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Problem-Based Learning and Civic Engagement in Undergraduate Education

Louise C. Keegan, PhD[1], Angela Losardo, PhD[1], and Kim C. McCullough, PhD[1]

Abstract

Problem-based learning and civic engagement are complementary constructivist andragogical approaches that emphasize active learning by guiding students to develop their own understanding and knowledge of a topic through experience and reflection. By providing examples of clinical cases and community-based experiences, these approaches can enhance and expand the sociocultural perceptions of the students, while also allowing them an opportunity to develop the valuable interprofessional skill of collaboration. This article introduces the reader to these two andragogical approaches, and argues that, when implemented concurrently, these approaches are ideal for undergraduate students completing communication sciences and disorders degrees. These teaching methods provide students with an opportunity to cultivate a professional identity, and by assuming responsibility for their own learning, begin to develop research and clinical skills.

Keywords

service delivery, speech-language pathologists (SLPs), evidence-based practices, professional policy/licensure/certification

Introduction

Undergraduate degrees in communication sciences and disorders (CSD) were traditionally designed to prepare students for graduate studies in speech-language pathology or audiology. These caring professions have always emphasized an appreciation for learning that occurs outside the classroom setting, and the experiential learning that is necessary for professional practice. Indeed, to earn clinical certification as a speech-language pathologist (SLP), through the American Speech–Language–Hearing Association (ASHA; 2014), one requires at least 1,260 hr of supervised clinical practical experience, whereas an audiologist requires 1,820 hr of supervised clinical experience. This experience requirement is implemented in an effort to provide clinicians the opportunity to develop a thorough understanding of how to interact with a variety of populations and to establish their role as a service provider in the professional environment.

In 2014, ASHA's Academic Affairs Board (AAB) was charged with examining the role and current models of CSD undergraduate education. The goal of the committee was to help determine whether and what changes to undergraduate education might be necessary and to provide a roadmap for implementing those changes in undergraduate education programs. According to the AAB Final Report, *The Role of Undergraduate Education in Communication Sciences and Disorders* by Crais et al. (2015), undergraduate education is moving away from more traditional lecture-based models of content delivery to more contemporary andragogies rooted in active and service learning, and case- or problem-based learning (PBL) and teaching.

The purpose of this article is twofold. First, PBL and civic engagement (CE) will be described. The level of preparation in which PBL and CE can be used at the undergraduate level will be proposed. And second, the benefits of concurrently introducing PBL and CE at the undergraduate level will be discussed. Clear and specific examples of these benefits will be provided, with supporting quotes from senior-level undergraduate students who participated in the dual approach.

PBL

Malcolm Knowles, the father of andragogy, advanced four principles of adult learning that are still widely incorporated in educational approaches used today:

1. adults need to be involved in the planning and evaluation of their instruction,

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Table 1. Learning Stages and Outcomes for Problem-Based Learning in Undergraduate Students.

Learning stages	Substages	Blooms taxonomy stages	Learner outcome verbs	Learner outcomes for problem-based learning
Formal operations		Remembering information Understanding information	Define, duplicate, list, recall Classify, describe explain, recognize	Makes relevant comments or statements about the case. Notes useful points and perceived problems about the case. Asks or answers related and relevant questions about the case.
Postformal reasoning	Absolutist	Applying information provided to solve a simple problem	Choose, demonstrate, employ, interpret	Makes references to, discusses, or interprets readings, videos, websites, PowerPoints, or other resources to support their comments.
	Relativist	Analyzing the multiple theoretical perspectives available	Appraise, compare, contrast, distinguish	Discusses case by moving beyond the initial suggestion and looking at the problem from various perspectives. Participates in independent open-ended self-reflection for case problem.
	Dialectical	Evaluating the contributions of various experts and easily resolve contradictions	Appraise, argue, defend, evaluate	Disagrees with other's opinions in a respectful manner and confidently introduces new alternative viewpoints Makes decisions as to how to assess, treat, and evaluate the client under discussion.

