BROADENING THE HORIZONS: A POLYTECHNIC LEARNING APPROACH TO ADDRESS UNITED NATION'S SUSTAINABLE DEVELOPMENT GOALS

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EXTENDED ABSTRACT

Summary

Learning about Diversity, Equity, and Inclusion (DEI) through the lens of the United Nation's Sustainable Development Goals prepares students for the future of work and civic engagement in a diverse, multi-cultural society. This paper introduces innovative high-impact practice of collaborative learning through the intentional pedagogical approach focused on awareness to community and global challenges. Recognizing the social, economic, and environmental sustainability challenges, first-year students in a comprehensive polytechnic university engage, address issues, draw in solutions and make recommendations to address UN sustainability goals ranging from poverty, health and gender equality to climate, justice, and education trials. In this paper we identify how students engage in collaborative learning to address real-world global challenges through a polytechnic learning approach and how to de-colonize the traditional pedagogical methodology by fostering intentional and transformational learning. We will also understand how students draw on and shape the importance of power, diversity, equity, and inclusion through social frameworks and analysis of systemic barriers.

Introduction

A Polytechnic (PolyX[1]) learning project is designed for undergraduate students enrolled in a First-Year Experience (FYE) course. As a high-impact educational practice, FYE emphasizes critical inquiry and collaborative learning to develop students' competencies at the intellectual and practical levels (Kuh, 2008). The project supports students through multiple learning engagements addressing UN Sustainable Development Goals. The goals are a call for action by all countries, poor, rich, and middle-income, to promote prosperity while protecting the planet. The project provides students with the opportunity to engage in intellectual, cognitive group discussions, identify challenges, recognize stakeholders, and draw recommendations and solutions while adopting new informational frames to issues concerning diversity, equity, and inclusion. Additionally, students determine how differences in social position and power shape identities and access in society by taking notice of their positionality.

Innovative Education

To fully become change agents, equity and quality must align. Examining systemic barriers that have gone on without interrogation or drawing in change for more sustained and equitable experiences supports the development of transformational and intentional pedagogy in the classroom. Critical Race Theory (CRT) reminds us to analyze the educational inequities and systemic barriers that obstruct learning ecosystems,

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[1] Cal Poly Pomona University's formalized learn-by-doing educational philosophy (see page 2)

such as quality education, one of the established goals of the United Nations. The theory helps promote social justice and transformation in marginalized communities by voicing multiple identities and contributing to the literature, education, and teaching space (Garces, 2014).

Furthermore, according to Douglas and Nganga (2015), focusing on culturally relevant pedagogy and leadership can enhance students' positionalities and influence mental preparation. Learning is an intrinsic good, and higher education learning communities are a crucial part of investing, supporting, and enhancing the next generation of leaders by building a globally skilled and knowledgeable workforce (Levine and Tennant, 2020). When students feel connected, it enhances the learning experience. This can be done by creating safe spaces, a sense of belonging, inclusion, engagement, and creative outlets where students can express their talents and build college experiences (Shelton, 2019). For example, through adapted theoretical frameworks focused to create purpose, the polytechnic learning approach (PolyX) helps promote meaningful collaborative learning, critical analysis, reflection, and innovative problem-solving of complex real-world issues affecting global communities.

PolyX Framework[2]

"Signature polytechnic experiences (**PolyX**) at Cal Poly Pomona promote students' discovery of the opportunities and challenges within the field and the development of creative and innovative solutions to those conditions. Through collaborative learning and intense mentoring, PolyX engages students beyond the classroom and prepares them for professional and civic success." (see Fig 1).

Figure 1. PolyX Criteria

PolyX Criteria	
Criterion	**Description Summary**
Intense mentorship	Intentional, regular, in-depth, and sustained mentorship by faculty, staff, and/or peers. Mentorship is tailored to specific needs of students and provides resources and support to issues that students face.
Dissemination beyond the classroom	Project outcomes are presented, published or publicly accessible.
Creativity, discovery, and innovation	Project results in a solution to a specific problem to fulfill an identified need.
Diverse and multidisciplinary perspectives	The project encourages participation of students from a variety of disciplines.
Global and community engagement	The project engages in some way with an identifiable community.
Collaborative learning	With faculty facilitation and mentorship, students lead the project by generating questions or topics of study, developing answers, defining roles and responsibilities for team members, finding resources, setting schedules and deadlines and asking follow-up questions.
Critical thinking and problem solving	The project incorporates a reflections component to promote greater awareness of skills and competencies developed through participation in a PolyX experience.

PolyX Project

We begin with an understanding of the PolyX project, its diverse learning elements and critical dimensions the assignment that engages students. The project aims to bring awareness to global goals that require cooperation, shared governance, and transformational practices by world leaders, communities, and intentional advocacy. Every human on earth can make a difference by playing a critical role in the solution to work towards more equitable and sustainable environments. A successful and sustainable development agenda requires partnerships, collaboration, shared vision, goals, and spaces where learning is not limited but rather intrinsically motivative to achieve. The project engages and connects students through explanatory feedback, and well-defined standards for competencies and quality. The focus is on students to meet all the underlined mechanisms through context-based learning, facilitation, and relevance.

Learning Outcomes

Promoting a sense of belonging in educational ecosystems increases the wealth of knowledge and experiences for both educators and learners. The learning outcomes for this project are developed to intentionally quantify students' critical thinking, information literacy, collaborative practices, awareness of inequities, and a reflection of their career goals, expectations, advocacy, and positionalities. The learning outcomes for this project are as follow:

- Students will use relevant resources and information literacy concepts to enhance professional and personal success through engaging in reflective and collaborative practices with their peer, institutional partners, faculty, and off-campus organizations.
- Students will identity and explore solutions through critical thinking, recommendations, report building, creating connections, and developing strategies.
- Students will come across experiential learning through viewing multi-disciplinary world challenges and presenting the findings of their research.

