



Fostering SEL competencies in digital learning environments: A COIL approach

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Abstract

This study explores the impact of collaborative online international learning (COIL) projects on the development of social-emotional learning (SEL) competencies in digital environments. As digital platforms reshape education, their role in fostering emotional and social development becomes crucial. COIL offers a unique opportunity to enhance SEL by connecting students from diverse backgrounds through structured virtual collaboration. Although the benefits of COIL for cross-cultural learning are well documented, its role in explicitly enhancing SEL competencies and supporting crisis-responsive education remains underexplored. This research addresses this gap by examining two COIL projects involving Taras Shevchenko National University of Kyiv: “Unite: Tackling Challenges through Interdisciplinary Solutions” with The Hague University of Applied Sciences and “Discovering Shared Heritage Narratives” with Erasmus Brussels University of Applied Sciences and Arts. Both initiatives incorporated SEL-focused activities, such as collaborative assignments, virtual discussions, and problem-solving exercises, facilitated via platforms like Zoom, Google Classroom, Canvas, Padlet, Blooket, YouTube, and AnswerGarden. Using a mixed-methods approach, data were collected through surveys, self-assessments, and reflections to evaluate the impact of COIL on students’ SEL competencies. The study assessed growth in self-awareness, self-management, social awareness, relationship skills, and responsible decision-making within the context of the ongoing war in Ukraine. The findings revealed that COIL not only improved students’ English communication and cultural awareness, but also significantly strengthened SEL competencies, emotional well-being, and academic engagement. This research offers valuable insights for creating supportive, inclusive, and resilient educational practices in digital and crisis-affected learning environments.

Keywords: collaborative online international learning (COIL); social-emotional learning (SEL); digital learning environments; emotional well-being; academic engagement; crisis-responsive education

Introduction

In an era of globalization and digital connectivity, education must navigate the dual challenge of equipping learners with essential academic knowledge while fostering the emotional and social skills necessary to thrive in a complex, interconnected world (OECD, 2024). Digital learning environments have broadened access to education, enabling students from diverse backgrounds to collaborate and exchange ideas across borders. However, this shift has also introduced complexities, particularly in terms of building meaningful emotional connections in virtual spaces. For instance, the absence of nonverbal cues in online interactions can impede the ability to gauge emotions and build rapport, often leading to feelings of isolation. These challenges are even more pronounced for students facing adversity, such as Ukrainian learners coping with the trauma of war, displacement, and uncertainty.

As digital platforms increasingly shape educational practices, their role in supporting emotional and social development has become critical (Lapidot-Lefer, 2022; Rout & Bhoi, 2024; Smith, 2023). Social-emotional learning (SEL) plays a central role in this development, focusing on self-awareness, empathy, emotional regulation, strong relationships, and responsible decision-making. These competencies are essential for students' overall well-being and success in both academic and personal spheres.

In this context, collaborative online international learning (COIL), which connects students from diverse cultural backgrounds through virtual collaborations, offers a unique opportunity to foster SEL competencies. While existing research on COIL has primarily focused on its impact on intercultural competence and language skills (Huertas-Abril & Palacios-Hidalgo, 2024), its potential to promote SEL competencies remains underexplored. This study seeks to address this research gap by examining how participation in COIL projects can support the development of SEL competencies, with a particular focus on students affected by crisis contexts, such as the ongoing war in Ukraine.

Specifically, the study investigates how COIL environments nurture key SEL skills – self-awareness, empathy, and emotional regulation – and explores their impact on students' emotional well-being, interpersonal relationships, and academic engagement. By analyzing the interaction between these factors, the study aims to provide valuable insights into how digital, cross-cultural learning experiences can promote both emotional resilience and academic engagement.

Key questions guiding this study include:

1. What specific SEL competencies are developed through participation in COIL?
2. How do students perceive COIL's impact on their social-emotional development, including emotional well-being and interpersonal relationships?
3. What role does COIL play in enhancing students' academic engagement in a digital, cross-cultural context?

Theoretical Foundations

The Conceptual Framework of SEL

SEL, which emerged over 20 years ago, has become an important component of modern education and human development. Drawing on diverse educational, research, and policy domains, SEL seeks to balance cognition, emotion, and behavior (Brush et al., 2022; Smith, 2023). It has evolved into a teaching methodology and a “process through which young people and adults acquire and apply inter- and intra-personal social and emotional competencies that support them personally and professionally” (Schwartz et al., 2023, p. 7). By addressing the interplay

between cognitive and emotional development, SEL provides individuals with a valuable set of tools to manage life tasks successfully, such as learning, forming relationships, communicating effectively, being sensitive to others' needs, and getting along with others (Elias, 2003).

