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Using a Social Ecological Model to Examine the Role that the Community Plays Regarding Children's Opportunities to be Physically Active

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Introduction

Research suggests, regular physical activity and increased physical fitness help decrease high blood pressure, cholesterol levels, metabolic syndrome, low bone density, depression, and obesity in children (Janssen & Leblanc, 2010). As childhood obesity rates continue to rise, schools have become essential settings to encourage health behaviors, such as physical activity. Environmental models like the social ecological model, exist within a larger environment and provide a plan to consider how different levels interact and influence physical activity (Langille & Rodgers, 2010). Social ecological model suggests behavior is influenced by multiple levels, ranging from higher-level policy and built environment (i.e., characteristics of the neighborhood in which an individual resides, works, or otherwise spends time) to individual motivations, demographics, and biological factors (Schreier & Chen, 2012).

Ecological models and frameworks are widely used in health promotion studies. The social ecological model integrates various levels that affect health to provide a clear picture of factors influencing health behaviors. According to the United Nations Children's Fund (UNICEF, 2018), "There are five nested hierarchical levels of the Social Ecological Model: individual, interpersonal, community, organizational, and policy/enabling environment" (p. 8). The individual level focuses on characteristics of an individual that influence behavior change such as knowledge, attitudes, values, and goals. The interpersonal level includes formal and informal social groups that influence individual behaviors like family, friends, coworkers, classmates and religious groups (UNICEF, 2018). The community level focuses on relationships among relevant groups and organizations and the built and natural environment (Langille & Rodgers, 2010). These can include

community leaders, formal and informal organizations, design of urban environment, and facilities which promote or prevent physical activity (Essiet, Baharom, Shahar, & Uzochukw, 2017). The organizational level consists of organizations or social institutions such as schools and workplaces (UNICEF, 2018). The fifth and final level is the policy/enabling environment which focuses on local, state, national, and global laws and policies that influence health and development (UNICEF, 2018).

The current study examined the role of the social ecological model in relation to the community and school's attitude and engagement in physical activity. This study was conducted in a school and neighborhood located on the northwest side of Chicago. The neighborhood was bordered by a country club, cemetery grounds, and two forest preserves (Chicago City & Neighborhood Guide, 2010). The community and school demonstrated the ability to work within all the social ecological model levels to ensure a positive outlook relating to physical activity engagement. Research has found youth are more active in schools that have strong community partnerships, allowing active lifestyles to be transferred between school and community (Van Acker et al., 2011). The establishment of linkages between family, school, and community are necessary to realize many health-related benefits associated with physical activity and school-age children's orientation toward lifelong participation (Centers for Disease Control and Prevention, 2012; Cipriani et al., 2012; Van Acker et al., 2011). The purpose of this paper is to describe how different parts of the social ecological model influence physical activity levels, attitudes, and engagement at one K-8 private Chicago school: Rose Garden Elementary School and the surrounding community. In addition, this study and its findings were made available through the participation in a service-learning project. By engaging in a service-learning

project, results were collected in an authentic and realist setting. Both the school and surrounding community yielded great information that only strengthened this study. Hopefully, other educators will be inspired to conduct service-learning projects of their own or find creative ways to implement them into their classrooms.

Literature Review

Similar to other environmental models, the social ecological model aims to explain certain behavior or to assist with behavioral interventions (Ding, 2013). Factors affecting behavior are presented as layers and each layer is significant to reach the next level (Tehrani et al., 2016). The social ecological model suggests interactions between people and their environments are complementary and influential (Salihu et. al, 2015). Ecological models have been used in a variety of health-related research projects such as one study related to childhood obesity (Ohri-Vachaspati, DeLia, DeWeese, Crespo, Todd & Yedidia, 2015). According to Ohri-Vachaspati et al., (2015), “The approach used herein supports using the SEM for predicting child weight status and uncovers some of the most promising domains and strategies for childhood obesity prevention that can be used for designing interventions” (p. 2). It is important to consider studies like the one listed above, especially in regard to improving childhood obesity levels, and based on the results, it is evident that the social ecological model helped to aid in that process.