Project Overview

In this section, we discuss the various assignment components, opportunities, intervention, understanding, and how the learning is shaped. According to Convertino and Graboski-Bauer (2018), college readiness is about indulging in neoliberal ideologies, a matter of equity and social justice principles that give precedence to social-economic mobility platforms. Therefore, we begin by introducing students to issues and challenges our world faces. Drawing on cultural, social, environmental, and economic capital to students' pedagogy creates intentional, unique, and equitable preparation (Duncheon, 2018). Students investigate the history and review the ongoing narratives, inequities, and segregation faced by countries and how the seventeen United Nations Sustainable Development Goals (SDG's) aim to go further and seek solutions to many challenges and issues faced by communities. The new goals are unique in that they call for action by all countries, poor, rich, and middle-income to promote prosperity while protecting the planet. The goals recognize that ending poverty must go together with strategies that build economic growth and addresses a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection.

Students learn that for sustainable development to be achieved, it is crucial to harmonize three core elements: economic growth, social inclusion, and environmental protection. These elements are interconnected, and all are crucial for the well-being of individuals and societies. In addition, eradicating poverty in all its forms and dimensions is an indispensable requirement for sustainable development. To

this end, there must be promotion of sustainable, inclusive, and equitable economic growth, creating greater opportunities for all, reducing inequalities, raising basic standards of living, fostering equitable social development and inclusion, and promoting integrated and sustainable management of natural resources and ecosystems. While the Sustainable Development Goals (SDG's) are not legally binding, governments are expected to take ownership and establish national frameworks for the achievement of the seventeen goals. Countries have the primary responsibility for follow-up and review of the progress made in implementing the goals, which will require quality, accessible and timely data collection. Regional follow-up and review will be based on national-level analyses and contribute to follow-up and review at the global level.

The seventeen Sustainable Development Goals (SDG's) are a shared vision of humanity and a social contract between the world's leaders and the people. The goals and targets will stimulate action over the next 15 years in areas of critical importance: people, planet, prosperity, peace, and partnership. On this basis, to be change agents, we must align equity and quality with educational goals, curriculum, programming, and understanding of students' positionalities to increase awareness and work towards the development sustainability for the next generation of leaders and future of our communities.

Students showcase their project through the following application and instruments:

- Students will collaborate in groups comprised of 3-4 members.
- Student groups will focus on one of the seventeen SDG's to research.
- Students will utilize university institutional resources and off-campus resources to gain and provide an understanding of a selected goal.
- Students will be required to submit a 5-page written report of their findings and recommendations:
  o What SDG was selected?
  o Identify three possible problems the goal is currently presenting
  o Who are the stakeholders, 'Key People' they would need to consult with and why?
  o What are some solutions, delivery, or expectations that would need to be put in place to accomplish the goal? Provide two recommendations
  o Conclusion – provide a summary of the findings, project experience, collaboration, and important elements connected to the project.
- Students are asked to create a 10-minute presentation of their project utilizing mostly images and limited text. All members are required to participate.

Outcomes

People, planet, peace, partnership, and prosperity are all elements underpinning the United Nations Sustainable Development Goals. Understanding of social, cultural, and environmental capital of the goals is critical to lead its efforts. The goals present students an opportunity to gain knowledge, techniques and help them deal with challenges by navigate foreign environments, context, personal obligations, sense of responsibility, economic concerns, race, and ethnic oppression. The social networks and relationships students build are central to their lives, success, and achievement and are resources that positively impact, expand, facilitate, and activate successful postsecondary trajectories (Rios-Aguilar & Deil-Amen, 2012). For resilience to occur among student communities, educators must nurture growth through social contexts, inspiring motivation, facilitating socially responsive learning environments, and expanding students' social network ties as crucial components in their persistence and retention.

The project also examines students' experiences through a culture lens. It is demonstrated that culture is a fundamental component of student successful academic achievement, particularly in Hispanic Serving Institutions (HSI's) like Cal Poly Pomona were 50% of the student body identify as Hispanic or Latino origin. It is essential to consider that students' cultural positionalities are at the foundational core of a justice framework. Fostering a connection between cultural heritage, community challenges, and educational environments offers a space of growth through intentional pedagogy practices. When educational learning communities foster inclusivity and drive culturally relevant efforts, students feel empowered, build resilience, and nurture their identities. Furthermore, cultural relevance to their learning creates a sense of victory and people are a apart of the victory to be achieved by the SDGs.

Finally, environments that create a sense of belonging and where individual differences, unique capabilities, innovation, and creativity are acknowledged foster purposeful and intentional meaning for students to grow and persist. The impact of an enriched educational environment creates a growing body of support, commitment, and social responsibility. Exposure to the SDG's can develop creative and innovative efforts through solution thinking, problem-solving, and result-leading conversations. Thus, the PolyX experiential learning project helps develop intentional and transformational outcomes that shift students' paradigms, enhance cognitive abilities, and inform the challenges our world faces. Students are then placed in a situation to ask themselves how their own positionality, values, and beliefs are connected and reflected to the SDGs. Finally, students are encouraged to reflect on how will they continue working towards achieving their goals and dreams personally and professionally.

Keywords: High-Impact Practices, Decolonization, UN Sustainable Development Goals

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