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Back to the future: The implications of service and problem-based learning in the language, literacy, and cultural acquisition of ESOL students in the 21st century

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ABSTRACT

Research has identified the essential proficiencies students should possess to be successful, but they are often not incorporated in the ESOL classroom. As a result, many teachers lack access to adequate instructional strategies to guide ELs to academic success. We argue in this article that, to provide a strong foundation and a bright future for ESOL students, problem-based learning and service-learning (PBSL) should be combined to activate the skills identified by the Partnership for 21st Century Skills (2011). For this, we reflect on the 21st century skills and the implications for teaching today's students—the Millennials and GenZs—keeping in mind the professionals they will become tomorrow. Reflecting a student-centered approach, we incorporate practice into the research process by illustrating a successful integration of PBSL into an ESOL learning environment in higher education and then highlight additional curricular opportunities for synthesizing PBSL at the elementary, middle, and high school levels.

INTRODUCTION

"*Education is for improving the lives of others and for leaving your community and world better than you found it" (Edelman, 1993, pp. 9-10).*

Inspired by a call for research in the Teaching English to Speakers of Other Languages (TESOL) field (Wurr, 2013), we seek to contribute by proposing a model that guides the larger discourse on service-learning, civic engagement, and language learning for minority students. This article combines the instructional strategies of service-learning (Levkoe, Friendly & Daniere, 2018; McDonough, Marks, & Harris, 2017; Morrissey, Beckett, Sherman, & Leininger,

2017; Webb, 2017) with problem-based learning (Chung, Yeh, & Chen, 2016; Hung, Jonassen, & Liu, 2008; Juskeviciene & Kurilovas, 2017; Li & Stylianides, 2018; Vandenhouten, Groessl, & Levintova, 2017) to meet the needs of English learners (ELs) both now and in the future.

In this article, the authors offer a comprehensive guide to problem-based service-learning (PBSL). First, we introduce problem-based service-learning and explain the PBSL model taking into consideration the skills our students need today and will need in the future. We then focus on meeting the needs of students in the 21st century and indicate the opportunities PBSL offers for Millennials and Generation Zs. Similarly, we share relevant and current research pertaining to the language, literacy, and cultural acquisition of ELs within the PBSL framework. Lastly, we propose transformative practices, professional development opportunities for Science, Technology, Engineering, and Math (STEM), and activities guided by the PBSL model that can be incorporated in the ESOL classrooms.

Problem-Based Service-Learning

Problem-based service-learning (PBSL) delivers a powerful instructional strategy to meet the needs of English for Speakers to Other Languages (ESOL) students by integrating a solid foundation of skills that provide curriculum support for students at all levels. The PBSL model highlights collaboration, critical thinking, deep learning, teamwork, oral and written communication, problem-solving, reflection, and the development of social skills (see Figure 1). Similar skills identified by the World Economic Forum (2016) include: active learning, problem-solving, critical thinking, literacy, oral and written expression, coordinating with others, service orientation and analysis.

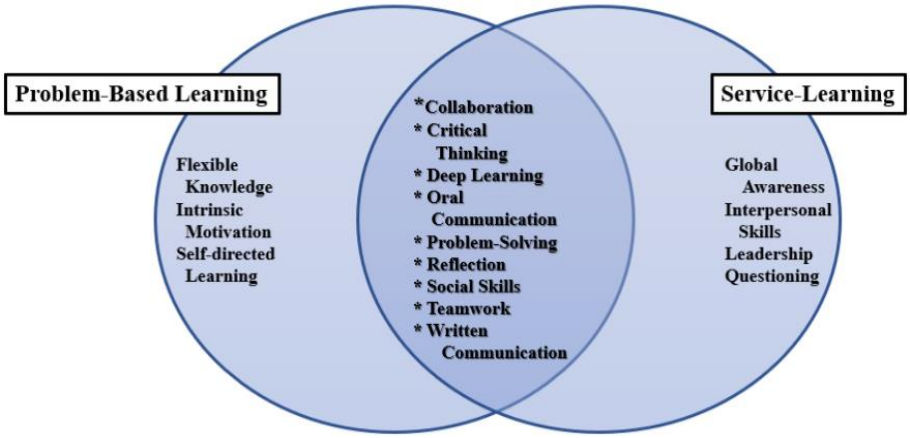

Figure 1. Problem-Based Service-Learning Model

Influential organizations around the world are noticing the importance of addressing 21st century skills in education. Two organizations, the Organization for Economic Co-operation and Development (OECD) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) focus on a wide range of issues including education. While the OECD concentrates on data collection, analysis, and policy promotion, UNESCO emphasizes international cooperation. More importantly, both organizations support active and service-learning strategies, as well as 21st century skill development. For example, according to an OECD/Asia Society (2018) report, "the more relevant learning is the better it is" (p. 8). The report highlights the Singapore framework for 21st Century Competencies and Student Outcomes, which not only

