

**The Impact of Technology-Enhanced Project-Based Learning on
Newcomer Emergent Bilingual Students
A Review of the Literature**

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EDLD 5315: Assessing Digital Learning

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February 17, 2024

Introduction

Newcomer emergent bilingual students (NEBS) are students who have recently arrived in a new country and are learning a new language while also learning academic content (Short & Boyson, 2012). They face multiple challenges, such as limited prior schooling, interrupted education, trauma, acculturation, and discrimination, which affect their academic and social integration (DeCapua & Marshall, 2011). However, they also have valuable assets, such as their home languages, cultures, experiences, and resilience, which can be leveraged for their learning and development (García & Kleifgen, 2010).

As an educator, I am interested in exploring how to best support the academic and linguistic needs of NEBS in middle school language arts classes. In my school district, I have observed that many NEBS struggle to engage with the traditional curriculum and instruction, which often do not reflect their backgrounds or address their unique learning needs. I also noticed that NEBS lacked opportunities to use their home languages to develop their academic language skills in meaningful and authentic contexts within their language arts classes. Therefore, I co-developed a technology-enhanced project-based learning (TEPBL) model/curriculum, focused on language (English) and content (language arts) acquisition, as a potential solution to these problems.

Given this, the purpose of my action research is to evaluate the effectiveness of this innovation/curriculum and to improve my practice as an educator and curriculum developer. I want to know if TEPBL can help NEBS develop their academic and linguistic skills. I also want to know how I can implement this innovation/curriculum in a way that is feasible, sustainable, and responsive to the needs and interests of my students and stakeholders. My research question is: How does technology-enhanced project-based learning affect the academic and linguistic

performance of newcomer emergent bilingual students in middle school language arts classes?

Review of the Literature

Definition of Technology-Enhanced Project-Based Learning

TEPBL is an instructional approach that integrates technology and project-based learning (PBL) to engage students in collaborative, inquiry-based, and interdisciplinary projects that address real-world problems or questions (Bell, 2010). The Buck Institute describes seven essential project design elements that provide a framework for developing and implementing PBL in classrooms: “a challenging problem or question, sustained inquiry, authenticity, student voice and choice, reflection, critique and revision, and public product” (Buck Institute for Education, 2019). These elements are included in the TEPBL lessons. Also, technology hardware, like laptops, iPads, headsets with an attached microphone, and software programs, applications, and websites like Schoology, Google Suite, Microsoft Suite, Canva, Studenttreasures Publishing, Flipgrid, and Padlet are supporting tools used to aid students’ implementation of projects, in addition to being a scaffold to support and encourage collaboration and gradual in-person communication in English for newcomer students.

Advantages of Using Technology-Enhanced Project-Based Learning

Technology-enhanced project-based learning (TEPBL) has many advantages for student learning and engagement, especially for newcomer emergent bilingual students. TEPBL can help NEBS develop their academic and linguistic skills, as well as their academic skills, such as content knowledge, literacy, and 21st century competencies.

Bell (2010) indicates that PBL can help students acquire and apply content knowledge in various disciplines, such as language arts, math, science, and social studies, as they engage in authentic and meaningful tasks that require them to use and apply their prior and new

knowledge. Moreover, TEPBL can help students develop their 21st century competencies, such as critical thinking, problem-solving, communication, collaboration, creativity, and digital literacy, which are essential for success in the global and digital society (Trilling & Fadel, 2009). Additionally, TEPBL can help students become more aware of how they construct their own knowledge (Brown & Campione, 1996), by using technology as a cognitive tool that supports their critical thinking. This can be particularly beneficial for NEBS, who are navigating the complexities of learning new academic content and language simultaneously.

As research suggests, technology can empower NEBS to actively engage in the learning process, promoting deeper understanding and fostering their academic and linguistic development (Foulger & Jimenez-Silva, 2007). Stoller (2006) states, project-based learning provides opportunities for “the natural integration of language skills” (p. 33). Putting this together, since TEPBL involves collaboratively addressing problems and projects with a real-world context, it can provide students with an outlet to use and practice their academic language skills in meaningful and authentic contexts, such as conducting research, presenting findings, and discussing issues with their peers. To add to this, in a study conducted by Professors Teresa Foulger and Margarita Jimenez-Silva (2007), which isolated technology supports for English learners (ELs) within a project-based environment, it was found that technology supports ELs in developing their writing skills by providing new avenues for collaboration and creation of content, and it enhances their writing skills by opening new learning opportunities.

