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ACT IT TO GRASP IT: ROLE PLAY AS A CATALYST FOR DEEPER UNDERSTANDING IN ACTIVE CLASSROOMS

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ABSTRACT

In many technical courses, conventional lectures often lead to passive learning, where students struggle to stay engaged and find it difficult to grasp complex concepts. This was a challenge observed in the MEC241 Fluid Mechanics course, where despite clear explanations, students still found it hard to connect theory with real-world application, and frankly, they found the lectures boring. To tackle this, a teaching innovation titled ***"Act It to Grasp It: Role Play as a Catalyst for Deeper Understanding in Active Classrooms"*** *was introduced. Instead of just listening, students were assigned roles and asked to act out real engineering scenarios. By stepping into the shoes of engineers, technicians, or team leaders, they experienced the content in a more relatable and meaningful way. The classroom was transformed into an active, collaborative space where students engaged with one another, applied concepts through dialogue and decision-making, and developed soft skills like communication and teamwork. Most importantly, they had fun while learning. Feedback collected through a student survey showed strong support for this method. Students reported improved understanding, higher engagement, and greater confidence in expressing their ideas. Many also appreciated the break from traditional lectures and recommended more sessions like this in other topics. This innovation demonstrates that role play is not just a playful activity; it's a powerful tool to enhance understanding, increase participation, and bring learning to life.*

Keywords: *Active classroom, Role play, Teaching and learning innovation, Engineering*

INTRODUCTION

Traditional lecture methods in technical courses often fail to engage students implicitly, especially when it comes to applying theoretical knowledge in real-world circumstances (Munjy et al., 2025; Klein et al., 2023). In the MEC241 Fluid Mechanics course, students displayed signs of disengagement, struggled with poor communication during group tasks, and had difficulty connecting abstract concepts to practical situations. These challenges highlighted a critical gap in conventional teaching, which tends to favour content delivery instead of active participation (Freeman et al., as cited in Klein et al., 2023).

To address this, role play was introduced as an innovative instructional strategy. Role play involves students assuming real-world job roles—such as materials engineer, site technician, or project lead—and performing structured tasks in an active, cooperative setting (Sano & Lemckert, 2014; Barrera et al., 2021). This approach is rooted in the belief that learning is deeper when students are immersed in realistic situations that mimic industry dynamics. It also promotes critical soft skills such as teamwork, communication, and leadership (Kedrowicz & Nelson, 2007; Torres de Macedo et al., 2024).

This teaching innovation aims to transform the classroom into an active, student-centred environment where theoretical understanding is enhanced through experiential engagement (Kozanitis & Nenciovici, 2023). In addition to addressing disengagement, role-play activities align well with the evolving educational focus on graduate employability. Engineering graduates are not only expected to demonstrate technical competence but also to possess well-rounded interpersonal and problem-solving skills. The role-play method nurtures these aspects by exposing students to simulated real-life dilemmas, stakeholder negotiations, and data-driven decision-making within a safe, structured classroom setting. Such immersive learning methods are increasingly supported by educational research and are being adopted in many global institutions to prepare students for multifaceted roles in the workforce.

Moreover, role-play supports a deeper pedagogical shift towards experiential learning. According to Kolb's Learning Theory, knowledge is created through the transformation of experience. By engaging in role-play, students progress through the experiential learning cycle, concrete experience, reflective observation, abstract conceptualization, and active experimentation and thus promoting not only retention but also the ability to apply concepts in novel situations.

METHODOLOGY

The implementation of this innovation took place entirely within the classroom setting, specifically for one group of class (16 students) during the scheduled tutorial sessions for the MEC241 Fluid Mechanics course as shown in Figure 1. Instead of the conventional approach of solving tutorial questions individually or in groups, the sessions were restructured into immersive role play activities. Students were divided into teams and assigned specific character roles based on a realistic engineering scenario. These roles included members of a consultant engineering firm, an internal engineering department, and residents lodging formal complaints about a technical issue affecting their neighborhood.

Figure 1.: Role-play activity in class.

Each group was tasked with investigating the problem, applying relevant fluid mechanics principles, and formulating a viable solution from their assigned perspective. The activity culminated in a simulated press conference where each group presented their findings and justified their recommendations to the class, acting as the public audience and stakeholders. This format encouraged cross-group interaction, critical thinking, and real-time communication. The entire process was designed to mirror real-world engineering consultations, making the classroom not just a place for learning theory but a platform for active, applied problem-solving.

The design of the role-play scenario was developed to reflect a realistic yet manageable engineering challenge involving water flow and system failures affecting a residential area, an issue that could plausibly occur and require input from various stakeholders. Care was taken to ensure that each role came with specific objectives and limitations, such as technical constraints, public interest concerns, or budgetary restrictions. This encouraged students not only to apply their technical knowledge but also to engage in negotiation, justification, and compromise when facing the collaborative challenges of the engineering profession.

To ensure all students were equally engaged, facilitators played an active role by moderating discussions, prompting deeper inquiry, and ensuring that quieter students were also drawn into the discourse. This helped maintain balanced participation across the groups and allowed students to reflect critically on their roles and responsibilities. Students were also encouraged to keep reflective notes throughout the session, which were later used in a debriefing session to consolidate learning outcomes and share perspectives on the overall experience.

RESULTS AND DISCUSSION

A feedback survey was conducted among the 16 students who participated in the role-play activity during the MEC241 tutorial session. The results offer insightful reflections on the effectiveness and reception of this active learning strategy.