The primary goals of SEL are:

- to promote positive learning environments that are supportive, engaging, and participatory; and
- to foster the development of interconnected cognitive, emotional, and behavioral competencies that empower individuals to overcome challenges and succeed in various aspects of life (Osher et al., 2016; Pentón Herrera, 2024).

SEL is increasingly valued in education for its numerous benefits, including improved academic performance, personal development, social outcomes, and workplace readiness (OECD, 2024; World Economic Forum, 2016). By focusing on whole-child development (Elias, 2003), SEL enhances student engagement, motivation, self-discipline, and essential interpersonal skills, such as communication and collaboration. It also supports mental health by helping students manage stress and negative emotions, while developing cultural competence to navigate diverse social contexts (Osher et al., 2016; Smith, 2023).

Research consistently demonstrates that SEL positively impacts both academic achievement and personal growth by fostering empathy, responsibility, and caring. Engaging “both the head and the heart” (Elias, 2003, p. 3), SEL creates a holistic and enriching learning environment where students are intellectually stimulated and emotionally invested, resulting in stronger content knowledge, better mental and emotional states, as well as overall well-being (Pentón Herrera, 2020).

In the short term, SEL boosts academic outcomes, reduces problem behaviors, strengthens relationships, and fosters positive classroom climates. Over time, it builds resilience, emotional regulation, and prosocial behaviors, supporting individuals in managing life's challenges (Peddigrew et al., 2022). Additionally, SEL addresses systemic inequities by fostering safer, more welcoming learning spaces, particularly for marginalized students, and mitigating the effects of trauma on learning. It is especially impactful for youth facing adversity, such as poverty, violence, and discrimination (Brush et al., 2022; Linville & Pentón Herrera, 2022; Pentón Herrera et al., 2022). SEL aligns with the United Nations' Sustainable Development Goals (SDGs), especially SDG 4, advocating for inclusive, equitable education and lifelong learning opportunities for all (United Nations, 2015).

Despite its profound benefits, SEL is often regarded as “the missing piece” in education because it connects academic knowledge to the essential skills needed for success (Elias, 2003, p. 7). Traditional academic systems have prioritized cognitive development while neglecting emotional and ethical growth, which is why SEL has not been explicitly stated or given much attention (Schonert-Reichl, 2020). Recent global challenges, such as the COVID-19 pandemic and ongoing geopolitical tensions, have highlighted the significant risks associated with children growing up with knowledge but lacking the social-emotional skills and moral compass necessary for navigating complex situations.

Thus, the combination of academic learning and SEL should be recognized as the true standard of effective education today and in the future (Elias, 2003). The issue should not be framed as a choice between intellectual development (as measured by IQ) and social-emotional growth (EQ), but rather as an acknowledgment that sound education requires an equal focus on both (Elias et al., 2003). It is essential to explicitly integrate SEL into curricula to develop well-rounded individuals who are equipped to succeed in both academic and interpersonal contexts.

The growing recognition of the importance of SEL has led to the development of various frameworks, each offering a unique set of competencies to guide students’ personal and academic growth. Effective SEL implementation requires a framework that is clear, consistent, and aligned with educational goals and addresses students’ needs (Brush et al., 2022; Schonert-Reichl, 2020).

One of the most widely recognized and adopted models for promoting SEL is the CASEL (Collaborative for Academic, Social, and Emotional Learning) framework. Rooted in extensive research across diverse fields, including neuroscience, psychology, pedagogy, and instructional methods, this framework identifies essential skills that provide young people with broad guidance for their actions in all aspects of their lives, both within and beyond the classroom (Elias, 2003; Osher et al., 2016; Smith, 2023).

Renowned for its systematic and evidence-based approach, the CASEL framework outlines five broad and interrelated areas of SEL competencies that underpin effective learning and holistic development (CASEL, n.d.). These competencies – self-awareness, self-management, social awareness, relationship skills, and responsible decision-making – support the performance of a wide range of social roles and life tasks (Elias, 2003), as shown in Table 1.

These SEL competencies “must be taught explicitly” (Elias, 2003, p. 9) and should be applied at various developmental stages, from childhood to adulthood, and in diverse cultural contexts. When nurtured in supportive learning environments, they are regarded as “mastery skills” (Schonert-Reichl, 2020) that underpin nearly all aspects of human functioning. SEL emphasizes active learning approaches, enabling these skills to be integrated across various curricula, where students are provided opportunities to practice them. This process fosters positive attitudes, behaviors, and thinking, ultimately contributing to holistic development.