When discussing the social ecological model’s five components and their relation to physical activity, King and Gonzales (2018) stated, “Personal, family, social, sociocultural, organizational, community, policy, and physical environmental factors can positively or negatively impact a person’s engagement in physical activity” (p. 29). Ecological models are centered on the assumption that physical activity takes place in distinct spaces that are

conducive to activity (i.e., recreation centers, community fields/parks, fitness clubs) and these places have the ability to influence the type and frequency of activity (Powell, Slater, Chaloupka, & Harper, 2006). A direct connection between community and physical activity engagement is recognizable; specifically, the level of safety in the neighborhood. Many adolescents and young adults noted neighborhood safety as an environmental obstacle that can impact physical activity engagement (Molnar, Gortmaker, Bull, & Buka, 2004).

Research found unsafe neighborhoods deter leisure sports or unstructured play and predispose children to sedentary behavior (Veugelers, Sithole, Zhang, & Muhajarine, 2008). According to King and Gonzales (2018), "...characteristics such as neighborhood safety and aesthetics as well as access to parks may positively or negatively influence whether someone engages in physical activity" (p. 29). Environmental obstacles such as high crime and traffic, insufficient or unsafe surroundings linked to recreational facilities, and an absence of access to recreational spaces are associated with lower physical activity levels (DeBate et al., 2010). In safer neighborhoods, community members are more inclined to participate in outdoor physical activity and utilize parks, fields, and bike trails while parents are more likely to allow children to play outside (Veugelers et al., 2008).

School location plays a role in physical activity opportunities for the community. If students and community members have access to safe parks and open green spaces located on or near the school, this environment can have a positive impact on physical activity engagement. Students spend a vast majority of their time at school and have many opportunities to participate in physical activity. Outside of PE, students can engage in physical activity during the school day such as lunch, classroom activity breaks, recess, and in between classes. According to He et al., (2013), "A previous review reported that

involvement in physical activity during such non-curricular school time contributes 5% - 40% of the recommended 60 minutes of daily physical activity” (p. 246). School staff can encourage students to engage in physical activity and create a supportive environment surrounding student physical activity engagement inside and outside of school. Schools are valuable physical, social, and regulating environments in which students examine, emulate, learn, and exercise health behaviors (Elder et al., 2009). Therefore, schools have a great opportunity to positively impact physical activity engagement.

Methods

Data Collection and Participants

This paper is based on a class project; therefore, data collection was informal (i.e., no audio recordings during interviews) and limited to one semester. To create the most authentic study, a variety of data collection methods were used such as data triangulation (Johnson & Turner 2003). Triangulation allows researchers to use more than one research tool (i.e., observations and interviews) to lessen the weaknesses of an individual relying on one source of data method and strengthen the outcome of the study (Bekhet & Zauszniewski 2012; Denzin 1978).

Community mapping was the first process used to gather information and is defined as, “... a process of discovery and reflection that allows the “mapper” to develop new understandings about a specific geographical area that can assist his or her quest to uncover valuable community resources for children and their families” (Ordoñez-Jasis & Myck-Wayne, 2012, p. 32). Community mapping helped highlight the supportive resources and services available to community members (Jagger, 2016). The research conducted and results of this study were a direct correlation of the community mapping process.

Community mapping was a major component of this study and allowed for an authentic and multifaceted study of the neighborhood and school.

While visiting the community, photos were taken, field notes were recorded, and interactions occurred with people who worked and lived in the area. Photos included different parts of a community recreation center and neighborhood park. Photos helped strengthen the study and provide insight into the different amenities available in the community. Field notes were recorded to further expand on what the community had to offer its residents. The notes emphasized the abundance of safe spaces available to community members to engage in physical activity as well as the well-maintained sidewalks and streetlights making it easier for residents to travel. Exploring the community was a great addition to this project because it allowed the opportunity to genuinely see the role physical activity played within the community.

While touring the school, photos were taken of bulletin boards, posters, and flyers or announcements relating to physical activity or the school's sport programs. Outside of the school's gymnasium there were two large trophy cases filled with many different sport awards, along with poster size pictures of the school's current sports teams. Located outside of the PE office was a bulletin board that displayed flyers about upcoming events within the school and community that pertained to physical activity and informational sheets about the benefits of exercise and eating healthy. The tour also included the school's athletic equipment room which contained different items (i.e., sports balls, jump ropes, hula hoops, and Frisbees) available for students to use during before and after school programs and recess. The school walk-through helped strengthen the study because a connection between the school environment and physical activity was created.

