



Article

Sustainable New Product Development for Ten Thousand Villages, a Fair-Trade Social Enterprise: Empowering Women and Economic Development through Problem-Based Service Learning

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Abstract: Universities have an important role in advancing sustainable development by educating future professionals. As an effective approach to scaling sustainability education, the author implemented a problem-based service-learning (PBSL) project with Ten Thousand Villages, a fair-trade non-profit social enterprise (SE), into a Product Innovation and Management course at a public university in the US. The purpose of this study was first, to explore the significance of, strategies for, and barriers to sustainability education in higher education; second, to present a case of a PBSL project systemically incorporated into a course; and third, to propose a PBSL model to facilitate its wide adoption in other courses. A qualitative research method was adopted employing open coding and the constant comparative method to analyze students' written reflections. Unlike the hypothesized model with a commercial enterprise, the findings revealed that fourteen new themes emerged for the PBSL model; most were consistent with the characteristics of SE. Through this study, educators and practitioners will be able to recognize the urgent need for the scaling of sustainability education and will be inspired to adopt problem-based service learning as a viable pedagogical approach. Further, the study will provide educators and practitioners with insights into its effective implementation into higher education.

Keywords: community–academic collaboration; economic development; gender equality; fair trade; problem-based service learning; new product development; social enterprise; sustainability; sustainable product development; UN Sustainable Development Goals

1. Introduction

Sachs [1] claimed that the twenty-first century is an era of sustainable development (SD), in which the global challenges of economic development, environmental sustainability, and social inclusion are interrelated and are our shared goals to achieve together. SD is most widely defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [2]. Sachs et al. [3] argued that universities have an important role in acting as catalysts to initiate and advance SD by educating future professionals across various disciplines to play the role of change agent. Although sustainability education has increasingly been incorporated into the curricula of higher education in recent years, it is still sporadic and has not been fully embraced. Many educators viewed the research on effective, strategic implementation of SD education as important but lacking effective models for application. As an effective approach to the scaling of sustainability education and the preparation of students to be responsible global citizens and professionals equipped with SD knowledge and understanding, the author implemented a problem-based service-learning (PBSL) project with Ten Thousand Villages, a fair-trade non-profit social enterprise (SE), into a Product Innovation and Management course at a large public university in the US. Educators have identified service learning (SL), problem-based learning (PBL), and problem-based service learning (PBSL) approaches that



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expose students to real-world challenges as effective models of teaching sustainability [4,5]. Eyler and Giles [6] argued that SL not only increases discipline-specific learning but also enhances students' civic responsibility and teamwork skills; it simultaneously benefits the community partner, and the faculty who implement the projects feel more rewarded. However, there is little literature on SL, PBL, and PBSL projects in the fields of entrepreneurship, new product development, and management, and they have not been widely adopted.

To fill the gap, this study aims first, to explore the significance of, strategies for, and barriers to SD in higher education; second, to present a case of a PBSL project systemically incorporated into a course; and third, to propose a PBSL learning model to scale its adoption in other courses. The research questions are as follows: first, what are the strategies and barriers to sustainability education? Second, what are previous examples of PBSL models adopted in the fields of entrepreneurship, new product development, and management? Third, what PBSL model is proposed to other educators based on the results of a PBSL project implemented into a Product Innovation and Management course? This study will help educators, researchers, and practitioners recognize the urgent need for scaling sustainability education and inspire them to adopt PBSL as a viable pedagogical approach. Further, the study will expand the relevant literature in sustainability education and provides strategies and insights into its effective implementation into higher education courses.

2. Literature Review

2.1. Education for Sustainability/Sustainable Development

In order to facilitate the achievement of the United Nations Sustainable Development Goals (UN SDGs), scaling the sustainability competencies of professionals in various fields is crucial and calls for the urgent implementation of sustainability curricula in higher education [7]. Bagley et al. [8] specifically argued for the need for SD education in management education to prepare a new generation of managers to be more insightful and socially responsible. While many universities have begun to increasingly offer sustainability curricula, Weiss et al. [7] conducted a meta-study with 133 cases from universities across the globe that synthesized the main drivers and barriers, located information gaps, and tested wide-spread assumptions on incorporating sustainability curricula into university education. Their results reveal that successful implementation is linked to a university's effective leadership; its support of professional development; its overall implementation of sustainability in terms of research, university operations, and outreach; and its external and internal stakeholders' active engagement in sustainability. The key drivers included coordination (n = 63), internal priority setting (n = 61), window of opportunity (n = 60), strategic plan (n = 55), interdisciplinary space (n = 54), government (n = 51), sustainability champions (n = 51), communication (n = 51), leadership (n = 45), and vision (n = 44). Conversely, the major barriers were interdisciplinary competence (n = 39), vision (n = 38), resources (n = 38), organizational structure (n = 29), incentives (n = 19), crowded curriculum (n = 18), internal priority setting (n = 17), leadership (n = 13), interdisciplinary space (n = 12), and collaboration (n = 12).

Numerous scholars and educators view effective implementation and outcome assessment as crucial. The most frequently recommended strategies are cross-disciplinary, broad in scope, and holistic in approach [4]. Aragon-Correa et al. [9] argued that SD education learning resources must be highly cross-disciplinary in nature due to the global scope of the issues, including not only environmental issues such as climate change but also encompassing social and economic issues such as poverty, employment, workers' rights, and economic development. Similarly, Bagley et al. [8] claimed that it is an educator's responsibility to prepare students for the interdisciplinary environment in which businesses operate (e.g., political, ethical, legal, and ecological) by effectively challenging them to think in an interdisciplinary and systemic way. Kim and Coonan [4] also suggested a cross-disciplinary online course as an efficient model for sustainability education. At Franklin & Marshall College in the fall of 2009, seven faculty members from various fields such as geography,

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urban studies, political science, management, psychology, and recreation and tourism collaborated to create and teach a fifteen-week undergraduate course on sustainability. A similar course taught as a pilot project for the Institute for Sustainability's curriculum initiative at California State University Northridge contributed to the advancement of organizational change and will be adopted as a core course in university-wide sustainability minor programs.

