


Chapter 2


Beyond the Test: Rethinking Assessment During Project-Based Lessons

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ABSTRACT

What if we saw students not as passive recipients of learning but as designers, engineers, and thinkers? Could this shift bridge the gap between how math is taught and assessed? These questions shaped my journey as a pre-service mathematics teacher exploring assessments beyond tests. In this autoethnographic study, we implemented project-based lessons using Engineering Design Process (EDP) with Grade 7 students under MATATAG Curriculum. Learning was made visible across phases of a real-world challenge—problem finding, exploring solutions, refining, and presenting outputs. With my professor and an assessment expert, we documented the process through tools, and reflections. Findings showed that when students engaged deeply in hands-on tasks, they demonstrated creativity, resilience, collaboration, and flexibility. Assessment became continuous, embedded into lessons, capturing

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what students knew, how they reasoned, collaborated, and adapted. This chapter highlights the potential of EDP for competency-based learning and reimagines assessment as reflective, responsive, and human-centered.

INTRODUCTION

What if the students we call “behind” in mathematics aren’t failing, but are simply assessed in ways that overlook how they think and learn? This question has stayed with me since my early training as a pre-service mathematics teacher. Traditional assessments, particularly the paper-and-pencil tests, tend to focus the speed and procedural accuracy, while neglecting creativity, perseverance, and collaboration. However, these neglected dimensions are integral to how students make sense of mathematics in their lives. Many students who appear disengaged and low-performing on written tests showcase deep engagement in project-based activities. They are collaborating with their peers, reasoning through the problems, and most importantly, applying mathematical ideas in ways that conventional assessments could ever measure (Schnell, 2025).

In many mathematics classrooms, assessment is still equated with numerical accuracy and procedural fluency. While this is efficient for standardization, these measures risk narrowing the scope of what counts as mathematical understanding. This assessment may fail to capture the students’ ability concepts in authentic contexts, where persistence, adaptation, and creativity come to the fore (Meylani, 2024). And worst, math is rendered disconnected from the real world. In the 21st century, the demands are something different. The qualities that need to be cultivated in the minds and hearts of the students call for a rethinking of what it really means to learn and be assessed in education. With the shift in the educational system globally, it is focused on competency-based learning. Students are required to develop the transversal skill. Transversal skills such as critical thinking, creativity, adaptability, and problem-solving skills. These salient skills cannot be cultivated through traditional assessment that merely focuses on rote memorization and procedural repetition. It emerges from authentic, relevant, contextualized, and interdisciplinary learning experiences. Therefore, the challenge to the educators is to not only teach differently, but also to assess differently in ways that honor and reflect how students think, reason, collaborate with peers, and engage with real-world problems.

One pedagogical response to this challenge is Project-Based Learning (PBL), in which students are encouraged to explore, innovate, and collaborate while doing a project. PBL invites students to work on extended tasks that reflect real-world contexts (Mohedo & Bújez, 2014). When combined with the Engineering Design Process (EDP), a structured yet flexible framework drawn from the STEM discipline.

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