

Empowering Global Citizens Through Multidisciplinary Collaboration in Education for Sustainable Development: Insights From the Learning Express (LeX) Programme

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Abstract

This paper explores the transformative potential of multidisciplinary collaboration in Education for Sustainable Development (ESD) through the lens of the Learning Express (LeX) Programme at Singapore Polytechnic. The LeX Programme, operational since 2013, engages students in cross-cultural, multinational teams to address real-world challenges aligned with the United Nations Sustainable Development Goals (SDGs). By embedding Singapore Polytechnic's Design Thinking Framework within Education for Sustainable Development, the programme fosters holistic and pluralistic approaches to problem-solving, emphasising empathy, innovation, and sustainability. A mixed-methods survey of 336 participants from ASEAN LeX trips revealed high levels of socio-economic awareness, global mindset, and acquisition of career-relevant skills, though some uncertainty remains regarding long-term application and global career interest. The findings highlight the importance of facilitator support, authentic immersion, and iterative learning in nurturing global citizens equipped to tackle complex sustainability challenges. Limitations include self-reported data and regional focus. The study concludes that integrating design thinking with Education for Sustainable Development can reinforce student identity, motivation, and purposeful engagement for sustainable futures (Boeve-de-Pauw et al., 2015; Cheah et al., 2022; Singapore Polytechnic, 2025; UNESCO, 2017).

Keywords: education for sustainable development, design thinking, global mindset, multidisciplinary collaboration, Learning Express

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Introduction

The urgency of sustainable development has prompted educational institutions worldwide to rethink their pedagogical approaches. Education for Sustainable Development (ESD), championed by UNESCO, seeks to empower learners with the knowledge, skills, values, and attitudes necessary to address interconnected global challenges such as climate change, inequality, and resource depletion (UNESCO, 2017). ESD emphasises holism—recognising the interdependence of social, economic, and environmental systems—and pluralism, which values diverse perspectives in addressing sustainability challenges (Boeve-de-Pauw et al., 2015).

Singapore Polytechnic (SP) operationalises these principles through its Graduate Attributes Framework, which defines qualities essential for future-ready graduates. Among these, three attributes are particularly relevant to the LeX Programme:

- **Global Mindset:** Ability to understand behaviours in cultural and economic contexts and collaborate on cross-boundary projects.
- **Communication & Collaboration:** Ability to tailor and convey information to suit the audience, negotiate, and work with people from diverse backgrounds to achieve common objectives.
- **Creativity, Innovation & Enterprise:** Ability to view issues from different perspectives, generate ideas, and capitalise on opportunities and resources to create value and implement solutions (Singapore Polytechnic, 2025).

The LeX Programme exemplifies SP's commitment to cultivating these attributes through multidisciplinary, cross-cultural collaboration. By embedding Design Thinking within ESD, LeX provides students with authentic opportunities to engage in problem-solving that is empathetic, innovative, and sustainable. This paper examines how LeX fosters global mindset and related graduate attributes, drawing on survey data and situating the discussion within the broader discourse on ESD and experiential learning.

Literature Review

Education for Sustainable Development

ESD aims to develop learners who can critically comprehend and act upon global issues (Cheah et al., 2022). It is participatory and transformative, encouraging learners to question assumptions, embrace diversity, and engage in collaborative problem-solving. UNESCO (2017) identifies competencies such as systems thinking, anticipatory skills, and collaboration as essential for sustainability.

Graduate Attributes and Global Competence

Globalisation demands graduates who can navigate cultural diversity and complexity. A global mindset enables individuals to interpret behaviours in different socio-economic contexts and collaborate across borders (Javidan & Bowen, 2013). Communication and collaboration are equally critical, as multicultural teams require negotiation, adaptability, and shared understanding (Cheah et al., 2022). Creativity and innovation drive sustainable solutions, allowing learners to generate ideas and leverage resources effectively (Brown, 2009).

Design Thinking and Experiential Learning

Kolb's (1984) experiential learning theory posits that knowledge is constructed through experience, reflection, and application. Authentic, real-world contexts enhance learning by engaging students in complex, ambiguous situations that require adaptability and problem-solving (Lombardi, 2007). Design Thinking complements this approach by providing a structured framework—empathy, ideation, prototyping—that fosters creativity and collaboration (Brown, 2009).