Table 1. *SEL competencies*

Competency	Definition	Core skills and behaviors
Self-awareness	Understanding one’s emotions, thoughts, and values and their influence on behavior.	Integrating identities, identifying emotions, demonstrating honesty, examining biases, developing a growth mindset.
Self-management	Managing one’s emotions and behaviors to achieve goals.	Managing stress, exhibiting self-discipline, setting goals, showing initiative, demonstrating agency.
Social awareness	Understanding others’ perspectives and empathizing with diverse backgrounds.	Taking perspectives, demonstrating empathy, recognizing social norms, understanding situational demands.
Relationship skills	Building healthy relationships and effectively navigating diverse settings.	Communicating effectively, demonstrating cultural competency, resolving conflicts, showing leadership.
Responsible decision-making	Making constructive choices in diverse situations.	Demonstrating curiosity, analyzing information, anticipating consequences, reflecting on impacts.

Mainstreaming SEL into educational systems is essential for transforming learning, promoting peace and equity, and improving long-term academic and life outcomes. Prioritizing SEL alongside academic content ensures a more inclusive, resilient, and humane model of education.

In this study, the CASEL framework serves as the conceptual lens for examining SEL development within the context of COIL. It informs the exploration of how digital, cross-cultural learning environments promote:

- self-awareness and self-management as students navigate their emotions, learning identities, and coping mechanisms in virtual collaborations;
- social awareness and relationship skills as they build empathy and intercultural understanding with peers from different cultural and socio-political contexts;
- responsible decision-making as they engage in collaborative problem-solving and ethical reasoning in a globalized educational setting.

These five competencies anchor this study's exploration of COIL's emotional and interpersonal impacts. The framework facilitates a systematic examination of changes in students' self-perception, empathy, communication, and ethical awareness, all of which are central to the research questions.

By applying the CASEL framework to students' experiences in COIL, this study seeks to bridge the divide between theoretical knowledge and pedagogical practice, showing how structured intercultural digital collaboration can cultivate essential SEL competencies, especially for students impacted by war.

COIL and SEL: A Synergistic Framework

COIL is an innovative educational approach that enables students to participate in global learning initiatives without the need for physical travel. By leveraging digital tools, COIL creates an inclusive, sustainable, and accessible environment for cross-cultural exchange, collaborative problem-solving, and virtual teamwork.

The concept of COIL was first introduced by the State University of New York (SUNY) in 2006, aiming to internationalize university curricula while overcoming the logistical and financial barriers of traditional study-abroad programs (Rubin, 2017). To support this initiative, the SUNY COIL Center was established, facilitating the integration of COIL within the SUNY system (SUNY COIL Center, n.d.). The approach quickly gained recognition for its ability to foster intercultural competence and academic collaboration across geographical boundaries.

Initially concentrated in the United States, COIL's reach expanded rapidly with the creation of the SUNY Global Partner Network, connecting educational institutions across North America, Europe, and beyond (Hackett et al., 2024). Today, COIL is widely implemented in higher education worldwide, serving as a powerful tool for promoting international collaboration and enhancing global learning opportunities (COIL Connect, 2021; Fernández-César et al., 2024; Gelashvili & Blanco, 2024).

COIL is positioned as a student-centered, transformative educational approach, grounded in theories, such as social constructivism, experiential learning, and action learning. Social constructivism emphasizes learning through social interaction, collaboration, and shared experiences (Vygotsky, 1978). In the COIL framework, learners actively construct knowledge through their interactions with peers from diverse cultural backgrounds, fostering the development of empathy, emotional regulation, and social awareness. Experiential learning (Kolb, 1984), a key element of COIL, encourages participants to learn through direct experience and reflection. Students engage in hands-on activities, participate in cross-cultural problem-solving, and reflect

on their experiences, helping them to develop both academic knowledge and emotional resilience. Action learning (Revans, 2011) involves tackling real-world problems collaboratively, which deepens understanding of global issues and enhances responsible decision-making and conflict resolution.

COIL is distinguished by its dynamic, interactive collaboration. Unlike virtual exchanges with limited interaction, COIL actively involves students in real-time problem-solving and decision-making, enriching the learning experience (O’Dowd, 2018). Typically lasting five to eight weeks, COIL courses integrate joint curriculum design and co-facilitation by educators from partnering universities in different countries (Hackett et al., 2024). Students engage in group discussions and collaborate on shared projects, assignments, and research. While COIL courses are often structured around specific disciplinary content, intercultural learning remains a core component.