incorporates knowledge, but also values and social and emotional competences, including "communications, collaboration and critical thinking" (p. 33). Similarly, UNESCO recommended PBSL skills in their publication "Global Citizen Education" (2015a) and in their working papers (Scott, 2015). UNESCO's *Education for all 2000-2015, EFA Global Monitoring Report* identified future education targets hoping to increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship by 2030 (UNESCO, 2015b). The UNESCO report (2015b) described the anticipated foundational skills necessary for success in 2030 as literacy, numeracy, digital and information communication technology (ICT). The core transferable skills comprised problem-solving, critical thinking, and communication while additional skills included analysis, creativity, collaboration, leadership, and entrepreneurship which can be developed through a combination of education and experience (UNESCO, 2015b).

PBSL: Meeting the needs of students in the 21st Century

Rainie and Anderson (2017) noted, due to rapid changes causing disruption in workplaces attributed to automation, including robots and artificial intelligence, new education and skills programs need to be built to meet new requirements. According to Adams Becker, Pasquini, and Zentner (2017), employers in 2020 will be seeking individuals possessing the following skills to meet the needs of the changing workplace: (1) complex problem-solving, (2) critical thinking, (3) creativity, (4) people management, and (5) coordination with others. However, current learners do not seem to be ready for the challenge and there is currently a need to institute new methods to equip students for the 21st century knowledge society (Häkkinen, Järvelä, Näykki, & Valtonen, 2017). It is becoming increasingly apparent that the skills needed in the future are the skills machines and robots are incapable of doing, the skills that can be strengthened and updated through education.

Fortunately, the instructional strategy of problem-based learning can successfully expedite learning the crucial 21st century skills (Barber & King, 2016). According to Lopez Brown (2017) "Problem-Based Learning… aligned to contemporary research findings... suggests that 21st Century Learning Skills are critical for accomplishing transformation in educational delivery and student achievement" (p. 540). Similarly, O'Connor, Lynch, and Owen (2011) stated, "student learning through community engagement is rooted in problem-based, reflective, 'deep learning' pedagogies of empowerment, transformation, critical thinking and social participation" (p. 106). Figure 2 represents the PBSL model with the addition of 21st century skills.

Millennial and Generation Z Students

Today in the 21st century, the students in our K-12 classrooms are comprised of Generation Z (GenZ) while in higher education the millennials are well represented. The millennial generation was born from 1982 to 1995 (Lancaster & Stillman, 2009); GenZs represents the generation born between 1996 and 2011 (Lanier, 2017).

