tools like Quizizz offer personalized learning experiences by adapting quizzes and exercises to individual student performance. These tools assess the strengths and weaknesses of each student, delivering customized content that addresses specific learning needs. This tailored approach ensures that students receive the appropriate level of challenge and support, enhancing their understanding and mastery of data structures at their own pace. Quizizz can also be used to facilitate peer-to-peer learning by implementing quizzes in a collaborative setting. Group quizzes or team-based activities promote discussion and cooperation among students, fostering a deeper understanding of data structures. By engaging in collective problem-solving, students enhance their learning through shared insights and strategies, benefiting from diverse perspectives within their peer group.

Methodology:

AI enabled Quiz:

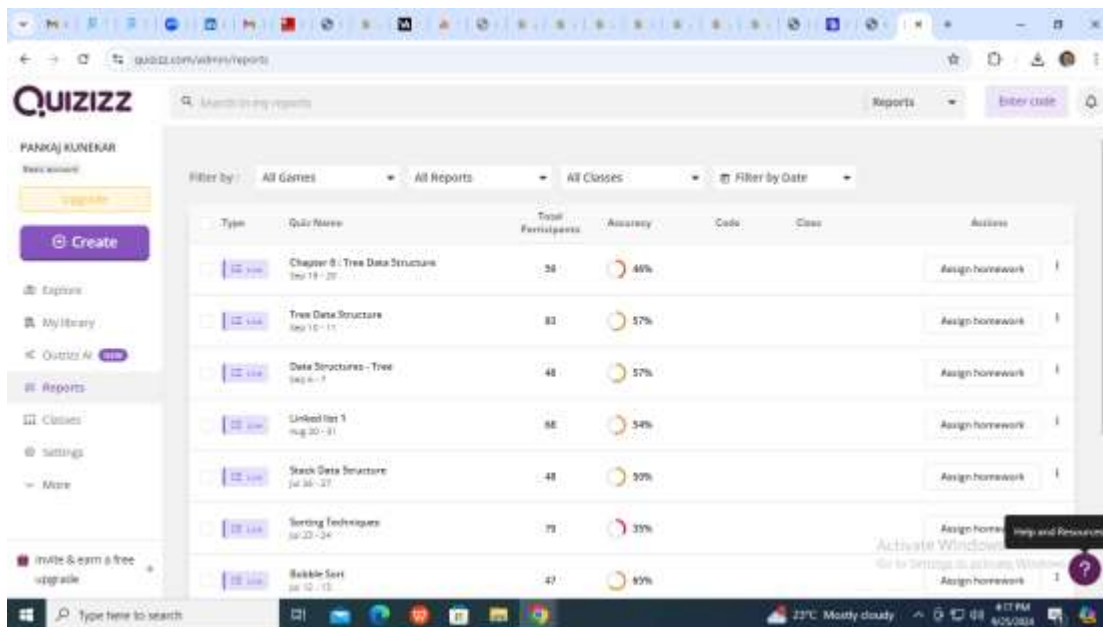


Figure 1: Quiz conducted on AI enabled platform

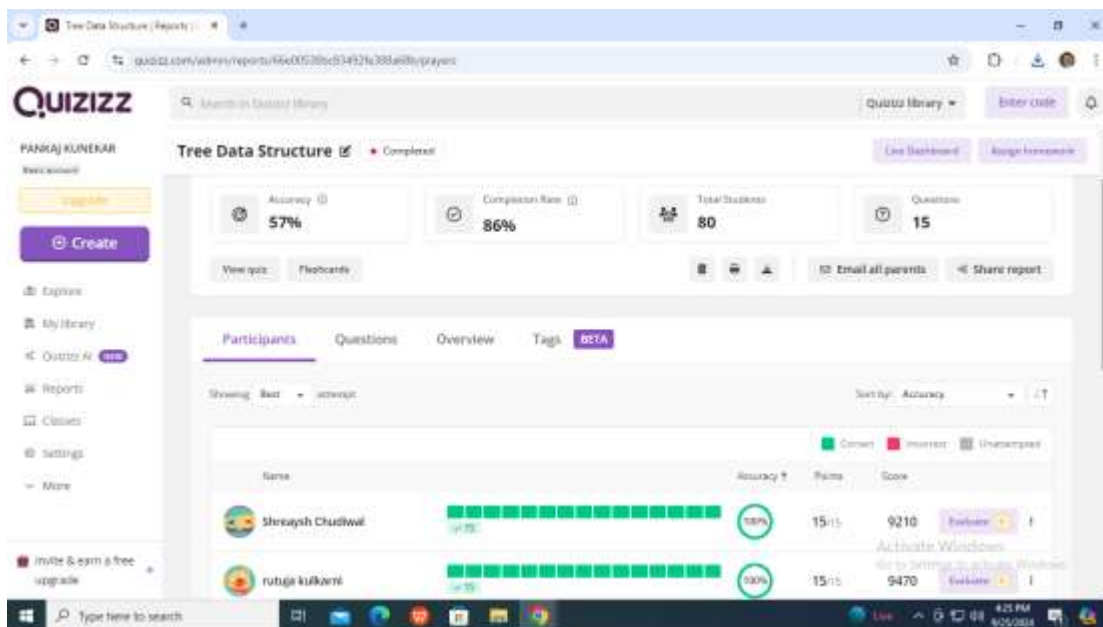


Figure 2: Quiz Responses

Duration:

The practice is implemented over the entire semester, with specific milestones for projects and periodic assessments for practical skills.

Resources Required:

Online Platform

Stakeholders Involved:

- **Students:** Engage in interactive quizzes
 - **Faculty:** Promote coding practices
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4. Outcomes and Impact**Learning Outcomes:**

- Students will be able to actively engage with data structure concepts in a fun and interactive environment.
- Improved retention of complex topics due to real-time feedback and the gamified nature of learning.
- Enhanced motivation and interest in data structures through dynamic quiz formats.

Impact:

- Increased student participation and enthusiasm for learning data structures.
- Higher comprehension rates due to immediate feedback, allowing for timely correction of misunderstandings.
- Reduction in the intimidation factor associated with challenging topics, resulting in greater overall academic performance.

Student Feedback:

The quizzes on Quizizz made learning data structures fun and engaging, and the instant feedback really helped to understand improvement."

Overall, these innovative practices contribute to improved academic performance, increased student motivation, and a more dynamic learning environment.

Peer Review Feedback: <https://forms.gle/jC5HhpyXFedYn4TF7>