2. experience (including mistakes) provides the basis for the learning activities,
3. adults are most interested in learning subjects that have immediate relevance and impact on their job or personal life, and
4. adult learning is problem-centered rather than content-oriented (Kearsley, 2003).

PBL incorporates all four principles of adult learning. PBL is a constructivist learner-centered approach that emphasizes knowledge as an emergent and socially constructed relationship to information, and is believed to bridge some of the issues related to the theory–practice gap in professional education (Fourie, 2008). The process teaches students to actively critically analyze a situation or problem, seek out appropriate resources, and create a solution (Visconti, 2010). Since the 1970s, PBL has become an increasingly prominent approach in the medical field, replacing the traditional lecture-based method of teaching, where traditional lectures (e.g., anatomy and neurology) were abandoned in favor of an integrated curriculum based on problem cases (Savery & Duffy, 2001). Since then, it has been adopted in a variety of health sciences curricula (Whitehill, Bridges, & Chan, 2014), and a number of speech-language pathology programs in Hong Kong, Sweden, Australia, the United Kingdom, and Ireland have adopted this approach. Significant correlations have been found between PBL performance and occupational competencies indicating direct implications for clinical service provision in speech-language pathology (Ho, Whitehill, & Ciocca, 2014). The seven occupational competencies examined by these authors included assessment, analysis and interpretation, planning intervention, intervention, planning and delivering services, professional group and community education, and professional development. All of these significantly correlated with PBL tutorial performance scores. Reflective journal scores were significantly correlated with intervention, planning and delivering services, professional group and community education, and professional development (Ho et al., 2014). Thus, the opportunities to participate in PBL tutorial groups and complete reflective journals at the undergraduate level may prepare students for future occupational activities.

By the time most undergraduate students enter college, they have entered Piaget's stage of formal operational thought. However, some developmental psychologists propose a fifth stage of cognitive development that extends beyond Piaget's period of formal operations, termed *postformal reasoning*, which is characterized by the understanding that diverse perspectives of a problem can be synthesized and that solutions are dependent on specific contextual variables.

According to Sinnott (1988), the development of postformal reasoning that allows one to tackle complex problems continues well into adulthood. Kramer (1983, 1989) describes three stages that an individual progresses through that can be applied to solving problems: absolutist, relativist, and dialectical (see Table 1). In the absolutist stage, individuals are prepared to solve problems; however, often they cannot see beyond simple solutions. Individuals at this stage rely on the instructor to tell them what they need to know or what is the right or the wrong solution. Although many undergraduate students may enter college thinking that their professors have all the answers, when they enroll

in their upper level pre-professional classes, they are exposed to the multiple ideas and perspectives of their instructors, competing theoretical orientations of the authors of their textbooks, and problems that do not always have a right or a wrong answer. It is then, during the relativist stage, that individuals begin to recognize that there may be multiple perspectives to be considered before solving a problem, even if still struggling with conflicting viewpoints. According to Benack and Basseches (1989), these conflicting ideas, theories, and perspectives can facilitate the development of relativist thought. In the dialectical phase, usually achieved in later adulthood (Basseches, 1984), individuals can appreciate the contributions of various experts in their chosen discipline and easily resolve contradictions. It can be argued that the use of PBL with undergraduate students systematically encourages relativist and dialectical thinking (see Table 1). PBL provides undergraduate students with multiple and varied opportunities to explore and recognize the various perspectives and methods that can be used in deducing a solution to a problem.

Savery (2006) outlines how the focus of PBL is not merely on solving the problem but instead involves a process of deepening student understanding of a set of learning issues embedded in a problem. For this reason, the initiating "problem" is often given an alternative title such as "trigger" (Burda & Hageman, 2015), "scenario" (Whitehill, Bridges & Chan, 2014), or, as will be used here, "clinical case." The clinical case is believed to be most effective when it is a complex, broadly defined, and open-ended scenario that is grounded in context that stimulates curiosity and motivates learners (Barrows & Kelson, 1995). Thus, a client's difficulties may be broadly diagnosed and lack specificity, but the context and social history provided allow undergraduate students to build a picture of the client as a person, which motivates them to investigate how they may assess the client to determine the specific communication difficulties he or she may be experiencing.