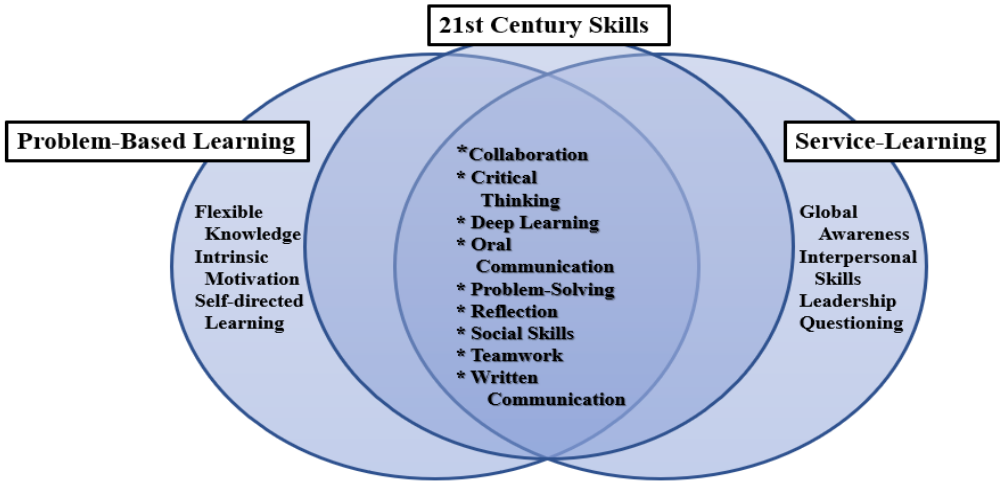

Figure 2. Problem-Based Service-Learning skills and the 21st Century Skill Core

Millennials. According to the Pew Research Center (2016), millennials became the largest generation in April 2016 in the United States. Many people describe millennials as self-confident, optimistic, and team-oriented (Borges, Manuel, Elam & Jones, 2006). With a penchant to live online, millennials usually prefer social media for communication and socialization. They thrive as team members, preferring online professional development, conferences, webinars, and seminars (Gibson, Greenwood, & Murphy, 2009). Millennials who do not have a strong offline presence favor working together, being mentored, and change. Work for millennials is not at the center of their lives; they see jobs as a contractual arrangement, working only to subsist (Crampton & Hodge, 2007).

Many relevant research findings concerning millennials impact education. Desy, Reed, and Wolanskyj (2017) noted millennials generally appreciate working in groups, flexibility, feedback, personalized learning, mentoring, and integrated technology. Lovely (2005) identified seven of the best instructional practices popular with millennials: (1) communication, (2) cooperation, (3) active learning, (4) prompt feedback, (5) time on task, (6) high expectations, and (7) respecting diversity. Coincidentally, some effective instructional practices identified for millennials also resonate with a younger generation (Generation Z), including collaborative learning, active learning, feedback, high expectations, and respecting diversity.

Generation Z. Generation Z (GenZ) represents 23 million individuals in the United States (Salleh, Mahbob, & Baharudin, 2017). The digital universe surrounds GenZs; technology is considered their best friend (Oblinger & Oblinger, 2005). The generation is highly reliant on the internet and social media, preferring fast-erasing social media platforms (Glum, 2015) such as Snapchat. For instructional purposes, they desire to learn visually utilizing interactive techniques (Cilliers, 2017) and often demand instant-gratification (Crappell, 2013). Successful instructional strategies when teaching GenZs include adapting a learning center approach comprising visual and creative components (Cilliers, 2017); collaborating by utilizing group activities combined with the Internet; supporting chunks of text with YouTube videos (Jaleniauskiene & Juceviciene, 2015); and combining instruction with practical experience (Williams, 2015). The key to reaching GenZ students appears to be mixing online with onsite activities (Vander Ark, 2011).

In the future, GenZs plan to become educated and begin working earlier; they understand education and training will be a constant. Williams (2015) found more than 40% of GenZs expect to work for themselves. According to Manpower Incorporated (2017), 65% of the jobs GenZ will perform do not exist yet. To relate to the generations in the future, Waterhouse (2005) stressed educators should contemplate student-centered learning, critical thinking, and collaboration.

Language, Literacy, and Cultural Acquisition of ESOL Students

Research on second language acquisition has long recognized languages are best learned through natural and contextualized use, that is, when language is used to perform authentic tasks (Abdullah & Hoon, 2008). With the shift to communicative language teaching in the 1970s, there has been a growing emphasis on using language to convey messages and connect with other people. As a result, increasing attention has been given to the use of tasks and problem-solving skills in the language classrooms (Nation & Macalister, 2010). Coincidentally, PBSL and the communicative approach to language teaching align with the constructivist view of learning. Constructivism assumes effective learning, and effective language learning, take place in "a student-centered setting that focuses on integrated, collaborative, and problem-based learning, [where] teachers become facilitators of the learning process rather than owners of the information" (Toledo-López & Pentón Herrera, 2015, p. 26).

When learning, developing, and expanding language and literacy skills, it is necessary for ELs to understand how they learn, comprehend, and process knowledge. Notably, "problem-based learning purposefully combines cognitive and metacognitive teaching and learning. "It is an approach that has been around since the late 1960s and engages language students in learning how to learn while they also learn language and content" (Mathews-Aydinli, 2007, p. 1). In a PBSL learning environment, students work collaboratively to generate possible solutions to a problem by exploring knowns and unknowns. Throughout this process, ELs can reflect on the information they are learning, on their own abilities to consume and produce relevant information, and on their meaningful contributions to the team. Using PBSL engages ELs in inquiry-based learning environments where multiple forms of literacy are explored, analyzed, and applied to find a meaningful solution using today's literacy skills and abilities.