Figure 1 illustrates the key stages of the COIL program, from initial planning to final collaborative outcomes.

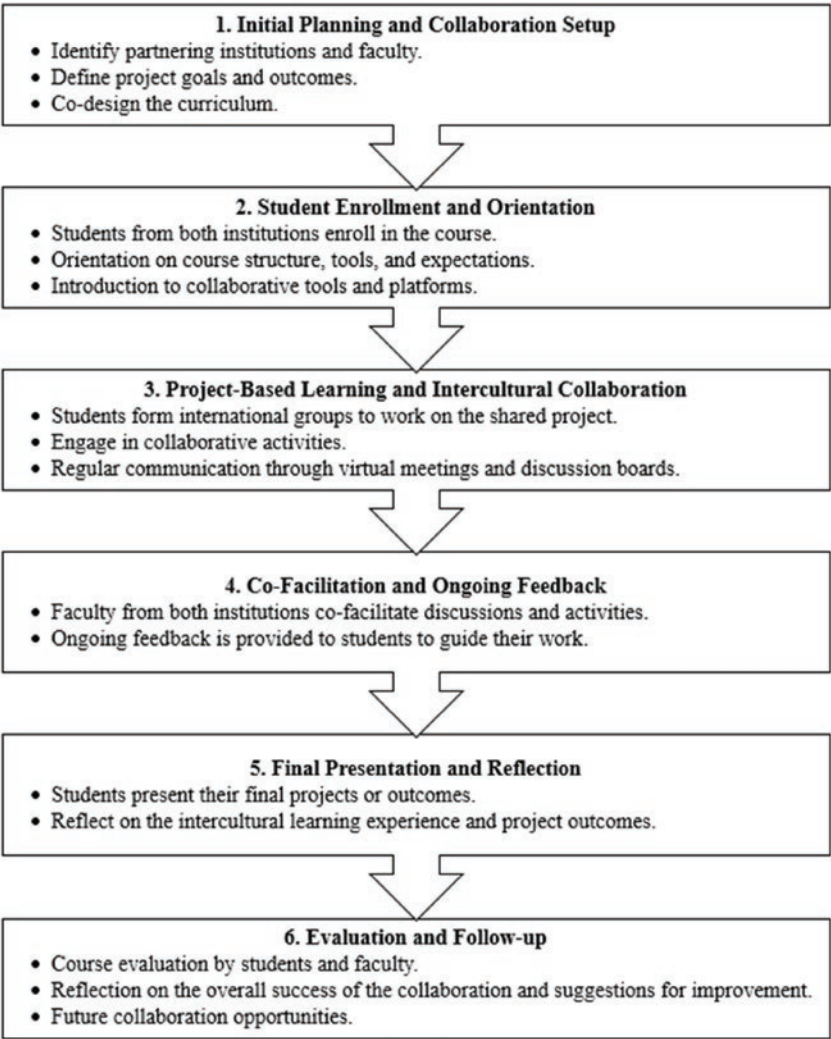


Figure 1. COIL building blocks

COIL's unique emphasis on active collaboration, intercultural dialogue, and digital technologies offers students rich opportunities to develop a range of competencies in an authentic, dynamic environment.

Through cross-cultural exchanges, students enhance self-awareness by reflecting on their emotional reactions and understanding how these influence their behavior in diverse cultural contexts. One effective COIL activity to develop self-awareness is a reflective journal, where students document their thoughts after engaging in intercultural dialogues. They analyze their own biases, triggers, and assumptions, fostering personal growth and emotional intelligence in their interactions with others.

Navigating challenges such as time zone differences, varying communication styles, and work ethics strengthens self-management, helping students regulate their emotions and adapt to unfamiliar digital settings. A time zone coordination challenge, where students plan and execute a project across multiple time zones, encourages adaptability and patience. By managing deadlines and adjusting to different work styles, students learn to stay organized, manage stress, and build resilience in virtual collaboration.

Social awareness grows as students engage with international peers, fostering empathy and a deeper appreciation for diverse perspectives and cultural norms. A virtual cultural exchange activity, where students share personal narratives and discuss key cultural traditions, broadens their understanding of global issues. By interacting with peers from diverse backgrounds, they cultivate empathy, expand their worldview, and strengthen their sense of global citizenship.