Methodology

The LeX Programme adopts a four-phase Design Thinking Framework to guide students through authentic problem-solving experiences. Participants collaborate with peers from regional universities and polytechnics, addressing local needs while developing academic and interpersonal skills.

A survey was conducted with 336 students (70% of the cohort) who participated in LeX trips to Cambodia, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. Administered one month after a 12-day immersion, the survey measured indicators related to global mindset, communication and collaboration, creativity and innovation, and socio-economic awareness using both quantitative (5-point Likert scale) and qualitative (thematic analysis) methods (Singapore Polytechnic, 2025).

Results

Programme Reach

Since its inception in 2013, LeX has operated in 10 countries and 28 cities, involving over 11,500 participants and 38 partner institutions. Its objectives include fostering empathy, global awareness, and sustainable innovation aligned with SDGs (Singapore Polytechnic, 2025).

Survey Findings

The survey results indicate strong evidence of growth across the three graduate attributes relevant to the Learning Express (LeX) Programme. In terms of global mindset, an overwhelming 95% of respondents reported an enhanced understanding of cultural and economic contexts. This suggests that the immersive nature of the programme successfully exposed students to diverse socio-economic realities, fostering adaptability and cultural sensitivity.

For communication and collaboration, 93% of participants indicated improved ability to tailor communication for different audiences and negotiate effectively within multicultural teams. This reflects the programme's emphasis on teamwork and cross-cultural engagement, which required students to navigate language barriers and diverse perspectives to achieve common objectives.

The attribute of creativity, innovation and enterprise also showed significant development, with 90% of respondents expressing increased confidence in generating ideas and leveraging limited resources to create value. The design thinking framework, central to LeX, appears to

have played a critical role in stimulating innovative problem-solving under real-world constraints.

Beyond these core attributes, the survey revealed additional insights. A notable 98% of students recognised opportunities and challenges within host countries, and 97% acknowledged the complexity of global issues, indicating heightened socio-economic awareness. Furthermore, 93% reported gaining career-relevant skills, including project management, teamwork, and cross-cultural empathy. However, despite these positive outcomes, only 66% expressed heightened interest in pursuing international careers, highlighting a gap between short-term learning experiences and long-term global engagement.

Finally, the role of facilitators emerged as a key success factor. Students consistently identified facilitators as instrumental in guiding the learning process. Facilitators provided cultural context, supported teams through the design thinking stages, mediated conflicts, and led structured reflection sessions. These contributions were essential in helping students consolidate their learning and connect their experiences to broader sustainability concepts.

Discussion

The findings affirm that LeX effectively cultivates global mindset and related graduate attributes. Immersive experiences in diverse socio-economic contexts challenge students to move beyond ethnocentric perspectives, fostering cultural intelligence and adaptability. Collaborative projects, framed by Design Thinking, provide opportunities to practise communication and negotiation skills. Resource constraints and cultural diversity stimulate creativity and innovation, enabling students to develop solutions that are both contextually appropriate and sustainable.

However, sustaining global engagement beyond the programme remains a challenge. While students exhibit heightened awareness and skills, only 66% expressed interest in international careers. This suggests the need for post-programme interventions, such as alumni networks, industry partnerships, and global internships, to translate short-term learning into long-term aspirations.

Facilitators play a critical role in mediating cultural differences and guiding reflection. Their contributions align with Vygotsky's (1978) concept of scaffolding, reinforcing the social dimension of learning. Investing in facilitator training and cross-cultural competence is essential for programme scalability.

Limitations

The study relied on self-reported data, introducing potential bias. The timing of data collection (one-month post-trip) may have led to memory bias. The regional focus on ASEAN participants limits generalisability, and the absence of longitudinal tracking prevents assessment of long-term impact. Future research should adopt longitudinal designs and expand to non-ASEAN contexts.

Conclusion

Embedding Design Thinking within Education for Sustainable Development, as exemplified by the LeX Programme, offers a powerful model for nurturing global citizens equipped to address sustainability challenges. By fostering global mindset, communication and collaboration, and creativity and innovation, LeX prepares students to become future-ready graduates. Future iterations should address limitations related to regional focus and explore strategies to sustain global engagement through structured follow-up initiatives.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

This manuscript was drafted with the assistance of Microsoft Copilot, an AI-powered writing tool, improve clarity, and ensure adherence to academic formatting. The AI was used for summarisation, language refinement, and structure, while all content was reviewed and verified by the author for accuracy and integrity.

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