The concept of culture, cultural appreciation, and inclusion is just as relevant as literacy and language learning in the educational landscape of the 21st century. As explained by Rapport and Overing (2000), culture refers to a "shared and stable system of beliefs, knowledge, values, or sets of practices" (p. 94). For ELs, migrating to a new country with new customs and language is a culturally shocking experience that may influence their participation and motivation in educational matters. Hence, providing a culturally safe, welcoming, inclusive, and responsive learning environment is fundamental to ensuring students' engagement and attendance. As a flexible learning and teaching framework, PBSL can be easily modified to incorporate diverse environments, cultural contexts, and settings worldwide (Frambach, Driessen, Chan, & van der Vleuten, 2012). Through PBSL, students' cultures become the center of focus because the learning environment revolves around student-centered experiences, knowledge, and systems of beliefs. By incorporating PBSL, ELs are immersed in a favorable educational setting where their cultures, beliefs, and ways of learning contribute to the collaborative dialogue and become part of the solution.

PBSL EXAMPLE: AMERICORPS

PBSL affords students authentic engagement with the community. The PBSL example shared in this section highlights an AmeriCorps program in higher education designed and taught by one of the authors. The plan was to develop a problem-based service-learning community block program focused on reading, writing, math and computers at the college level. A consistent finding among PBSL researchers is the value of extending the classroom to interactively connect with the real-world.

The class began like most college classes, with introductions, ice breakers, a challenge, and previewing the syllabus. Elaborated in the syllabus, the course foundations were trust, respect, and integrity. The focus of the course was collaboration; the learning was unlimited. High expectations were expressed for all students. Together, two faculty members taught thirty students one twelve-hour day each week for a year. One instructor was responsible for teaching English, critical reading, logic, writing and team-taught computers; the other taught computers, math, ran the learning lab and also taught English. The students were selected from across the southwestern United States by AmeriCorps. They were provided living expenses, employment for four days a week and participation in the learning community. Eighteen students were ELs.

Problem-based component

The foundation of the course was the collaborative, student-centered approach of problem-based service-learning. In class, the instructors assumed the roles of facilitators and worked with the students to learn the skills they needed to acquire. The students learned English, while learning how to read and think critically, how to write reflectively, and problem-solve logically. The students chose the problems they wanted to study from a list of suggestions; as an alternative, they could write their own problem. Some examples included prehistoric tribes indigenous to the Southwest, the Hohokam and Anasazi; the legal system of Arizona; and Spanish water law. Six groups of five students were formed reflecting problem preferences; roles for group members, including leader, researcher, service, writer, and presenter, were assigned by members of the group. To learn about the problems, the students conducted in-depth research which ranged from visiting archives and libraries to conducting interviews. Progress was noted when two of the students mentioned they had driven to northern Arizona over a weekend to visit Montezuma's Well, a National Historic site, to learn more about the Anasazi. Photos of the Anasazi cliff dwellings were included in their PBSL writing and reflection journals, which were utilized as a group collaboration tool. While working on their problems, each PBSL group was challenged to think about who in the community would be interested in the information.

Service-learning component

The PBSL course provided service to the community. During our class the students took responsibility for their own learning and were responsible for all aspects of the service component of the course. One individual from each of the PBSL groups worked on serving the community; it was their responsibility to transform their problem to service for their community. To facilitate the process, the six service group members or service team, met regularly to discuss and share ideas. As active community members, the instructors offered suggestions and shared their community contacts when requested. The service team visited with community, business, and school district leaders, including the local chamber of commerce and service organizations,

to explain the PBSL process and their desire to provide service to the community. The service team left a flyer and questionnaire after each community visit. The response from the community was overwhelming. Each group subsequently matched their problem with a need in the community identified by the returned questionnaires. The groups presented workshops to local schools highlighting their problems including the Hohokam, Anasazi, the deserts of the Southwest, or Spanish water laws. Additionally, each session taught one component skill of critical thinking, problem-solving, writing, reflection, or group collaboration. The group presentations actively engaged the elementary and middle school students. The strategic steps enumerated by Perren (2013) applied to the AmeriCorps PBSL learning community (see Table 1). Also, see Table 2 for a list of skills demonstrated in the community and in the classroom.