Prior to visiting the school and community, a series of informal interview questions were created in order to answer the research question: how do the different parts of the social ecological model influence physical activity levels, attitudes, and engagement in this community and K-8 school. Interviews (n=11) were conducted with the PE teacher, Ms. Freeman, classroom teacher, Mrs. Marquez, six students, and three community members; one male, one female, and a male police officer. Each interview lasted 15-30 minutes. Interview questions explored perspectives, attitudes, and opinions regarding physical activity engagement and promotion in the school and community. Examples of interview questions included: (a) Do you believe the community is structured so people can engage in physical activity safely and are able to navigate easily to local parks or community centers?, (b) Would you say the school environment is supportive of the PE program?, (c) Do you incorporate physical activity into the classroom? If so, how? If not, what are some things that prevent you from doing so? OR How do you promote any physical activities outside of school? (Bulletin board, newsletter, etc.), and (d) Do you participate in sports or physical activity after school? OR What type of physical activities do you do with your family members or friends?

Observations were conducted throughout the community and school setting. Two community settings were observed, and field notes were recorded in an indoor recreation center and a park. The community recreation center consisted of two dance studios, a small fitness center, two general childcare/multipurpose rooms, and a basketball court. The park had full-size tennis and basketball courts, two playgrounds, a walking/bike trail that included different workout stations, and a nature observation area. In addition, three school settings were observed: a general education classroom, one PE class, and afternoon

recess. The third-grade coed PE class lasted 35 minutes. Recess was held for kindergarten for 45 minutes with a 15-minute indoor recess. Field notes were recorded on physical activity promotion and implementation in those setting. Observations were confirmed via informal interviews.

Results

The neighborhood surrounding Rose Garden has many parks, trails, and facilities to engage in physical activity while promoting safety. There is a gated playground and large, open, green field located directly across the street from the school. Throughout the community there are sidewalks, speed bumps, speed control ticket cameras, and streetlights. Based on observations and interviews, two themes emerged: 1) safe spaces for physical activity engagement and 2) supportive and positive attitude toward physical activity in the school and community.

Safe Spaces and Physical Activity Engagement

The first theme explains the importance of community safe spaces in order to enhance physical activity engagement. Currently, public elementary schools in the United States average less than the recommended PE minutes per week (85-90 minutes versus the recommended 150 minutes) and less than 30 minutes per day of recess (Kern et al., 2018). Therefore, students need safe spaces to be active outside of school.

Fortunately, this community had multiple spaces for people to engage in physical activity. There were neighborhood parks, newly remodeled trails, a large forest preserve, one golf course, community park district, and playground directly across the street from the school. Community members were asked, "What do you feel is the community's greatest asset(s)?" They appreciated the strong police presence allowing them to feel safe.

While walking around the park district's outdoor track, two different police officers patrolled the area.

Community residents agreed the location is a nice place to live. Most of the houses were well-maintained with nice cars parked in the driveway and along the streets. The sidewalks were free of cracks, street signs were clean and bright, and traffic intersections had working crosswalks. The neighborhood was well-kept and clean, free of trash and debris. Community members took great pride in their neighborhood and worked hard to maintain it. Together, they started an official association and worked to boost the interests of the northwestern corner of Chicago and assure their neighborhood stays a lively and enjoyable place to live.

The local police officer interviewed said community members were very active. He always saw families outside, walking, riding bikes, playing sports, and playing at the parks. Due to the safety of the community, the officer explained the running joke among police officers in the other districts, "This is the community that every police officer wants to patrol, it's basically the end goal."

Students confirmed their engagement in physical activity in the neighborhood. They said they enjoyed basketball or softball, running around the park, and playing tag. Students spent a lot of time with family and friends at local community parks and recreation centers because there were always fun activities. During visits to the neighborhood, it was noted that many children and community members were outside walking their dogs and riding bikes.

Support and Positive School Attitude

While observing at Rose Garden, a second theme emerged: the school displayed a supportive and positive attitude toward physical activity. There were bulletin boards promoting various health and fitness tips and suggestions to be physically active. Constructing school environments to promote and encourage physical activity and healthy living provides a special opportunity to connect with children and adolescents, promoting their current and future health, as lifelong health behaviors are established at an early age (Glickman, Parker, Sim, Del Valle Cook, & Miller, 2012). The school environment, or culture and beliefs built within a specific school, seemed to have a major impact on the school's support for physical activity opportunities (Langille & Rodgers, 2010). Ms. Freeman mentioned many classroom teachers implemented physical activity into lessons and would often seek ideas from her. If weather permitted, students engaged in PE, recess, and after-school playtime outside.