Shrivastava [10] argued that teaching environmental sustainability management requires a holistic pedagogy that integrates cognitive learning with emotional, spiritual, and physical learning. A passion for sustainability is also needed in managing sustainability, though a cognitive understanding is required to implement environmental sustainability practices. While the current major pedagogical aim is to advance students' intellectual understanding and problem-solving skills, this method does not necessarily elicit a passionate response, so Shrivastava put forth a prototype sustainable management course that includes emotional and physical components as an example of the transformative potential of such embodied learning.

2.2. Sustainable New Product Development

2.2.1. Fair Trade and Artisans

Fair Trade is "a trading partnership, based on dialogue, transparency and respect, that seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers" ([11], p. 73). This social movement was triggered by the unequal exchange between the primary producers in the developing countries of the Global South and the corporate buyers of the developed countries in the North. The primary goal of Fair Trade is to provide workers, farmers, and artisans with just prices for their goods, allowing them to maintain an acceptable standard of living [12]. According to Pierre [12], fair pricing is ensured by the presence of a price floor that requires all Fair-Trade buyers to purchase the product at or in excess of the agreed upon amount. Fair Trade also allows access to credit and price stabilization [13]. Since individuals know they will be paid at least the rate of the price floor, they are able to better allocate their resources for the future and do not have to keep reserves on hand in case the market rate for their goods falls dramatically [14]. Furthermore, when Fair Trade products are purchased a certain percentage of the Fair-Trade premium is earmarked for productivity improvements for workers, farmers, and artisans, ultimately leading to a more effective industry [15].

A broadened education and distribution channel of Fair Trade has extended beyond the circle of social activists to conscious consumers because it offers ethical consumption and enhances social entrepreneurship to bring about radical institutional change through social activism, marketing, and ethics [16]. Artisans draw on their technical expertise, aesthetic norms, and design skills to create objects for beauty and practical use—ceramics, baskets, textiles, wood items, and metalware. Though artisans are highly skilled in their craft, poor education and illiteracy hinders their access to new markets. Unlike the traditional market, an increasing group of consumers values the artistic creativity of handcrafted, individual pieces. These consumers think about who made a ceramic vase, what they were paid, what the production facility was like, and how the production affected the environment [17].

2.2.2. Circular Economy

Geissdoerfer et al. ([18], p. 759) define a circular economy (CE) as "a regenerative system in which resource input and waste, emission, and energy leakage are minimized by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling." The circular economy model was developed in response to the take–make–waste or linear economy, that dominates many industries [18]. A circular economy follows a regenerative design and seeks to reduce the consumption of finite resources and end the paradigm of infinite growth [19]. The take–make–waste model is especially apparent in

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the fashion industry, one of the most environmentally harmful industries [20] given that America alone has over 16 million tons of textile waste each year.

Shirvanimoghaddam et al. [21] stated that there are three specific sectors of the production and consumption cycles that must be addressed to achieve a CE. In the manufacturing phase, producers must reconsider how products are made, what materials are used, and how those materials reach the production cycle, and producers need to decrease their GHG emissions and water usage [22]. In the consumption cycle, consumers need to buy higher-quality goods that will last longer and focus on supporting sustainable and ethical sellers [23]. Shirvanimoghaddam et al. [21] added that consumers must also be conscious of reducing their purchases of new garments and opting for alternatives such as renting garments or using thrift shops. Lastly, in the post-consumption phase, businesses should focus on repairing, repurposing, and recycling garments to ensure a more efficient use of sparse resources [21]. A less common but arguably more impactful way to reduce waste is to shift the burden of waste to producers rather than consumers [24]. Reducing pre-consumer waste can take a variety of forms including upcycling unwanted or old garments into new clothes, using offcuts to produce original products, and even using zero-waste patternmaking to reduce the availability of offcuts altogether [25]. As these techniques are perfected over the next decades, the demand for virgin fabrics will likely decrease, thereby reducing the strain put on the earth for the farming and transportation of additional raw materials [26].

2.3. Problem-Based Service Learning (PBSL)

2.3.1. The Benefit and Characteristics of PBSL

In order to facilitate holistic learning for sustainability, educators believe that they should allow students to integrate and apply their knowledge to solve real-world complex problems. This type of design encourages "learning by doing," where course goals are attained through action projects. According to Hoffman and Ritchie ([27], p. 97), PBL is defined as "a student-centered pedagogical strategy that poses significant, contextualized, real-world, ill-structured situations while providing resources, guidance, instruction, and opportunities for reflection to learners as they develop content knowledge and problem skills." In PBSL, students serve the community by consulting with community partners on a particular need and utilizing their discipline-specific knowledge to suggest solutions to problems [28], thereby reducing the gap between theory and reality [29]. By actively seeking solutions to real-world problems, students report enjoying the learning experience, which helps develop lifelong learning skills [30].

The major characteristics of SL and PBL are summarized as "student-directed learning, real-world problem-solving, work in groups, reflective techniques, and reciprocity" ([31], p. 2). Because small groups of students actively solve problems in a self-directed manner [32], the group work enhances their interpersonal communication skills, flexibility, and respect for others [33]. PBSL also allows for reciprocal collaboration between students, community partners, and faculty toward shared goals, and their authentic, reciprocal relationships facilitate transformative learning [34]. Thus, PBSL enhances their ability to engage with other people [35]. SL experiences particularly reveal higher levels of the 3 Rs of reality, reciprocity, and reflection [36]. SL project experiences through the 3 Rs facilitate a variety of developmental effects, such as comprehending social issues and leadership skills [37–39]. Additionally, students reflect on their experiences with the problem-solving processes as community members [40]. Reflection, in an oral or written form, allows students to attach meaning to their real-world problem-solving experiences [41], connecting concepts learned in the classroom with real problems.

There is numerous evidence of the effectiveness of PBSL from various disciplines: engineering [42], business [43], public relations [44], architecture [45], and urban development [43]. The outcomes from Mcdonald and Ogden-Barnes' workshop with PBSL, offered to post-graduate students ranging from MBA to Ph.D. levels in various fields such as communications, IT, chemistry, and psychology, revealed that the most enhanced skills

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were teamwork (95%), problem-solving (83%), critical-thinking (68%), application skills from discipline-specific knowledge to real-world problems (65%), and personal development (65%) [46]. Citizenship skills (e.g., cooperation, fairness, and respect) were not as developed as the other skills (22%). Student evaluations in an instructional technology graduate program also showed positive results on greater awareness of community issues and an increased sense of civic responsibility [46]. Despite the documented benefits, the PBSL approach is less effective in transmitting information than the traditional approach; however, it does increase retention by offering examples and applying theories and concepts as opposed to relying on abstract classroom lectures [47]. Thus, combining PBSL with the traditional classroom instruction approach may be beneficial as they each compensate for the shortcomings of the other [48].