Table 1. Seven strategic steps (Perren, 2013, pp. 497-503) aligned to the AmeriCorps example.

Strategic Steps to Successful Service-Learning (Perren, 2013)		**AmeriCorps Learning Community**
Step 1	Planning and logistics	The year-long course was planned before the course began and modified as needed throughout the year. An information tri-fold brochure highlighting PBSL was distributed to local businesses, service organizations and school districts. The instructors and service team met with administrators and school boards to explain PBSL.
Step 2	Obtaining materials and developing background	A budget for materials was developed with the dean of instruction with monthly reports submitted. The syllabus and course loose-leaf notebook were distributed during the first-class meeting.
Step 3	Preparing for field experiences	The PBSL student service team worked together to prepare for the service-learning field experience workshops. Before the service-learning experience, participating teachers were invited to an informal dinner to get to know the AmeriCorps students.
Step 4	Implementing field experience and civic engagement	A map and directions to the location were given to the AmeriCorps students. A handout concerning district rules and guest badges were provided by the district
Step 5	Reflecting and connecting	After each PBSL workshop the students met informally in groups to reflect upon the activity; one student took notes. After the culmination of the PBSL service project, some of the groups desired to become more involved with the district students; arrangements were made for interested PBSL groups to tutor students before school.
Step 6	Diversifying and repeating	Other districts requested information about the PBSL program and the possibility of arranging for PBSL groups to visit their schools.

Step 7	Expressing gratitude and evaluating	A party was held at the end of the PBSL workshop service activities; a local pizza restaurant donated pizzas and drinks. The PBSL groups met and reflected about the entirely of the experience. The PBSL students assessed themselves and their contribution to the group; a second assessment was submitted as a group. Additionally, a survey was created and distributed by the facilitators.

After a full calendar year the class ended. The instructors met with each participant to advise them concerning future educational opportunities. There was a celebration; the AmeriCorps class had one last meal together. Each participant and instructor brought food and shared stories about their learning journey. This type of personal relationship and investment between teachers and students is thought of as a precursor to academic learning (Fullan, 2016). According to Kumar and Meenakshi (2009) "relationships grow over time through an expression of shared values and a common purpose" (p. 19). Developing personal relationships with students not only enhanced academic learning, but also changed the instructors forever.

Table 2. Skill reinforcement in the community and classroom

PBSL Skills	Demonstrated in the Classroom	Demonstrated in the Community	References
Critical Thinking	PBSL groups	PBSL service team; PBSL workshops	Kress (1985); Zwiers (2006)
Deep Learning	PBSL groups	PBSL service team; PBSL workshops	Leach (2015)
Problem Solving	PBSL groups	PBSL service team; PBSL workshops	Grace and Lee (2014)
Collaboration	PBSL groups	PBSL service team; PBSL workshops	Little (2009); Peyton, Moore, and Young (2010); Pratt, Davies, and Connor (2011)
Teamwork	PBSL groups	PBSL service team; PBSL workshops	Verplaetse, L. S., and Migliacci, N. (2008)
Social Skills	PBSL groups	PBSL service team; PBSL workshops	Bailey (2007)
Reflection	PBSL group reflection following each class	PBSL service team; after PBSL workshops	Cunningham (1987); Zwahlen (2017)
Self-Directed Learning	PBSL groups—group assigned individual tasks	PBSL group—group assigned individual tasks for workshops	Hendry, Wiggins and Anderson (2016); Matusovich, Jones, Paretti, Moore and Hunter (2011)

Written Communication	as assigned by PBSL group; individual PBSL reflection journal	PBSL service team; after PBSL workshops	Abdullah and Hoon (2008); Christie (2002); Cunningham (1987); Othman and Ahamad Shah (2013); Verplaetse, and Migliacci (2008)
Oral Communication	as assigned by PBSL group; PBSL presentation	PBSL service team; PBSL workshops	Christie (2002); Williams and Sugumaran (2015); Wright (2016)

Teamwork and collaboration were the foundation of the PBSL AmeriCorps process. Additionally, the students integrated their problem-solving and critical thinking and deep learning skills both in the classroom and in the community. Technology was reinforced during the research component of the process and when communicating with the community. It was the cultures of the students that enriched the classroom and the community PBSL workshops; culture provided a depth and richness to the whole experience, greatly maximizing the learning outcomes of all PBSL students.