Ms. Freeman sees students twice per week and does her best to teach a variety of skills. PE units tend to last a month because she only sees students 7-8 times per month and include mostly team sports, such as soccer, flag football, volleyball, and Frisbee golf. Students participate in fitness testing in November and again in April. When asked what they liked most about PE, students said it is fun to talk with friends and play games and they enjoyed the break from the classroom.

While observing Ms. Freeman's PE class, her classroom management and teaching strategies were exceptional. While teaching a volleyball unit, and without explanation, the class lined up in proper volleyball rotation. The students were very knowledgeable about the sport. Although the school does not meet the Illinois PE requirements, the PE program is very well facilitated and Ms. Freeman follows the necessary standards and curriculum to

help students build proper skills in all three domains: psychomotor, cognitive, and affective. When speaking with a group of students, they all expressed how much they enjoyed PE and have learned so much from Ms. Freeman.

Outdoor recess equipment includes playground equipment, four square, basketball hoops, kick balls, jump ropes, and chalk. For indoor recess, all students have access to open gym and equipment. During open gym, adult supervision is necessary, and they set up a variety of activities for students. When students were asked about recess, there was one very common theme: they wished it was longer. Students were allowed 15 minutes for recess. During that 15 minutes, four minutes were lost due to lining up and escorting students to and from the gymnasium as well as for equipment setup and retrieval. This organization left students only 11 minutes of recess. On the positive side, they all enjoyed recess and it gave them time to play and socialize with peers.

Mrs. Marquez, the classroom teacher, is always willing to incorporate physical activity into her lessons. She and her colleagues have online blogs promoting physical activity for students outside of school. Community activities, such as the annual fun run, are promoted via newsletters. Physical activity is also implemented in STEM and music classes, where students work together, build projects, and dance. Mrs. Marquez was knowledgeable about extra physical activity opportunities for students and explained the intramural sports and clubs, created by Ms. Freeman, that include sport leagues for upper elementary students and a one-month intramural sport program for lower elementary students. Events are well-attended and supported by faculty who want to cheer on their students. It is presumed that enhanced opportunities in schools would further increase physical activity behaviors of children and adolescents (Langille & Rodgers, 2010).

Discussion

The purpose of this study was to examine how different parts of the social ecological model influence physical activity levels, attitudes, and engagement at one K-8 private Chicago school and the surrounding community. Results demonstrate a clearer understanding of the community and the school's role in fostering positive physical activity engagements. The results further solidified the hypothesis that there is a relationship between the social ecological model and its effects on physical activity levels, attitudes, and engagement. The results build on existing data regarding the role and influence of the social ecological model pertaining to physical activity engagement, attitudes, and opportunities.

At the commencement of this class project, the idea was to find where physical activity was lacking in the school and community. However, after completing this project, it was clear the community contained ample safe spaces for physical activity engagement and the school displayed a supportive and positive attitude toward physical activity. Rose Garden and the surrounding neighborhood set a good standard for other schools and communities to reference in order to successfully meet the criteria of the social ecological model and positively influence physical activity levels, attitudes, and engagements of the students and families they serve. Because the end goal was to implement physical activity into an area of the school that was lacking, we decided to engage the students in a fun and challenging game during recess.

There is a growing awareness and support regarding the many benefits of healthy, safe outdoor activity places for children (Cilliers & Cornelius, 2018). Collectively, students and community members never mentioned driving as a means of transportation. They

either walked, jogged, or rode bikes. One student explained she and her family rode their bikes to the local pool and home every weekend. Also, no one mentioned any safety concerns or prohibiting factors in regard to engaging in public physical activity. A feeling of safety in the neighborhood seems to be a crucial environmental factor (Farely et al., 2007). Officer Friendly mentioned the last known major crime in this community took place over three years ago.