2.3.2. PBSL Model

Researchers previously proposed various models and theories of PBSL [2,31,49]. The author provides Kim's model [31], drawn from the results of a PBSL project for trend analysis and forecasting and new product development for a commercial enterprise (a small apparel business), as a hypothesized PBSL model as shown in Figure 1 because it is most relevant to this study and its field (i.e., new product development and management); further, the potential differences between a PBSL project with a commercial enterprise and a social enterprise might yield meaningful comparisons and contrasts. The overlap of PBL and SL in the center of the diagram illustrates the following qualities of PBSL: real-world problem-solving; critical and creative thinking skills; self-directed learning; enhanced discipline-specific learning and better retention of knowledge; up-to-date industry-specific knowledge/skills; the desire to be a socially responsible/ethical professional; intrinsic motivation and student engagement; oral and written expression and self-efficacy; teamwork and communication skills; leadership and interpersonal skills; reflective learning; collaboration and reciprocity experience; civic responsibility; a sense of growth; research and writing skills; and direction for career choice. The PBL on the left side of the diagram presents students' gaining flexible and life-long learning whereas the outcomes of SL on the right side feature an awareness of social/global issues, future inclination to serve, moral and multicultural development, and enhanced empathy. These components, drawn from the results, were overall consistent with the PBSL projects reported in other literature; however, not many SL components were yielded.

2.3.3. Steps to Implement a PBSL into a Project/Course

Educators suggested various steps to effectively implement PBSL into a project/course for positive learning outcomes. Kaye [50] proposed the following five stages: investigation, preparation, action, reflection, demonstration, and evaluation. Ackers and Laur [51] proposed the identification of a problem, investigating the challenge, exploring the ideas, utilizing the inquiry process, and developing a summative product to share publicly. Kim proposed four steps in her 2022 study [31]; however, in this study, the four steps were adapted to five steps by dividing the original Step 4 into two parts: Step 1, set the goals and objectives of the PBSL project by identifying the purpose of the project, creating student learning objectives, and selecting a community partner; Step 2, choose a real-world problem and create project guidelines with the community partner's input; Step 3, facilitate students' problem-solving processes by supporting student-directed research, modeling the application of classroom learning to real-world problems, guiding team-work by helping to resolve challenges, and aiding in the creation of solutions to the problem; Step 4, require students to reflect on their experiences in a written format; and Step 5, host students' presentations of their completed projects to the class and the community partner, who will judge the proposed solutions to the problems and provide students with their feedback.

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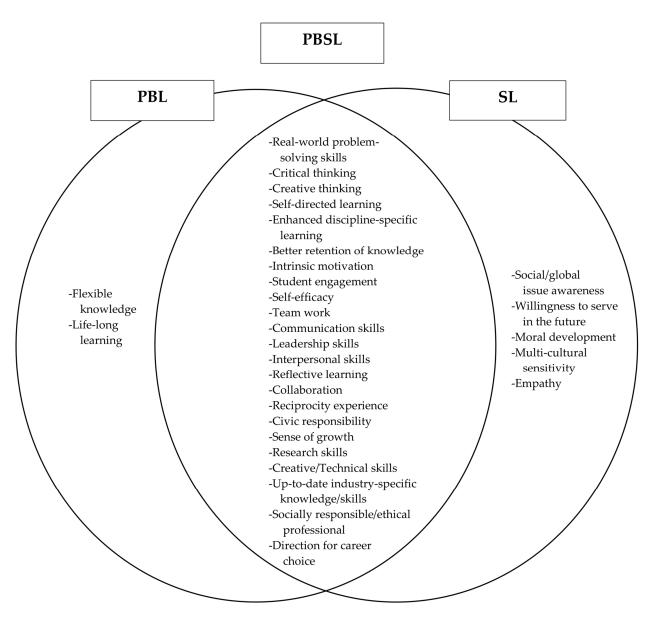


Figure 1. Hypothesized model of PBSL student outcomes.

3. Course, Participants, and Student Learning Objectives

The author developed the Product Innovation and Management course into which a PBSL project was implemented in 2011 and taught the class from the spring of 2012 to 2017. It was offered to approximately 10–20 Master's students as a required course in the Master's Program of Global Product Development at a large public university in the US every spring semester. The students consisted mostly of females with several male students. The sixteen-week course explored the process of new product management in the global market with a focus on strategic elements of product development such as the new product process, the product innovation charter, and the new product portfolio. It was developed as a combination of lectures about the process of new products management early in the semester and lab components covering Lectra's product development computer program Kaledo (Print, Weave, Knit, and Style) later in the semester. Two paper projects applying Kaledo were assigned as the course requirements as well as small in-class assignments and quizzes. Both paper projects required students to create new products for community partners: one for a local commercial enterprise and the other for a social enterprise.

The student learning objectives were, first, to define terms related to product innovation management and product development; second, to comprehend the product innovation

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management process in the global market; third, to conceptualize and analyze strategic factors in new product development in the global market; fourth, to generate product concept and design concept testing; fifth, to acquire skills for product development team management; sixth, to comprehend and apply creativity in design as a product concept to increase a firm's competitive advantage; seventh, to comprehend and apply sustainability and social responsibility when employed as a firm's strategy for competitive advantage; and eighth, to utilize product development technology (e.g., Kaledo) to create a new product.

4. The Implementation of PBSL

4.1. Goals and Learning Outcomes of the PBSL Project and Selection of a Community Partner

The purpose of the group project (two students in each group) was to create innovative sustainable products for a chosen social enterprise. The intended student learning outcomes were first, to understand the enterprise's business model and sustainability practices; second, to identify its target market; third, to develop an innovative collection of sustainable textile or apparel products that could strategically fit into the selected business' practices; fourth, to explain the innovativeness of the proposed products; fifth, to design the items in the collection utilizing the Kaledo program and to describe the strategic materials, design, and manufacturing process in the value chain; sixth, to justify the contribution of the new products to the business as well as their integration into the business's practices; and lastly, to create a presentation board.