In conclusion, it was not how the students entered the class, but how they left—what they took with them. It was all about the takeaways. In the case of the AmeriCorps class, the takeaways were deep relationships with their cohort and instructors built on trust, respect, and integrity. The progression of becoming self-directed learners was all about skill development—English, critical thinking, problem-solving, oral and written language, and collaboration. During the PBSL process, the AmeriCorps students not only honed their skills concentrating on real-world problem solving, but also developed lifelong learning skills and personal relationships.

PBSL GRADE LEVEL ACTIVITIES

Elementary School Activity

Problem-based component. During the 2016-2017 and 2017-2018 school years, an elementary school district in Phoenix, Arizona, participated in the district-wide STEM Math Science Partnership grant training. One elementary school in the district reportedly used PBSL frameworks to organize a recycling club to address the issue of waste and littering. The effort helped teachers and students reduce the problem of wasted paper products and campus littering. The recycling club helped students accomplish important school improvement goals, deepen student engagement and inquiry, build collaboration skills, and increase concept integration. The recycling effort organized students and teachers around an initiative that was important to the school community. At the end, teachers and students reflected on their experiences and contributions to the community.

Service-based component. The same team proposed ways to help students extend the original recycling club beyond the school campus into the neighborhood. The recycling team surveyed the community with a student-developed questionnaire to determine recycling needs

while other group members surveyed local businesses and families via email or electronic services like *Remind.com* or *Google Forms*. Teams used electronic maps to establish a recycling collection methodology, collection and distribution routes, and collection calendar. Teachers helped students with contacting local recycling centers to establish a plan to handle recyclables. Finally, students collected, tallied, and donated to the community all collected funds that were payment for bulk recyclables. Teachers and students used problem-solving simulation tools such as Causal Mapper (Baumgartner, 2004) and Structural Thinking and Experiential Learning Laboratory, with Animation (STELLA) (Eskrootchi & Oskrochi, 2010) to demonstrate students' thinking processes and causal relationships of recycling and neighborhoods.

Middle School Activity

While some middle schools use Project Lead the Way to teach their students STEM problem-solving concepts, one middle school in Arizona uses Engineering Projects in Community Service (EPICS) to facilitate middle school students with problem-based service learning. The teachers leading the project were looking for methods to improve collaboration and problem-solving skills of 7th and 8th grade students. In these middle school activities, both teams examined collaboration around community issues of adaptability, vacant lot use, and neighborhood littering.

Problem-based component. One middle school in Phoenix, Arizona, surveyed their faculty and staff to identify needs on the campus and proposed solutions concerning campus accessibility for students with special needs. Using Google Forms' online surveys and campus walks, the students learned that primary-level students needed step stools to reach water fountains. Some areas on campus required adaptive features such as lifts or ramps to make the areas more accessible to special needs students during events such as award ceremonies. The 7th and 8th graders used their problem-solving skills to plan and build ramps for wheelchair accessibility based on an article they read demonstrating how students' projects impacted their communities. One of the leading teachers read a juried article about how students used EPICS protocols to build adaptive prototypes for their physically disabled peers. In the article, students had used EPICS protocols to "develop computer-controlled toys for children with physical disabilities and design classroom furniture for physically handicapped … students" (Coyle, Jamieson, & Oakes, 2005, p. 5). Because the juried article was beyond students' comprehension levels, a similar text written in the students' readability range was located on *www.Newsela.com*.

Service-based component. In 2015, a science teacher's 8th grade science students used PBSL strategies to develop an indigenous desert garden on the school's campus for student learning and beautification. A grant provided funds to purchase desert plants previously studied by students in class. The school principal approved the garden and provided a space on campus for it. By 2016, a fence was installed, plants arrived, and the students began planting. To provide sustained care for the garden, plants were labeled. By 2017, the garden had grown and required extra care. By that time, the school district had scheduled a *Love Our Schools Day*, a day when community members, school employees, students, and school service groups volunteered time to beautify school campuses across the district. Volunteers were treated to refreshments and student volunteers received community service credit for their service.