When speaking with community members about what they enjoyed most about their neighborhood, one of the most prominent responses was the appreciation of police presence. They expressed feelings of safety engaging in activities outside and comfort allowing their children to play outside. Parents rank outdoor safety their top determinant when deciding if their children should play outside (Farely et al., 2007). Officer Friendly mentioned the police department prides itself on their community involvement. He believes neighborhood members and local police officers have a great rapport with one another and work together to keep the community safe. Due to all the great facilities and neighborhood security in the community, physical activity engagement is very prevalent among community members. Results clearly show that different social ecological model levels can simultaneously and independently influence school environments and opportunities available for children to participate in physical activity.

Incorporating physical activity into the school day can be accomplished in creative ways like implementing it before and after school and during lunch. According to Kohl, Cook, and IOM (2013),

Moreover, other school-based opportunities, including intramural and extramural sports programs, active transport to and from school, classroom physical activity

breaks, recess, and before- and after-school programming, all can help youth accumulate the recommended 60 or more minutes per day of physical activity while in the school environment (p. 5).

Furthermore, another option to incorporate physical activity into the school day is during lunchtime. Engaging in a quick activity break is a great way to help students and schools bridge the gap and meet daily physical activity recommendations. This activity can be student led along with faculty overseeing it or solely faculty led to further ensure student safety and engagement. It is important to consider all options when relating to youth health promotion, specifically physical activity implementation opportunities within schools.

According to McCaughtry, Tischler, and Flory (2008), "...teachers alone do not set the tone and tenor in the ecology of classrooms; instead, the entire school environment (e.g., administrators, school staff, facilities, etc.) combine to shape how both teachers and students view their work" (p. 283). Rose Garden did a great job creating an environment that encouraged student physical activity involvement. Kelly et al., (2019) reported teachers and administrators are key contributors in the implementation of physical activity in schools and have the power to create supportive and encouraging environments that promote physical activity. Mrs. Marquez stated she implemented multiple activity breaks for her students because she knows the value and importance of physical activity, especially for younger students. Results confirmed Rose Garden fostered a supportive physical activity environment.

As mentioned, the STEM and music teachers also incorporated group collaboration, projects, or dancing into their lessons to get students moving. A study conducted by the

Institute of Medicine (IOM; 2012) found children spend almost half of their waking hours in school. Therefore, schools provide the best opportunity for a population-based approach to increase physical activity among the nation's youth. Other school-based opportunities such as intramural sports, active transport to and from school, classroom physical activity breaks, recess, integration of physical activity into curricula lesson plans, and before- and after-school programs can help children meet the recommended 60 or more minutes per day of physical activity while in the school (Kohl, Cook, & IOM, 2013). Although physical activity breaks may pose a challenge to classroom teachers given core curriculum requirements, combining PE with noncurricular physical activity strategies is an important step in ensuring that children meet the recommended 60 minutes of daily physical activity and should be the goal for all schools (IOM, 2012).

There are many ways to implement physical activity into the school day such as classroom activity breaks. These short breaks can further help students meet their daily physical activity requirements but in an engaging, convenient, and creative way. There are additional benefits outside of just meeting daily exercise requirements that result from the implementation of physical activity in the classroom. For example, "Teacher implementation of classroom physical activity breaks was related to higher student physical activity during school and better on-task and attentive behavior in the classroom" (Carlson et al., 2015, p. 72). Examples of classroom activity breaks include but are not limited to the following: Instant Recess, TAKE 10!, classroom energizers, dance breaks, chair yoga and meditation, and various other activities (Carlson et al., 2015). It is evident that physical activity can be implemented in the classroom and would be beneficial to students on a physical, cognitive, and emotional level.

Another way the school supported physical activity was offering PE and its many benefits. For example, “Physical education addresses the needs of the whole child by helping children exercise both their bodies and their minds, with a positive impact on their physical, mental, and emotional health” (SHAPE America, 2016, p. 3). The National Association for Sport and Physical Education (NASPE) recommends that schools provide 150 minutes per week of instructional PE for elementary school students (SHAPE America, 2016). Illinois requires students in grades K-12 to take daily PE but does not specify the number of minutes per week (SHAPE America, 2016). Unfortunately, even with the national and state requirements, Rose Garden offers PE only twice per week.