The author initiated the project in the fall of 2011. Ten Thousand Villages (TTV), a local franchise of the national Fair Trade social enterprise, was selected as a service recipient for the PBSL project. TTV, one of the world's oldest and largest Fair-Trade organizations, founded by Edna Byler in 1947, is headquartered in Akron, PA, and markets handcrafted products created by over 120 disadvantaged artisan groups from over 35 developing countries, mostly consisting of women [52]. It has a wide product portfolio with unique products, including jewelry, sculptures, baskets, candles, toys, soaps, bags, and tableware. TTV's designers and buyers guide artisans to the employment of sustainable practices for their products and packaging, including the use of natural, upcycled, recycled, and non-plastic materials, and work together to customize their traditional craft skills to fit into the current trends of North American markets, including its popular styles and colors [53]. TTV's environmental and social sustainability practices have had great impacts, particularly on the Global South. These impacts have included empowering women and promoting economic development by providing employment to women. Additionally, TTV has addressed climate solutions and promoted responsible consumption and production. The author considered TTV to be a good fit for the project because it spans the entire product development process, beginning with the creation of innovative products to their manufacturing then retailing while also seeking social justice. In addition, the author was aware of TTV's needs for university resources and expertise and had worked with the store previously on various SL projects in her other classes, including on the creation of a brochure for a local shopping destination for TTV and on the creation of promotional strategies for events, as discussed in Kim and Lee's 2017 study [54]. When she discussed the new class and the new product development project idea with the manager, she also recognized the fit with TTV in terms of its business needs and was enthusiastic about the opportunity for collaboration. She was also very interested in hiring students as interns for the business in the future.

4.2. Selecting a Real-World Problem

The author included several of TTV's manager's ideas into the project description, such as creating a collection within a particular target consumer segment. The project description instructed students to introduce TTV; describe TTV's target market for their new products, considering demographic, psychographic, and geographic factors; develop an innovative collection of sustainable textile or apparel products that strategically fit into TTV's unique business practices, considering artisan manufacturers; justify why the new products are innovative compared to current TTV products; design four to six original items for the

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collection utilizing the Kaledo program and describe the strategic materials, design, and manufacturing processes; explain the contribution of the new products to the business and their integration into its business practices; explain the new product's contributions to the triple bottom line—the environmental, social, and economic benefits; and lastly, create a presentation board in a jpg file including the designs and the name or logo of TTV.

To introduce the project, the store manager of TTV attended the class early in the semester to discuss its mission and vision, evolution, target market, product portfolio, product development, sourcing for manufacturing, and other practices. She showed several touching videos of artisans' stories, illustrating what TTV's collaboration meant to them in terms of enhancing gender equality by empowering women, bettering their children's education by improving their household's income, developing the local economy, and preserving their cultural identity and tradition. This appeal—particularly the artisans' testimonials—was extremely powerful in evoking student interest and learning. She also displayed a number of TTV's unique products, including baskets, boxes, toys, linens, jewelries, wallets, and pens, and shared many of the stories behind the products, which also played a role in attracting students' attention and interests. This confirms that one of the most effective ways for social entrepreneurs to appeal to consumers and spread awareness of their work is through storytelling.

4.3. Facilitating Problem-Solving with Students

A facilitator's role is critical for an effective PBSL experience. In this case, the author facilitated student learning by guiding student-directed research, encouraging them to revisit specific course materials and concepts, applying particular knowledge of the new product development process to TTV, and modeling critical thinking and problem solving. The author also facilitated the group learning process by monitoring their teamwork and supporting them in conflict resolution.

4.4. Student Reflections

In order to assess the effectiveness of the project, students' informal verbal reflections were documented throughout the process and formal written reflections were required toward the end of the semester. Ten open-ended questions were developed as prompts, as shown in Table 1, though answers were not a mandatory requirement; instead, open, unstructured responses were allowed. As documented in the literature review, reflection is one of the most important components of a PBSL project because students who take the time to reflect on their experiences take more from those experiences.

Table 1. Question prompts for reflections from students	Table 1. Ouestion	prompts for	reflections from	students.
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Question #	Prompt
1	What were the most satisfying or challenging parts of your work? What did you like or dislike, and why?
2	What learning occurred for you in this experience?
3	How did this project address the needs of Ten Thousand Villages?
4	Do you see benefits of working with a community partner? Why, or why not?
5	Explain the potential impacts of the experience on you and Ten Thousand Villages.
6	Did anything about your community involvement surprise you? Was it an eye-opening experience? If so, how?
7	Has the experience affected your worldview? How?
8	How can you raise awareness and educate others about sustainability and social responsibility?
9	What specific skills did you employ for this service-learning project?
10	Any other comments?

Seventy student reflections in total were collected from six semesters from the spring of 2012 to 2017. To analyze the collected reflections, open coding and the constant comparative

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method [55] were employed. First, the author compiled all students' answers by question number. One answer to one question became one unit of analysis. Words and phrases that did not affect the meaning were eliminated and the answers were shortened. Next, certain words, phrases, clauses, or sentences that generated units of meaning were coded to identify themes and sub-themes.

4.5. Students' Presentations of Completed Projects and Feedback

Students proposed and created various textile and/or apparel products for TTV employing weaving, knitting, or printing techniques using the Kaledo program. The products included wall hangings; decorative pillows; yoga outfit collections (e.g., tank tops, t-shirts, pants, headbands, and bags); kitchen/dining collections (e.g., aprons, placemats, towels, and napkins); exercise collections (e.g., armbands, bags, and mats); beach wear (e.g., swimsuits, pullovers, gowns, dresses, and hats); lounge wear (e.g., sleeping wear, gowns, and sleepers); bath products (e.g., shower curtains, bath mats, towels, and soap dispensers); pet products (e.g., beds, leashes, collars, sweaters, and water bowls); gardening products (e.g., vests, shorts, and gloves); women's accessories (e.g., bags); jewelry (e.g., bracelets); and men's accessories (e.g., ties, wallets, belts, and handkerchiefs). They chose an artisan group by searching through TTV's website (e.g., artisans' testimonial videos and blogs) and identified their specialized skills that could be utilized for textile and/or apparel products such as weaving; knitting; quilting; stitching; batiks, indigo, or other dye techniques; block printing; hand paintings; and ceramics. The selected artisans were located in Guatemala, Costa Rica, Argentina, Brazil, India, Vietnam, Cambodia, Philippines, Turkey, Peru, Nepal, Kenya, Bangladesh, and Madagascar. Within the identified artisan group's skill sets, students explained their chosen sustainable materials, design processes, and production methods. They presented a final board with a collection of the product items, and some groups included a storytelling technique, sharing a touching story of the artisan group and the potential impacts of their collaboration with TTV on their lives. The store manager and a board member from TTV attended the poster presentations at the end of the semester and critiqued the projects as guest judges. After the groups' presentations, the top three projects were selected by the judges, and gift cards were presented as awards.

