

## Gamification Teacher Professional Development: Engaging Language Learners in STEMS through Game-Based Learning

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**Abstract :** Kindergarten-12th grade teachers engaged in teacher professional development (PD) on game-based learning techniques and strategies to support teaching STEMSS (STEM + Social Studies with an emphasis on geography across the curriculum) to language learners. Ten effective strategies have supported teaching content and language in tandem. To provide exiting teacher PD on summer and spring breaks, gamification has integrated these strategies to engage linguistically diverse student populations to provide informal language practice while students engage in the content. Teachers brought a STEMSS lesson to the PD, engaged in a wide variety of games (dice, cards, board, physical, digital, etc.), critiqued the games based on gaming elements, then developed, brainstormed, presented, piloted, and published their game-based STEMSS lessons to share with their colleagues. Pre and post-surveys and focus groups were conducted to demonstrate an increase in knowledge, skills, and self-efficacy in using gamification to teach content in the classroom. Provide an engaging strategy (gamification) to support teaching content and language to linguistically diverse students in the K-12 classroom. Game-based learning supports informal language practice while developing academic vocabulary utilized in the game elements/content focus, building both content knowledge through play and language development through practice. The study also investigated teacher's increase in knowledge, skills, and self-efficacy in using games to teach language learners. Mixed methods were used to investigate knowledge, skills, and self-efficacy prior to and after the gamification teacher training (pre/post) and to understand the content and application of developing and utilizing game-based learning to teach. This study will contribute to the body of knowledge in applying game-based learning theories to the K-12 classroom to support English learners in developing English skills and STEMSS content knowledge.

**Keywords :** gamification, teacher professional development, STEM, English learners, game-based learning

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