A vast majority (87.5%) of the students reported that they had never participated in a role-play activity before in any class as shown in Figure 2. This suggests that the experience was novel and likely broke the monotony of typical engineering tutorials.

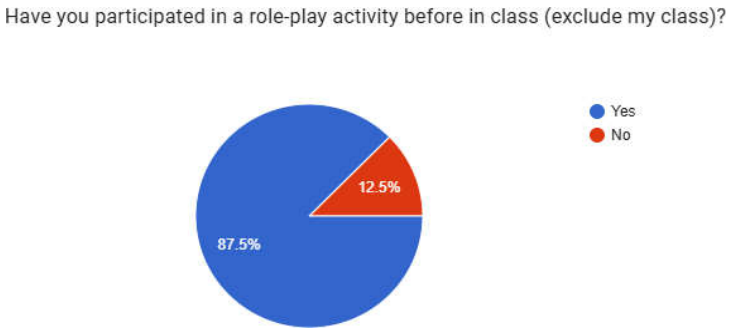

Figure 2.: Previous experience in role-play activity.

Regarding engagement, 50% of the students found the activity "Neutral," while 37.5% found it "Somewhat engaging," and 12.5% found it "Very engaging." While this shows mixed levels of engagement, it is notable that none of the students found the activity "Not engaging." More importantly, 62.5% rated the role-play as "Very effective" in helping them understand the topic, and the remaining 37.5% found it "Somewhat effective." This indicates that the method significantly contributed to conceptual clarity as shown in Figure 3.

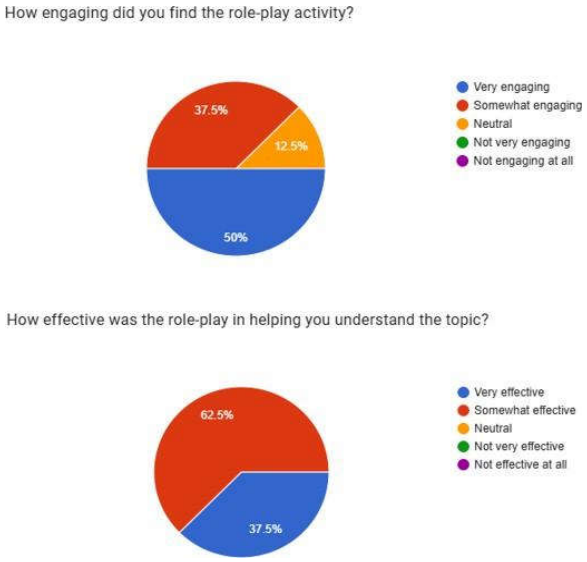

Figure 3.: Engagement and effectiveness of role-play activity

On the development of soft skills, 50% strongly agreed and 50% agreed that the activity helped improve their communication and teamwork abilities, demonstrating a unanimous perception of soft skill benefits. Finally, 75% of students rated the role-play as “Very relevant” and “Somewhat relevant” to the course content, affirming the alignment of the activity with the learning objectives as shown in Figure 4.

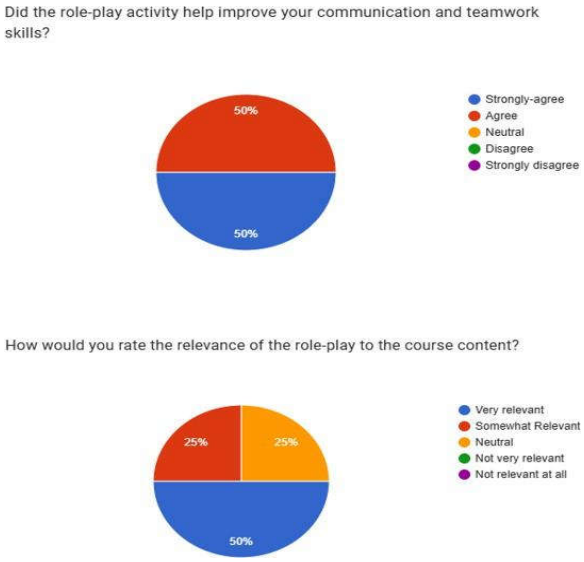

Figure 4.: Communication, teamwork and relevancy of role-play activity

These results support the idea that role-play is not only a novel engagement tool but also an effective method to enhance comprehension and professional competencies in technical courses.

CONCLUSION

The integration of role-play into the MEC241 classroom has proven to be an effective and engaging strategy for bridging the gap between theoretical learning and real-world engineering practice. By allowing students to step into professional roles and simulate collaborative problem-solving, the activity not only enhanced conceptual understanding but also nurtured essential soft skills such as communication and teamwork. Feedback from the students affirms the relevance and impact of the method, suggesting that such active learning innovations hold great potential for improving student engagement and learning outcomes in technical education.

Furthermore, it is recommended that this role-play approach be extended to other classes and subjects within the engineering curriculum or even across disciplines. Its adaptability allows educators to tailor scenarios to specific course content, making it a versatile tool for enhancing student participation, critical thinking, and real-world application in various educational contexts. Subjects such as project management, design thinking, thermodynamics, or even ethics in engineering can benefit from role-play elements that simulate industry-like situations. Encouraging cross-collaboration among departments fosters interdisciplinary learning and better prepares students for the complex, multifaceted challenges they may face in their future careers.

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