The projects were then graded by the author using a rubric that weighed various components out of a possible total of 90 points: innovativeness (10 points), target market (10 points), description of design, materials, and manufacturing (14 points), contribution to/fit into the business (10 points), quality of designs and presentation board (25 points), required format (5 points), and PowerPoint presentation (16 points). The papers, presentation boards, and reflections of the most successful projects were sent to the manager of TTV, inspiring new product ideas. Subsequently, several of the students who took the course were hired as interns and students commented that their real-world experience with TTV was invaluable not only for the course content learning but also their professional development. The store manager later sent some of the best projects to the headquarters of TTV and some of these were reflected in their new products, which was a rewarding experience for the students.

5. Post-Project Evaluations

The PBSL project was evaluated based on students' written reflections, and the analysis of the reflections confirmed the project's success, revealing how enjoyable and impactful the project was to students and the community partner.

5.1. Most Satisfying Aspects of the Work

When asked, "What were the most satisfying parts of your work?" many students identified feeling rewarded and satisfied by helping other people as the result of their real-world project: "The most satisfying part of the project was knowing that our ideas could possibly be utilized and eventually help people make a better living."

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Several other students responded that their learning about the impactful social enterprise TTV was satisfying:

The most satisfying part of this project was learning about Ten Thousand Villages. Hearing the stories and their artisans was really heartwarming. The purpose of their organization is great, helping others who would otherwise not receive help. The lady that spoke about all of these artisans was very enthusiastic. Her passion was evident. Being able to be a part of something that could help this organization was nice.

Similarly, another student said, "The most satisfying was what I learned about the company and the artisans that they employ . . . I think that more companies should engage in this sort of business model because these products are truly making a difference in every part of the artisan's life."

Other students commented on their sense of fulfillment from the completed new product development:

The most satisfying part of the project was creating an entire line from beginning to end with a meaning behind it. It was interesting to research different cultures and determine how their skills and traditions can be incorporated into a product that would sell well in America. Since we were able to create these products using Kaledo, it helped me to understand the product development process more.

Another student said, "This project is great because it creates awareness and makes students in product development really utilize the new product development process that we have used all year. Also, it encourages working with a team and dealing with other people's views." A couple of students mentioned their increased self-efficacy: "It was really satisfying knowing that I was capable of producing an entire product line on my own." One student specifically appreciated the focus of handmade-products and sustainability:

I really enjoyed this project because it required focus on handmade products and sustainability. While sustainability is a rising concern and focus in our field, we do not take much time to look into handmade products or small-scale manufacturing very often. While this was the most interesting part of the project, it was also somewhat difficult to research because small, third world manufacturers do not tend to have much presence on the internet.

Students also attached more meaning to the product lines they developed from the appreciation of the artisans' lives and cultures to which they were exposed. One student reflected,

The project was definitely challenging, yet also rewarding. It was wonderful to learn not just about Ten Thousand Villages, but also about the individual artisan groups I selected to work on the individual products. It became more than just a product collection by the end of it; I found that I truly cared about the groups and people that would be working on it.

Lastly, many students identified using Kaledo as a satisfying experience from which they felt a sense of accomplishment and confidence, particularly when they finally viewed their completed line development after making efforts to learn the new software.

5.2. Most Challenging Aspects of the Work

When asked, "What were the most challenging parts of your work?" many students mentioned the complexity of identifying the sourcing, design, and manufacturing processes with a focus on sustainable new product development from a particular artisan group when they were not familiar with them. One student mentioned, "The most difficult part of this project was coordinating the line from design to manufacturability. This was difficult because every part had to tie together and make sense. Design will limit materials and materials will impact the types of manufacturing processes that can be used." Similarly, another student commented,

It was difficult to figure out exactly the design process of how the new products would be created. This would include doing all the research to understand what

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fibers needed to be used, how they were formed, and how the materials were made into a product. I do not have a large amount of textile knowledge this is why I found this part somewhat challenging.

Other difficulties included working in a team and learning the new computer program Kaledo in a short timeframe.

5.3. Learning Occurring through the Experience

When asked, "What learning occurred for you in this experience?" many students mentioned fair trade, nonprofit business operations, innovative new product development, sustainable product development, and the product development software Kaledo. Students' comments included: "... how to develop an innovative product by creating something new to the firm, something that reaches a new target market, and showcases a new cultural aspect," "how much work is involved in developing new products, especially manufacturing sustainable products for affluent consumers." One student reflected,

This project really showed me the importance of fair trade from the beginning of product development to the final product result. We had to research materials, dyes, artisan groups, the locations of the groups and if the materials could be accessed by them, the types of styles being crafted and if they could be realistically made by the artisans. Groups could not be chosen at random—it had to actually make sense with availability of materials and even the artisans' skill sets as not all groups in a particular area may be skilled at making a particular product we have in mind. This really helped me understand how doing only one thing "right" doesn't mean the product is sustainable and that it promotes social responsibility and fair trade. What makes an organization and their products truly fair trade is the entire process.

Another said, "I am so grateful that I was exposed to Ten Thousand Villages. I learned about their business model and all about their fair-trade aspects. I never understood completely what fair trade was exactly until this project. I also learned more about manufacturing. I had to think critical of how this would be made."

Other students identified critical thinking and creative/innovative thinking. One student commented, "I learned how to think critically about what it means to be innovative. Innovation can be many different things, but it must be useful. Innovation does not have to be hard or complex." Many students also appreciated learning about different cultures, particularly about artisans in the Global South and their needs. Additionally, one student learned about the importance of collaboration: "I learned that everyone has different styles of writing and working and that the best projects come with dual effort."