According to Barrows (1992), the ideal PBL group consists of between five and seven students, as discussion among this number of students provides a most effective medium for learning. Students assume specific roles for each problem (e.g., chair, scribe, reference collector) that establish a structure within the group. The group size and organization are intended to create an environment where there are enough differing opinions to allow for a broad and diverse discussion of the topics, whereas groups are still small and structured sufficiently that students feel comfortable expressing their opinions and ideas. This provides an avenue for students to voice their thoughts, and as Vygotsky (1986) discussed, speaking allows one to transform and develop one's thoughts, thus facilitating the development of clinical reasoning skills.

The PBL approach is often distinguished from other case-based teaching approaches by the role of the tutor (Whitehill et al., 2014) who does not provide instruction but serves to monitor, probe, guide, support, and challenge the students as they themselves direct the learning process (Burda & Hageman, 2015). Instruction involves preassigned readings and the expectation that students will supplement this with their own reading. Thus, this teaching and learning method encourages the beginning skills needed to utilize evidence-based practices (Visconti, 2010), an important concept for those in health care professions.

The PBL approach has not yet been adopted across curricula in the United States, yet there are a number of instructors, in the field of speech-language pathology and audiology, who have implemented and applied the principles of PBL to one or two classes in the program at the graduate level (Burda & Hageman, 2015; Greenwald, 2006; Kong, 2014).

Although PBL has primarily been applied to graduate coursework in the United States (Burda & Hageman, 2015; Greenwald, 2006; Kong, 2014), and graduate students who are also participating in clinical experiences often have the advantage of a developed clinical schema that can aid them with these clinical cases, programs in other countries have successfully implemented the PBL approach at the undergraduate level both before and during clinical experiences (Ng, Bridges, Law, & Whitehill, 2014; Shin, Haynes, & Johnston, 1993). In fact, undergraduate students in CSD report that the PBL approach provides them with improved communication and critical thinking skills that allow them to more efficiently synthesize information and generate a suitable conclusion (Visconti, 2010), thus preparing them for future clinical experiences. The opportunity to develop these skills at the undergraduate level appears to be beneficial for students planning to begin a graduate program in speech-language pathology and audiology where synthesis of information and critical thinking skills are crucial for the application of knowledge to the clinical setting. The aim of the PBL approach is to provide students with knowledge, intrinsic motivation to learn, and experience using effective problem solving, self-directed learning, and collaboration skills (Whitehall, Bridges, & Chan, 2014), and beginning this process at the undergraduate level is likely to facilitate the development of competent engaged graduate students and, subsequently, professionals.

CE

CE, an andragogical approach to learning with a similar experiential perspective, involves community-based problem-solving experiences and aims to connect structured student activities in communities with their academic study (Saltmarsh, 2010). Thus, students become involved in community programs or facilities, and have an opportunity to give back to the community in a volunteer capacity, while also interacting with individuals who have communication

difficulties as a result of, for example, dementia or intellectual disability. This experiential learning method has been applied extensively to a variety of undergraduate disciplines and requires students enrolled in an academic course to provide a service to a community partner, and reflect on it (Goldberg, Richburg, & Wood, 2006). Similar to the PBL approach, this approach decentralizes the role of a teacher as the singular authority of knowledge and the student becomes accountable for the learning. CE, also labeled "service-learning," is described by Bringle, Hatcher, and McIntosh (2006) as

> a course-based credit-bearing educational experience in which students (a) participate in an organized service activity that meets identified community needs and (b) reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of personal values and civic responsibility. (p. 12)