To extend the *Love Our Schools* project beyond the school campus, it was proposed that teachers help students with surveying their neighborhoods to determine possible service projects, for instance, uses for vacant lots. A team of teachers and students surveyed the community with a student-developed needs/wants questionnaire, including local businesses and families via email or electronic services like *Remind.com* or *Google Forms*. Teachers guided students' use of electronic maps to identify vacant lots. The process included students collaborating to develop purposeful uses for the vacant lots; students contacting local businesses for donations of tools, seeds, and other materials to convert the vacant lots into gardens (or other functional areas based on the neighborhood needs assessments); students organizing crews and developing work schedules for teams to clear the lots for use; and students collecting, tallying, and donating to the community any remaining monies generated from the vacant lot project. Teachers and students used problem solving simulation tools such as Causal Mapper (Baumgartner, 2004) and Structural Thinking and Experiential Learning Laboratory, with Animation (STELLA) (Eskrootchi & Oskrochi, 2010) to demonstrate students' thinking processes and causal relationships between their actions of collaboration and community involvement with maintenance of the vacant lots.

High School Activity

For the high school activity, the authors of this article decided to address a relevant and heartbreaking topic that continues to affect schools across the nation, school shootings. It is difficult and shocking for all students to have to learn about school shootings and not know that they have a voice to speak up and contribute to the American society's improvement. We propose the topic of school shootings as a PBSL service-learning activity high school learners can engage in to find solutions, become involved in their communities, and support one another as they mentally and physically fight through this horrifying reality. At the same time, this PBSL learning activity gives educators the opportunity to teach their students that they are not victims and that they can use their intelligence to improve their society.

Problem-based component. Students are given the problem of school shootings and are tasked on finding possible solutions. As a problem-based activity, teachers are only expected to provide the problem and ensure learners understand the goals, objectives, and expectations (Archbald, 2013). It is ultimately up to the students to determine how the problem can be solved and what is the best solution to this problem.

Service-learning component. In this component, students are expected to take the solution found for the problem to the next step. In service-learning, learners build relationships outside of their educational institutions, become advocates, and find ways to connect with and serve their community (Ryan, 2012). In this activity, students will engage in service-learning by adding a component to their solution that involves going out to their community to advocate for, volunteer at, or serve in a community organization that is looking for solutions to the problem of school shootings. To bridge the classroom-community divide, one idea is to encourage students to write a letter to the editor of their local newspaper, write an article for a magazine, or write a letter to their state or federal legislators.

CONCLUSION

"It is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be" (Asimov, 1981, p. 19).

Learning must become personalized and individualized for each student to achieve their own goals. This is certainly true for ELs, who migrate to English-speaking countries from various walks of life, with diverse formal educational backgrounds and divergent academic learning experiences that make them unique learners. Suitably, Dr. Helen Soulé, the executive director of the Partnership for 21st Century Skills (P21), stated "education systems need to provide students with hands-on learning that mirrors real-world problems and work opportunities in an interdisciplinary way. These new types of skills cannot be taught in isolation but must instead be suffused throughout the curriculum" (as cited in *The Economist* Intelligence Unit , 2015, p. 12). Additionally, students must be able to collaborate, analyze, evaluate, and take responsibility for their own learning. Conversely, teachers are expected to take on new didactic roles focusing on guiding students to work effectively and embracing 21st century skills themselves.

The authors of this article propose the PBSL model with the vision of contributing to the larger discourse on service-learning, civic engagement, literacy, language learning, STEM, and 21st century pedagogy. As advocates for quality education for underserved students, it is our belief much of the impact of 21st century educational change rests with educators. Fortuitously, teachers have the perspectives of knowledge and experience; they know how much their students will have to learn in order to embrace the future. The onus is on teachers. Working in collaboration, teachers will have to modify and adapt the 21st century skills and develop new instructional strategies to meet the needs of their students. The problem we are addressing is not a problem yet for most educators; it is looming on the horizon. The value of this article is that we are looking and projecting forward. As professional literacy and language educators, we must keep our eyes open; our students are counting on us to guide them to the future. As scientist Louis Pasteur once stated, "chance favors only the prepared mind" (as cited in Geison, 2014, p. 40).

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