5.4. Addressing the Needs of Ten Thousand Villages

When the question "How did this project address the needs of Ten Thousand Villages?" was asked, most students responded that their work inspired TTV's design ideas and provided new product offerings, expanding their existing product portfolio. Several students mentioned that they had created a line that appealed to a younger target market. According to one student, "During her visit, the store manager stated that the company would like to attract younger consumers. Our project addressed the needs of Ten Thousand Villages in that we offered a product line and category that could help create more jobs for the artisans while attracting a younger consumer market." Another commented, "We found an area that Ten Thousand Villages has not addressed within their current product assortment we felt would be very profitable based on their current target market as well as our proposed target market. This project shows the need of these types of products that competitors do not currently offer while staying parallel to their business practices." Another student echoed, "This is especially beneficial since Ten Thousand Villages want to target young students. This project enables the brand to hear young people's opinions, preferences and ideas to see what would work for the company and what can be implemented for future profits and future artisan partnerships."

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Subsequently, students' best works awarded by the community partner were sent to the headquarters of TTV, which made students feel rewarded, shown by one student's comment: "Yes, as [the professor] stated, the board member who came to judge our projects has already requested permission to tell the corporate office what our suggestions were."

5.5. Benefits of Community Work

When asked about the benefits of doing community work, students identified numerous benefits. One student emphasized the importance of helping others and the community and a sense of fulfillment from helping:

Community work is so vital to not only my life, but also to those around me . . . I believe if the community comes together and learns about ways to help others and the world around us, we will change not only our communities but the world and mitigate the damage that all these years of injustice and pollution have caused. In addition, community work makes you feel good because you are doing good. We only have one world, and we must take care of it and those inhabiting its space.

Another echoed, "it is important to support local businesses and organizations, which ultimately supporting the local economy and community." One student repeatedly identified a sense of fulfillment as a benefit: "It allows you to impact other individual's lives that you may have never been able to touch before. It is also very fulfilling and rewarding to help other individuals who are less fortunate than you are."

Several students viewed personal growth as a benefit. One student mentioned, "It makes you reflect on your own personal life and forces you to think of others and to put yourself in someone else's shoes." Another echoed, "Yes, this entire process humbled me. It put things into perspective that my life is perfect and I have nothing to complain about. I need to focus on helping others and appreciating more of what I have."

Several students pointed out that community work can provide them with increased motivation for hard work, passion, and enhanced learning. One student commented, "I do believe there is benefit in doing community work. When a student can see exactly how their project will impact a population, it encourages them to work harder. It also increases the passion behind their project, which results in greater learning." Another student particularly expressed self-efficacy as a benefit: "My personal worldview is well rounded and I was aware of the poverty of workers in general. Again, it impacted me to know that my skills and knowledge could be applied in the field of community work."

Another benefit included an increased awareness of social issues/needs: "I have researched sustainability and social responsibility before so I was more aware of the issues in the world. However, I learned much more about fair trade, its process, benefits, pricing and collaborations. I now support much more fair-trade goods."

5.6. Future Impact of the Experience on Students and the Community Partner

When asked about the future impact of the experience on themselves and on the community partner, one student mentioned a desire to advocate for sustainability and fair trade:

Now that I am full of knowledge on such a matter, I will go out and tell others as well as help them start their journey to being more sustainable and advocating for fair trade. I think the issue is that many people are unaware or if they have knowledge, they do not understand the severity of the issue. I believe as more people become educated, they will make the change as well! I believe Ten Thousand Villages is going to expand into more impoverished nations and begin changing the lives of millions around the world.

Another expressed the desire for more community engagement: "This experience has left an impact that I need to get more involved in the communities that I reside in . . . There are people in our own towns that are in need of the help and don't have the resources to advance."

Another student identified increased consumer awareness of green washing and more thoughtful purchasing of authentic sustainable products in the future:

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For me personally, this project has really taught me to carefully observe and research products and organizations that claim to be fair trade. Just sustainability alone has become somewhat of a popular trend, with so many people praising efforts of a brand's "sustainability" without actually looking into the entire process done to make a product . . . Many consumers are content with a code of conduct that may or may not even be legitimate. This has impacted me in a way that I find it necessary to really dig deep and look at what is really going on behind the scenes.

As for the future impacts on TTV, students mentioned inspiration with regard to innovative product design within its fair-trade value and the advocacy of fair trade. One student responded,

I believe this will also have a future impact on Ten Thousand Villages as well. Every potential product design needs to be looked at to make sure it truly is promoting fair trade values. In addition, a project like this could hopefully show the organization just how innovative a product can be, yet still be made through the time-honored skills they want to preserve in their artisan groups.

Another mentioned, "This could impact Ten Thousand Villages by shedding more light on their advocacy to help marginalized groups in other countries. They can gain more attention through social media, so that more people can join in on the effort by purchasing items or volunteering their time."

5.7. Surprising Aspects of the Community Involvement

When asked, "Did anything about your community involvement surprise you? Was it an eye-opening experience? If so, how?" many students mentioned artisans' lives with limited resources and lower-paid, labor-intensive work. One student commented, "It was eye opening to do research on a different part of the world and find out how little resources that the underprivileged artisans had." Another said, "It was extremely eye opening and humbling to watch the videos of the Ten Thousand Villages artisans! I was shocked at how much time and effort goes into these handmade products and yet we can pay \$20–30 for these one-of-a-kind items!" Another expressed, "Yes, that they take up a long time and dedication to do their work and they sell it at such low price. It is also amazing to learn about their culture and that their spiritual life in the center of their culture." Another emphasized her realization of the impacts of our purchases of the artisans' products on their lives:

I think this has opened my eyes to how one purchase at Ten Thousand Villages can impact someone's life in another country. It really touched my heart to see these men and women working so hard every day to make items that will sell in the US and in these videos they are always smiling. It truly shows that the simplest lifestyle can make people happy. They don't take anything for granted.

Several students mentioned that they were surprised by the lack of awareness of TTV, a local social enterprise: "for an organization that has such a wonderful mission and vision, I was surprised at the amount of people who have never heard of the company. After completing the project, I realized that the lack of marketing has a major effect on brand awareness." Similarly, one reflected, "after researching, I was surprised how many socially responsible apparel companies exist that I have never heard or shopped from. It is important to get the word out so people will value this movement and support its expansion."