This approach to education strengthens the link between higher education and society, something that researchers have consistently emphasized as important (Goldberg et al., 2006; Sheffield, 2004). It also directs the learner away from memorization and facilitates the integration of observations with theoretical and academic knowledge. In this way, it is intended that the process is intrinsically rewarding, motivating, and empowering for students as they take responsibility for their own learning (Goldberg et al., 2006). This activity occurs outside the university classroom and is beneficial to community service organizations, whether they are for-profit or nonprofit. Students are not paid for this experience because it is tied to an academic course, and reflection is a required and integral component of the process. For example, students may be asked to spend 1 to 2 hr per week in a community setting, often recommended by the instructor who likely has established community relationships, and class assignments then include reflective activities or papers based on this experience. Thus, this educational model is beneficial not only to the students and their learning but also to the community that is served by these students, as well as the faculty member who can demonstrate integration of scholarship, teaching, and service, all of which are important to academic success.

The CE model is distinguished from other experiential learning models by the ongoing reflection and the equal benefit to the student and the recipient of the service (Bringle et al., 2006). There is a wealth of research that highlights how students begin to think more like experts in a field when afforded the opportunity to learn in multiple contexts (Zlotkowski & Duffy, 2010). Mahendra, Fremont, and Dionne (2013) found that experiences in long-term care settings had a significant positive impact on their graduate speech-language pathology students' knowledge of dementia. Similarly, Kaf, Barboa, Fisher, and Snavely (2011) noticed that, for both their audiology and speech-language pathology graduate students, direct contact with those in the community settings resulted in more positive attitudes toward older adults in residential facilities. Hence, it is well documented that participation in CE presents as an avenue for preparing students to acquire the necessary competencies that are fundamental to working with community populations and thus may enhance a clinician's ability to competently assess and treat individuals with communication disorders. In the following section, the benefits of concurrently introducing PBL and CE opportunities at the undergraduate level will be discussed.

Benefits of Using a Dual Approach

Although there is a profound emphasis on clinical experience at the graduate level, undergraduate SLP and audiology students are not often afforded the opportunity to become involved in a professional setting, or to interact with the populations that they learn about in the classroom setting. Although undergraduates are not qualified to provide clinical services to individuals and organizations in the community, they are a population that can be drawn upon for volunteer contributions to community organizations, as their course schedules are usually not as intensive as those of graduate students. Also, as individuals who are interested in observation experiences to make their career decisions, they are in a good position to begin thinking of the profession from a clinical perspective. Combining the educational models of PBL and CE provides undergraduate students with the opportunity to work in the classroom with hypothetical clients and also meet and interact with individuals in the community who may have some similar communication difficulties. Thus, these models are complementary when implemented together and present undergraduate students with a structured and effective learning model that can help to prepare them for graduate study and eventually professional practice.

This dual approach can be implemented in a variety of ways. The following method, implemented by one of the authors, is a specific example for how to incorporate PBL and CE in a senior-level undergraduate course on adult language disorders. The PBL component of this course involved written clinical cases of adults with communication impairments subsequent to neurological damage (e.g., stroke, brain injury, dementia). The students received new clinical cases every 2 weeks during the semester. At this point in their undergraduate career, the students were eager to develop a clinical schema for working on the cases. Students worked in groups of five to seven individuals and assumed a different role for each problem. Roles included a chairperson, a scribe, a reference collector, a timekeeper, and an active participant (depending on group size, there may have been multiple active participants). All students

read assigned readings and discussed these in light of the clinical case. Students developed questions relative to the clinical case and used both recommended class readings and their own sources to answer these questions. As needed, the instructor was available to guide them in expanding and clarifying the questions. The assignments that accompanied the clinical case included the group questions and answers compiled by the scribe, a reference/bibliography list, and a product (i.e., any useful tool deemed relevant to the clinical case by the group). Examples of the products included brochures for clients, families, and professionals; information videos; informal assessment tools; and treatment plans or resources.