COIL's collaborative projects nurture relationship skills, teaching students how to communicate effectively, respect differing opinions, and resolve conflicts across cultures. A global case study challenge, where students collaboratively analyze and propose solutions to real-world problems, strengthens teamwork and interpersonal communication. Through active listening, negotiation, and joint problem-solving, students build trust, enhance collaboration, and develop meaningful professional and academic relationships.

COIL fosters responsible decision-making by guiding students to evaluate the ethical implications of their actions and collaboratively develop constructive solutions to global challenges. Through a global ethical dilemma discussion, where students debate and propose culturally inclusive solutions to pressing ethical issues, they engage in critical thinking and ethical reasoning. By considering multiple perspectives, students develop informed, responsible decision-making skills aligned with global citizenship values.

Figure 2 illustrates the synergy between COIL and SEL, showing how COIL nurtures SEL competencies such as self-awareness, self-management, social awareness, relationship skills, and responsible decision-making.

While COIL provides a platform for developing these essential competencies, SEL enhances COIL by equipping students with emotional resilience, empathy, cultural sensitivity, and communication skills – key traits for thriving in virtual, cross-cultural learning environments. This creates a mutually reinforcing process.

Methodology

Research Design

This study employs a convergent parallel mixed-methods design to investigate the impact of COIL projects on the development of SEL competencies in digital learning environments. In this design, quantitative and qualitative data are collected simultaneously, analyzed independently, and then integrated during the interpretation phase to provide a comprehensive understanding of the research problem (Creswell & Plano Clark, 2018; Katz-Buonincontro, 2024).

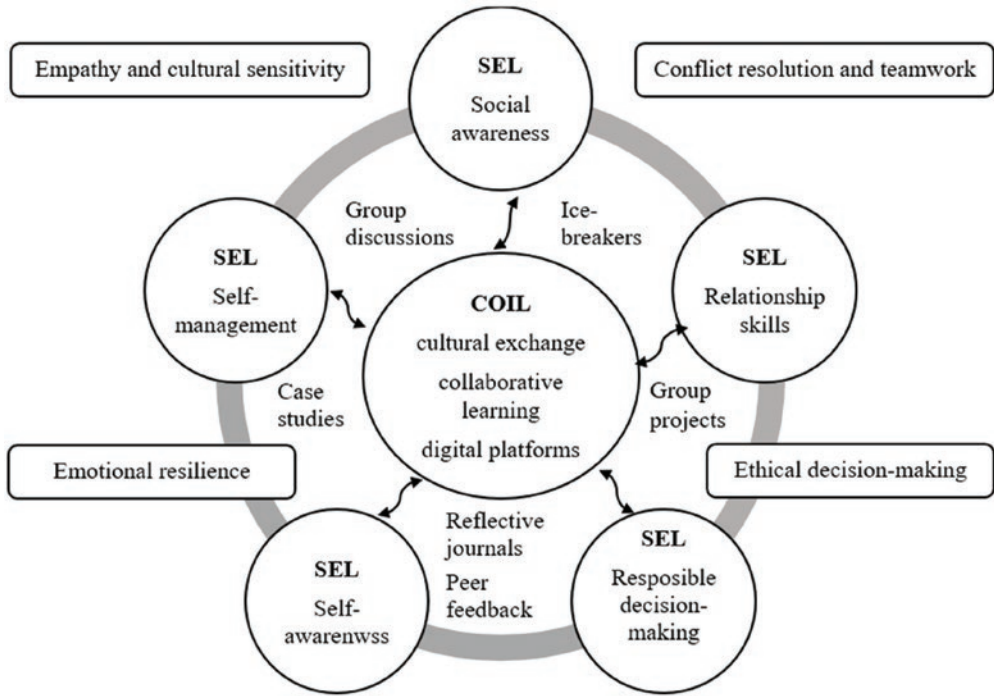


Figure 2. COIL and SEL synergy

As illustrated in Figure 3, the research process followed the key phases of the convergent design: (1) concurrent data collection from identical samples, (2) separate but parallel analysis of quantitative and qualitative data, and (3) merging of results to compare and contrast findings.