Another said she was surprised to discover the significant need for and increased participation in the sustainability and fair-trade movement:

I didn't realize how significant the need is in my area for sustainability and fair trade as well as how many people are acting to fight against these problems our community and world faces. I am glad that I am educated and willing to make a difference in my life and in the lives of others. This project has demonstrated that it all starts with a decision to change and actions to make the change occur!

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5.8. Impacts on Worldview

When asked if the experience affected a student's worldview and in what way, many students responded that it had a great impact on their worldview. One student mentioned that this experience broadened and diversified her worldview:

Yes, my worldview has been expanded and diversified. Many countries are struggling to meet basic needs and living in America we are living in a bubble. We go through everyday life complaining about frivolous things 'when people don't have shelter or even running water. This experience has made me more eager to travel the world and volunteer to the less fortunate whenever possible. These people really need the help.

Similarly, another student reflected,

This project certainly had an effect on my world view. We were told several stories about how the partnership with Ten Thousand Villages has affected local artisans and helped them make their community a better place. All of these success stories make me want to be more involved in the process of helping underprivileged communities.

Several students mentioned their expanded knowledge of artisans' living and working conditions in other cultures. One student remarked, "This experience has made me view the world in a different light as it showed me the struggle and hardships that these artisans go through, and how much hard work and effort they put in just to have dinner on the table." Another said, "I always had some knowledge about unfair wages, labor cost, and harmful conditions in countries making specific products, but doing this project gave me a better scale of how large this issue currently is."

5.9. Educating Others and Raising Awareness about Social Responsibility and Sustainability

When asked, "How can you raise awareness or educate others about sustainability and social responsibility?" students identified numerous ways to educate other people and raise awareness on those issues. Many students mentioned sharing videos on their social media sites, such as Facebook, Instagram, and Twitter, including reposting articles that discuss sustainability practices; following ethical and sustainable companies; and creating blogs. One student said,

I can educate others or raise awareness about social responsibility and sustainability by utilizing my social media outlets like Facebook, Twitter, and Instagram. These outlets will allow me to reach people all over the world, and allow me the opportunity to introduce them to some of my work. I could also start a blog dedicated to social responsibility and the impact that it has had on my life.

Several other students mentioned visiting classes and schools and creating groups in universities. One student said.

Education about sustainability and social responsibility is very important for today's students . . . I would be willing to visit other classes or schools to explain the benefits of working with such a great company that is able to help local communities and maintain a focus on sustainability. Students are much more likely to relate and become interested in a project that has a relatable and realistic end goal and reward.

One student emphasized the importance of teaching sustainability in schools:

Social responsibility has to start with being taught in the schools. Getting kids more involved in service projects at their schools and raising awareness on how to take care of people and the environment. Teaching students the importance of philanthropy and having more field projects such as this Ten Thousand Villages project where students are able to design their own community service projects. Having students get more involved in organizations in their communities and having students record community service hours. Teaching student who are

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furthering their education, that desire to be entrepreneurs and product developers the importance of sustainable practices and ethical sourcing.

In education, one student suggested, "Use various teaching methods such as videos, articles, discussions, and real-life case studies that show what people in third world countries go through, how they survive, and the limited amount of resources they have available."

Other answers included "actively involved in volunteering;" "joining non-profit organizations;" "creating an organization geared toward bringing awareness about the issue;" "word-of-mouth," for example "tell my friends and family the information I learned and have continued to spread knowledge if the subject arises," "take advantage of discussing sustainable product development and ethical companies when possible," " . . . use Ten Thousand Villages as an example of why we should become more aware of how our actions can affect others," and "share the concept and vision of Ten Thousand Villages;" "buying every possible goods in a fair trade store;" and "starting by being conscious about our own resources like water, wastes, dangerous chemicals." One student emphasized the importance of living as an example:

I can educate others and raise awareness about social responsibility and sustainability by living my life as an example. I think it is very important that we are mindful of what we consume, both internally and externally, because it affects not only ourselves, but the people and world around us. I believe by telling people I communicate with about ways they can help those in poverty, economic crises, and climate change. We cannot do it by ourselves, we must work as a team if we want to see global transformation.

5.10. Skills Employed for the PBSL Project

When asked "What specific skills did you employ for this service-learning project?" many students identified research skills, critical/analytical thinking skills, creative thinking skills, artistic/design/technical skills (including Kaledo), teamwork, leadership skills, communication skills, writing skills, presentation/public speaking skills, time management skills, and project management skills. One student mentioned,

Critical thinking and creativity was really important for this project. It is very important to be creative enough to come up with ideas and concepts for new products that will be marketable to the public. But critical thinking skills are also vital when it comes to a community service project because one has to consider how these products can be designed and crafted while still remaining a fair-trade item. Everything must be researched and it also must be ensured that the artisan groups are truly being benefited from crafting these collections. In that sense, critical thinking comes into play by having everything questioned to see if something could be designed in a better way so that is truly continues to promote fair trade values.

Similarly, another student reflected,

First, I had to think critically and do a tremendous about of research on the company, their consumers, and their artisan partners. Second, I also had to be creative and expose my artistic abilities to design a completely new collection of products that no one else has though of before and that Ten Thousand Villages currently does not offer. Lastly, I had to utilize my analytical skills to truly create a whole new collection utilizing Ten Thousand Villages' current partisan partners and utilizing materials and methods that they are implementing in the production of Ten Thousand Villages' merchandise.

Another commented,

Project management skills was a major skill that this assignment helped me to further develop. Because the project was so complex and had many layers, we had to budget our time each week to make sure we were making progress and would complete the project on time. It also helped me to refresh my design and writing

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skills. We needed to thoroughly and concisely describe all the aspects of our line within a certain page limit for the paper and time limit for the presentation.

6. Model of PBSL Student Outcomes with a Social Enterprise

Based on the post-project evaluation, most of the outcomes proposed in the hypoth-esized PBSL model were confirmed, with the exception of up-to-date industry-specific knowledge/skills and direction for career choice, though students alluded to these benefits using slightly different wording. Fourteen new themes emerged in the analysis of students' reflections: time management skills, project management skills, writing skills, presentation skills, eye-opening, new worldview, heartwarming, gratefulness, passion/enthusiasm, helping people in need, social responsibility, sustainability, fair trade, and economic development in underprivileged communities, which were added to PBSL in the center of the diagram in the revised PBSL Model in Figure 2. Four themes, social/global issue awareness, willingness to serve in the future, multi-cultural sensitivity, and empathy, that were included in SL in the proposed model were identified by students in this study and moved to PBSL. A total of eighteen new themes were added in the right column of PBSL in the revised model.

