

Enhancing STEM Education Through Collaborative Game Nights

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EXECUTIVE SUMMARY

The chapter illustrates the concept of STEM game nights as a powerful platform for promoting informal STEM education. In particular, the authors illustrate how various institutions' mathematics teacher educators organized their own STEM game nights for local elementary school students and their families. Integrally, preservice teachers planned and executed these collaborative events. The chapter highlights the diverse array of STEM game night examples, drawn from experiences working with preservice teachers, local students, and their families across three institutions nationwide. The authors emphasize the unique opportunities and benefits these events offer, focusing on collaborative efforts, preservice teacher empowerment, student engagement, and family involvement. By weaving in relevant research, this chapter provides valuable insights and guidance for STEM teacher educators, K-12 teachers, professional development educators, and parents to harness the power of

informal learning through games.

INTRODUCTION

The book chapter illustrates the concept of STEM Game Nights as a powerful platform for promoting informal STEM education. In particular, the authors illustrate how various institutions' mathematics teacher educators organized their own STEM Game Nights for local elementary school students and their families. Integrally, preservice teachers planned and executed these collaborative events. The chapter highlights the diverse array of STEM Game Night examples, drawn from experiences working with preservice teachers, local students, and their families across three institutions nationwide. The authors emphasize the unique opportunities and benefits these events offer, focusing on collaborative efforts, preservice teacher empowerment, student engagement, and family involvement. By weaving in relevant research, this chapter provides valuable insights and guidance for STEM teacher educators, K-12 teachers, professional development educators, and parents to harness the power of informal learning through games.

In this chapter, we chronicle how three universities planned for, facilitated, and reflected on their respective Math Game Nights or STEM Nights (hereafter, STEM Game Nights). At University A, students in grade 5 participated in the Math Game Night; at University B, students in grades K-2 and 3-4, separately, participated in the Family Math Game Nights; and at University C, students in grades K-5 participated in the STEM Night.

As expected, the overarching goals for hosting these after-school activities were similar, and all three universities underscored the following attributes:

- Incorporate hands-on, interactive games or activities.
- Facilitate a deeper understanding of STEM concepts.
- Promote logical reasoning and problem-solving skills.
- Foster a fun, engaging event.
- Inspire a lifelong love for learning.

Research supports the notion that informal learning experiences, such as the STEM Game Nights, increase student engagement and motivation (Hidi & Renninger, 2006). Moreover, Denson and his collaborators (2015) noted that students, who had been exposed to informal learning opportunities, improved their problem-solving skills and demonstrated a more in-depth understanding of STEM concepts.

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