TEPBL can also help students develop their bilingualism and biliteracy, which are the ability to use and understand two or more languages in various domains and contexts (García & Kleifgen, 2010). This is because the TEPBL/language arts curriculum encourages students to use

and value their home languages as resources for learning and communication, as well as to learn and appreciate the new language of instruction (English).

Barriers to Implementing Technology-Enhanced Project-Based Learning

While TEPBL offers numerous advantages for NEBS learning and engagement as seen above, implementing it effectively can present challenges for both educators and students. These challenges build upon those encountered in traditional project-based learning (PBL) and are further amplified by the integration of technology. Specifically, PBL requires teacher skills, time, planning, and resources, as well as a shift in the roles and expectations of teachers and students. Moreover, NEBS may face additional barriers and challenges in TEPBL, such as language barriers, cultural differences, and academic gaps that may hinder their participation and performance in TEPBL.

As suggested by Barron et al., 1998, effectively implementing PBL requires teachers to possess a specific skillset and knowledge base, navigate time constraints for inquiry-based learning, and effectively balance various instructional methods like scaffolding, modeling, and feedback. Teachers need to have a deep understanding of these instructional strategies and PBL in order to effectively facilitate the inquiry process, and an absence of this understanding can limit the depth and complexity of the projects students can undertake. Similarly, students themselves may encounter difficulties in managing their time, formulating, and evaluating questions for their projects, and accessing background knowledge or constructing logical arguments (Edelson et al., 1999; O'Brien, et al., 2014). These challenges can hinder their ability to fully engage in the inquiry process and successfully complete the project.

Furthermore, NEBS may face additional barriers and challenges in TEPBL, such as language barriers, cultural differences, academic gaps, and social isolation that may hinder their

participation and performance in TEPBL. According to Echevarria et al. (2006), NEBS may struggle to understand and use the academic language and vocabulary (that is required for the project-based learning tasks and products), especially if they have limited prior schooling or interrupted education. Additionally, newcomers may encounter cultural differences and conflicts, such as different values, beliefs, norms, and expectations that may affect their collaboration and communication with their peers and teachers (IRIS Center, 2023).

Summary

This literature review explores the potential of technology-enhanced project-based learning (TEPBL) to support the academic and linguistic development of newcomer emergent bilingual students (NEBS) in middle school language arts classes. It examines the advantages of TEPBL for student engagement and learning, highlighting its ability to foster critical thinking, collaboration, and communication skills, while also acknowledging the challenges associated with implementing PBL, such as teacher preparedness, time constraints, and student difficulties with project management and inquiry-based learning. Additionally, the review considers the specific challenges faced by NEBS in TEPBL environments, including language barriers, cultural differences, and academic gaps.

This Review and the Field of Education

This literature review contributes to the field of education by specifically investigating the potential of TEPBL for a population often underserved in educational research: newcomer emergent bilingual students. By examining the unique challenges and opportunities faced by NEBS in TEPBL settings, this review informs educators and curriculum developers about strategies to create inclusive and effective learning environments that leverage the strengths of TEPBL to promote academic and linguistic success for all students.

Strengths and Weaknesses of the Literature

The strengths of the literature lie in its exploration of the multifaceted benefits of TEPBL for student learning and its recognition of the specific challenges faced by NEBS. The review draws on research that highlights the potential of TEPBL to cultivate critical thinking, collaboration, and communication skills, all of which are essential for success in the 21st century. Additionally, the literature acknowledges the need for further investigation into effective implementation strategies and support structures for NEBS within TEPBL environments.

However, the literature also reveals some weaknesses. While research suggests the potential benefits of TEPBL for NEBS, there is a limited body of empirical studies specifically investigating its effectiveness in improving their academic and linguistic outcomes. Furthermore, the literature review could benefit from including a wider range of perspectives, such as those of educators who have implemented TEPBL with NEBS and the students themselves.

Focus of the Current Study

My current study aims to address the gap in research by investigating the effectiveness of a TEPBL model specifically designed to support the academic and linguistic development of NEBS in a middle school language arts classroom. Informed by the findings of this literature review, the study will explore how TEPBL can be implemented to address the unique challenges faced by NEBS while capitalizing on its potential to promote their engagement, learning, and academic success. The study will also contribute to the field by providing insights from the perspectives of both educators and NEBS involved in the implementation process.

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