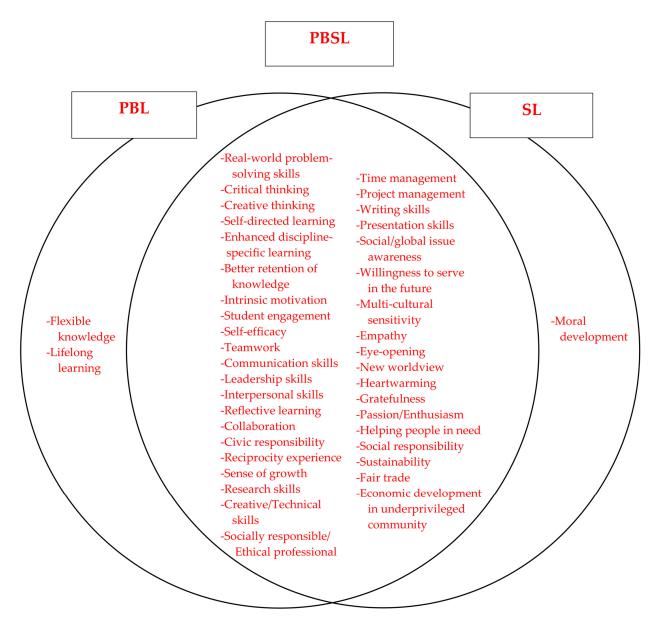


Figure 2. Model of PBSL student outcomes with a social enterprise.

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Most of the newly added PBSL themes—for example, eye-opening, new worldview, heartwarming, gratefulness, passion/enthusiasm, helping people in need, social responsibility, sustainability, fair trade, economic development in underprivileged communities, social/global issue awareness, willingness to serve in the future, multi-cultural sensitivity, and empathy—were related to the characteristics of SE. As shown by these themes, students were highly engaged, and their emotional and spiritual learning was evidenced by their passionate responses, including as "heart-warming," "grateful," "passionate," "enthusiastic," and "empathy" as well as the increase in cognitive learning. The author found these results to be different from those of a similar project conducted with a commercial enterprise in her 2022 study [31]. Collaboration with a non-profit social enterprise, a service-focused community partner, revealed more SE elements.

7. Discussion and Conclusions

As multi-disciplinary houses of knowledge, expertise, and equipment, universities are best positioned to solve the complex, multi-faceted challenges of sustainable development. However, they must not silo their role by remaining isolated in their own laboratories but must collaborate with all stakeholders, including business practitioners, policy makers, and NGOs, to identify complex global problems and propose solutions. Societal issues such as climate change, poverty, gender inequality, and disease require locally tailored solutions, and the US has long encouraged its universities to engage in this kind of problem-solving because it can support all dimensions of sustainable development—the environment, society, and economy [1].

This study has highlighted the need to implement SD education with a focus on cognitive and non-cognitive skills such as problem solving, critical and creative thinking, resilience-building, collaboration, and social and emotional learning. Strategies for cross-disciplinary learning that is broad in scope and uses a holistic approach were also identified with the suggestion of a PBSL model as an effective tool.

This study explored a case of a PBSL project with a social enterprise systematically implemented into a Product Innovation and Management course as well as proposing a model of its outcomes. As illustrated by the post-project evaluation, the students acknowledged numerous benefits of the PBSL project not only for themselves but also for the community partner, which is in line with other studies' documented results. The hypothesized PBSL model was revised to include the fourteen new outcomes that emerged in this study—time management skills, project management skills, writing skills, presentation skills, eye-opening, new worldview, heartwarming, gratefulness, passion/enthusiasm, helping people in need, social responsibility, sustainability, fair trade, and economic development in underprivileged community—while four themes of SL (social/global issue awareness, willingness to serve in the future, multi-cultural sensitivity, and empathy) were moved to PBSL. The student outcomes revealed the difference between Kim's previous case study [31] of a PBSL project with a profit-focused commercial enterprise (a forecasting company) and the non-profit social enterprise in this study, which added significantly more outcomes of PBSL relevant to the characteristics of SE. The results also confirmed the effectiveness of SD education in increasing social and emotional learning.

It has been documented that PBSL is less effective in transmitting information than the traditional pedagogical approach [51]; however, according to student reflections, utilizing a hybrid course structure that combines lectures earlier in the semester with a lab for Kaledo instruction and projects later in the semester seemed to compensate for the downside of PBSL. A possible future enhancement to the project might include reserving class meeting times for students to orally reflect on their learning with classmates and extend their ideas. Another consideration when assessing a PBSL is the evaluation of student learning outcomes through new types of assessment. Rather than basing assessment only on content knowledge and cognitive learning, new methods that systematically evaluate student learning through competencies that enable successful problem-solving and performance in relation to real-world problems, challenges, and opportunities (e.g., social responsibility

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and citizenship, empathy and compassion, cross-cultural understanding and tolerance) are required to increase the effectiveness and better assess the outcomes of PBSL projects. For example, systems thinking is recommended to be implemented into assessment as Kim and Coonan discussed in their 2023 study [4]. Cachelin et al. also argued [56] that systems thinking should be adopted as a necessary and more foundational outcome of higher education for students' more complete and integrated understanding. Complex, global challenges require students to be prepared for the reality of a world with threats of impending climate change and deeply rooted inequity [57]. A systems thinking rubric created by the University of Utah and modeled after those developed by the American Association of Colleges and Universities is a good example because it reflects the interconnectedness of sustainability and equity. According to Cachelin et al. [56], the indicators employ systems thinking as a tool to comprehend the significance of context and relations and also link sustainability to equity in a more measurable, explicit, and comprehensible way.

In conclusion, the author recommends PBSL as an effective model for teaching SD that can be implemented into various courses. She hopes that, through this study, educators and practitioners will recognize the urgent need to scale sustainability education and will be inspired to adopt PBSL as a viable pedagogical approach.

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