The CE component of the class was primarily assigned as an out-of-class activity. The instructor had established relationships with long-term care and skilled nursing residential facilities in the area, and students were required to make contact with the activities director at these establishments and to spend at least 1 hr per week volunteering in whatever capacity was appropriate to the facility. Many students spent their volunteer hours working with residents on arts and crafts, reading to and with them, serving meals, or serving as companions for residents who did not have family visitors. The instructor monitored participation by checking in with the activity directors, through class discussion of the volunteer experiences, and through written class reflection assignments documenting these experiences. Students were required to integrate their experiences with PBL (i.e., the clinical case) and CE (i.e., volunteering) in one-page reflection assignments that were submitted at the end of each clinical case (i.e., every 2 weeks).

As previously noted, the learning models utilized by these undergraduate students draw on the theory of constructivism, which posits that acquisition of knowledge is an active process. Thus, active participation in the PBL process, rather than passively listening to lecture material, facilitated learning by providing new knowledge within an active problem-solving clinical case. The experiential learning in a community setting actively built upon that newly acquired knowledge and provided students with an opportunity to analyze and integrate their classroom learning with their CE experiences.

Learning, as previously outlined, is not limited to expanding knowledge, and these teaching methods also serve to facilitate learning in a broader sense. Kaf et al. (2011) described how students applied their classroom knowledge as they gained firsthand experience of the typical communication difficulties and behavioral issues that arise as a result of cognitive impairment and mood changes in dementia. They also found that this experience facilitated students' understanding of the concepts they were learning in the classroom and thus their understanding of the needs of the population with which they were interacting. Use of clinical cases allows students to develop a profile for their hypothetical clients and get a sense of their personalities. Therefore, it is not surprising that this process gives undergraduate students the opportunity to cultivate a person-centered approach that emphasizes compassion and consideration for the clients and their families (Herrington, Oliver, & Reeves, 2003). One of the students who participated in the aforementioned class stated,

> Working through these problems has enabled me to become more familiar with important aspects to consider while assessing individuals with aphasia, such as using a caregiver assessment and quality of life measurement to form a more holistic picture of the client.

Similarly, direct contact with individuals who have communication difficulties has been shown to positively affect students' attitudes toward these individuals (Kaf et al., 2011). This is especially true for interactions with older populations. Gallagher, Bennett, and Halford (2006) found that undergraduate nursing students have more negative attitudes toward older adults than do more educated and experienced practicing nurses, and it is expected that the same could be true of CSD undergraduate students. The firsthand experiences that accompany CE provide students with educational experiences that improve attitudes, thereby positively affecting the quality of the care these students will provide to their clients as graduate students and clinicians. The following quote from another student who participated in the CE experience summarized her change in attitude toward long-term care facilities:

> I always find myself leaving the nursing home with the best attitude. I think sometimes nursing homes can be depressing for people but it actually has the opposite effect on me. I go there hoping to impact someone's life but leave with them influencing mine.

These two experiential learning approaches provide students with team building and interdisciplinary skills, both within and outside the classroom setting. Students have opportunities to observe and interact with other professionals when participating in CE experiences, and can learn a great deal about how to be an effective team player during PBL experiences. When working on PBL cases, students learn how to collaborate, cooperate, and make decisions as a team. Assigned roles on a team allow each student to develop participatory and leadership skills, and the social environment is critical in allowing students to verify their own understanding of the presented concepts and seek viability (Savery & Duffy, 2001). This environment also allows students to examine the perceptions and opinions of others. Alternative viewpoints that encourage relativistic thinking serve to challenge students' initial impressions, hence stimulating the critical thinking skills that lead to enhanced learning. This social negotiation of meaning is integral to

working as a team and developing the collaborative skills necessary for interprofessional practice. The following quote from a student exemplifies how she learned something about herself from participation on a team:

> I have to be patient and willing to listen to everyone's opinion to form the best conclusion for the patient. These techniques will be very important in my future.