Ms. Freeman also includes fitness testing. The state of Illinois requires the use of FITNESSGRAM, a comprehensive, health-related fitness assessment that focuses on the following fitness categories: aerobic capacity, body composition, abdominal strength and endurance, trunk extensor strength and flexibility, upper body strength and endurance, and flexibility (Miller, Lilly, Elliot, Campbell, Weigand, & Bulger, 2016). Fitness testing benefits include teaching children about the importance of health-related physical fitness using it as a motivational tool to increase physical activity levels among school-aged children (Welk, 2008; Miller et al., 2016).

There is a plethora of evidence from previous studies that highlight the importance of PE programs within schools. More specifically, quality PE programs that aim to teach the whole child and encompass many different important qualities. According to Richards and Wilson, “NASPE (2010a) provides an overview of four elements that are indicative of a quality physical education program: 1) the opportunity to learn, 2) meaningful content, 3) appropriate instruction, and 4) student and program assessment” (2012, p. 36). In order to

provide students opportunities to learn, schools must have the time, equipment, resources, and qualified educators available to do so (Richards & Wilson, 2012). The next important element is meaningful content. Richards and Wilson (2012) stated,

The physical education curriculum should be structured to provide students with a variety of meaningful learning experiences including motor skill development, fitness education and assessment, development of cognitive concepts related to motor skills and fitness, social and emotional development, and the promotion of regular participation in physical activity outside of the school setting (p. 37).

The third element, appropriate instruction places an emphasis on providing students with an inclusive and supportive learning environment that includes multiple practice opportunities and encourages student growth and development (Richards & Wilson, 2012). Lastly, student and program assessment focus on the continuous assessment of both student learning through formative and summative assessments and overall program quality (Richards & Wilson, 2012). When these four elements are met, students are guaranteed a higher-quality PE program. It is imperative that schools work to meet these four factors in order to ensure that students are receiving the best form of PE possible, in order to help students, live healthy and active lives.

Limitations

Because this study was part of a class project, limitations included a small sample size within one school and community, without comparison to others, minimal time spent in the school during a single semester, and no interview recordings to further analyze responses. Although, the results of this study were promising it would be beneficial to

conduct further research into this topic, during a longer time span, and ideally with a larger sample size of students.

Service-Learning Applications

Service-learning projects can help educators develop a better understanding of their students, the community where they teach, and the availability of safe physical activity outside of school for students. Another benefit is that service-learning projects can be two-fold. For instance, educators can perform school- or community-based service-learning projects themselves or make it a class assignment for students. Engaging in service-learning projects as a professional is an excellent way to learn more about your students and the community where you teach. Additionally, “Service learning provides meaningful ways for students, teachers, administrators, and community agencies and members to move together with deliberate thought and action toward a common purpose that has reciprocal benefits” (Berger Kaye, 2014, p. 2). By assigning this project to students, it gives them the opportunity to investigate and explore their own communities, acknowledge any possible issues, and offer solutions by reflecting and problem-solving (Berger Kaye, 2014). The ability to investigate, explore, problem-solve, and reflect are all fundamental and important skills that can transfer into different facets of students’ lives. According to Berger Kaye (2014), “Research shows that well-designed service learning, in addition to addressing identified needs, results in positive academic, social, civic, and skill development for participating youth” (p. xi).

There are a number of ways students, teachers, administrators, community groups, and members can engage in service-learning projects. Although there are many avenues

and options available to complete service-learning, this article specifically focuses on the use of community mapping techniques and the social ecological model as a framework. In order to successfully implement service-learning, it is important to understand the five stages of service-learning projects. According to Berger Kaye (2014), “The essential and interdependent five stages of successful service learning are: Investigation, Preparation and Planning, Action, Reflection, and Demonstration” (p. 26). Educating potential participants on these five steps will contribute to the success of any service-learning project. By starting with this outline and following the steps, participants can craft a more meaningful, informative, and engaging project.

More specifically, the process of community mapping discussed in this article was the investigation stage. The collection and review of all data, interviews, and observations was the preparation and planning component. The implementation of a fun and engaging recess activity at Rose Garden Elementary School was the action stage. Following that, once the project was completed, a final paper and presentation was required, in which participants presented their projects, described their overall process, and findings while using the five stages of service-learning projects as an outline to formulate their presentation. Lastly, this article stands as the final service-learning project stage, which is the demonstration component. Using this article as a guide to create and implement your own service-learning project will help participants get the most out of the experience and feel confident throughout the project process.

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