Although CE activities do not always emphasize teamwork and collaboration, a number of studies indicate that engaging in such activities develops students' perceptions of how an interprofessional team operates and increases students' confidence in interacting with other professionals (Altosino & Armstrong, 2014) while also providing them with an opportunity to experience and observe collaborative decision making (Goldberg et al., 2006). Another undergraduate senior participating in the class recognized the professionals she will likely work with in the future.

> As a future SLP, I know there is a good chance I will eventually be working with Occupational Therapists, Doctors, Nurses, Nutritionists, and Social workers in order to benefit and help the patient.

There are important implications on the identity of the students as an individual with societal responsibilities, as well as their perception of themselves as a clinician. There is a great deal of research that highlights how students begin to think more like experts in a field when afforded the opportunity to learn in multiple contexts, both within and outside the classroom (Mahendra et al., 2013; Zlotkowski & Duffy, 2010). It can be argued that an undergraduate course that incorporates the dual approach of PBL and CE allows students to begin to develop a future professional identity in the fields of audiology and speech-language pathology. An individual identity is not entirely individual in that it is constructed with group identities, and engagement in the world, with PBL and CE experiences, facilitates the ongoing process of identity construction (Eckert, 2000). Discursive practices, including the written reflections, that are an integral component of the CE process, provide students with an opportunity to express their opinions regarding their personal growth in identity. Another student demonstrated this as she stated,

> I realize how we are not just speech "therapists," but that we are also advocates for each patient and their individual needs.

Finally, the use of these andragogical approaches in conjunction with one another emphasizes the importance of research and evidence-based practice. PBL involves critical examination of the literature, including resources chosen by the instructor and sought out by the students. This provides students with experience seeking out articles that are directly relevant to the clinical case at hand, and enables them, through repeated practice, to become more time-efficient at locating relevant resources (Greenwald, 2006). These skills will be necessary in the clinical setting. Furthermore, the CE experience underscores for students that being able to relate their reading and academic learning to the practical setting is an important clinical skill. This process highlights for students how research and practice are reciprocal, empowering them to become agents of their own learning who as clinicians will be capable of, and interested in, referring to relevant research. This is supported by the following quote from a student who was learning through this dual approach:

> This class has given me the confidence to continue on to graduate school because even though I will not always have the answers, I understand how to find them.

In addition, it is well known that there is a current shortage of researchers to teach in university graduate programs in speech-language pathology and audiology (Greenwald, 2006; McNeil et al., 2013). Emphasizing this link between clinical practice and academic research at the undergraduate level may enhance student motivation at the master's level to consult the literature in clinical settings, ask relevant clinical research questions, and develop an interest in clinical research that may even result in the future pursuit of doctoral studies.

Conclusion

To conclude, PBL and CE are experiential constructivist andragogical approaches that emphasize learning through experience. In the classroom setting, the focus is not just absorption of knowledge but also application of that knowledge through reflective, experiential, and clinical reasoning. When using these two complementary approaches at the undergraduate level, the instructor's primary goal is not to impart knowledge, but rather to facilitate the conceptual leap from memorization of course content to application of that content. Incorporating a dual approach of using PBL and CE at the undergraduate level can have multiple benefits for students. In addition to learning relevant undergraduate program content, the combined use of PBL and CE can enhance and expand students' sociocultural perceptions, and positively affect their attitudes toward individuals with communication impairments. Students can observe the provision of person-centered services in the community that emphasize tolerance, compassion, and consideration for the clients they will one day work with and their families. Students can gain experience and confidence working on a collaborative team, and develop valuable interprofessional skills. By assuming responsibility for their own learning, undergraduate students can begin to develop their professional identity. And finally,

students can gain an understanding of how research and practice are reciprocal, empowering them to develop beginning research and clinical skills that will be necessary at the graduate level and beyond.

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