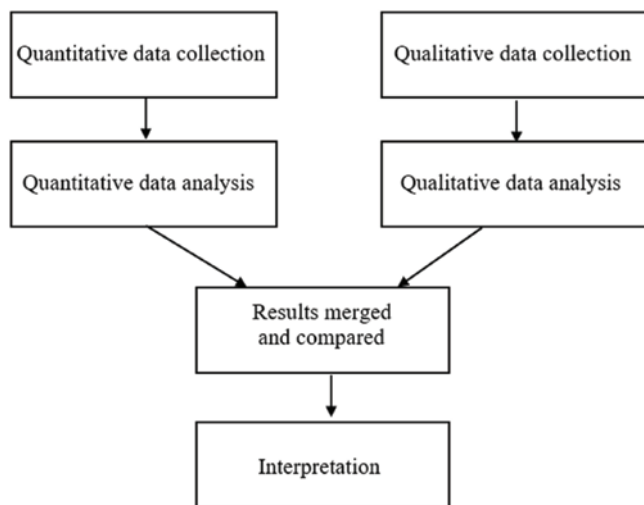


Figure 3. Convergent parallel mixed-methods design

The study is based on two COIL projects conducted during the fall semester of 2024 at Taras Shevchenko National University of Kyiv (TSNUK), a leading Ukrainian institution with a strong international focus. This academic setting provided a solid foundation to explore COIL's role in fostering emotional and social development, given the ongoing war's impact on students' resilience and well-being.

An identical sampling strategy ensured the same participants contributed data to both quantitative and qualitative phases, enabling direct comparison and effective integration. This alignment strengthens the validity of findings by offering complementary evidence from multiple data sources.

The convergent parallel design leverages the strengths of both quantitative methods (e.g., objective measures, trend analysis) and qualitative methods (e.g., subjective interpretation, detailed exploration), allowing for a richer, more comprehensive view of COIL's impact on emotional and social development.

The mixed-methods approach enabled multiple forms of triangulation, enhancing the study's credibility. Data triangulation was achieved by collecting information at multiple time points (e.g., before and after COIL participation) and from diverse sources (e.g., comparing student reflections across two COIL collaborations). Methodological triangulation involved combining self-assessments, reflective exercises, and both open- and closed-ended surveys, providing complementary perspectives and supporting the integration of quantitative results with qualitative insights for deeper understanding.

Participants

A total of 132 undergraduate students, aged 18–22, participated in two COIL projects. They were enrolled in various bachelor's programs, with a gender distribution of 30 males and 102 females. Participants were selected based on their enrollment in courses related to the COIL initiatives.

For the project “Unite: Tackling Challenges through Interdisciplinary Solutions” (TSNUK-THUAS COIL), 45 students participated: 14 law and 14 English philology students from TSNUK, alongside 17 students from Journalism, Media, Communications, and Management at The Hague University of Applied Sciences (HUAS), the Netherlands.

For the project “Discovering Shared Heritage Narratives” (TSNUK-EhB COIL), 87 students participated: 44 English/German philology students from TSNUK and 43 students majoring in Tourism and Leisure Management at Erasmus Brussels University of Applied Sciences and Arts (EhB), Belgium.

Representing diverse cultural backgrounds from Ukraine, the Netherlands, and Belgium, the participants were selected for their academic qualifications and enthusiasm for interdisciplinary, cross-cultural collaboration, making them an ideal group for exploring the development of SEL competencies in a global virtual setting.

According to the pre-project survey (see Appendix A), the participants were motivated by several factors:

- improving English communication skills (73%);
- excitement about trying something new in education (73%);
- opportunity to broaden their horizons (68%);
- desire to collaborate with students from diverse disciplines (54%).

These motivations reflect the participants' interest in both academic and social-emotional growth through intercultural and interdisciplinary collaboration.

COIL Project Overview

Two COIL projects were selected for their alignment with the study's objectives:

1. "Unite: Tackling Challenges through Interdisciplinary Solutions", a partnership with HUAS, focused on addressing contemporary challenges faced by young people through interdisciplinary problem-solving.
2. "Discovering Shared Heritage Narratives", a collaboration with EhB, aimed to uncover connections between cultural and historical narratives reflecting shared heritage.

Each COIL project spanned 8 weeks, organized as follows:

- Weeks 1–2: Orientation sessions introduced project goals, virtual tools, and cultural contexts. These sessions included icebreakers, team-building, and discussions on cultural sensitivity, setting the foundation for effective communication and collaboration. Students were divided into diverse, intercultural teams of 6–7 people.
- Weeks 3–6: Collaborative activities, including virtual meetings, research projects, problem-solving tasks, and digital storytelling, aimed to foster teamwork, enhance communication, and promote active interaction. These activities addressed social challenges and shared cultural narratives while practicing empathy, conflict resolution, and virtual collaboration.
- Weeks 7–8: Final team video presentations and reflective sessions evaluated learning outcomes and SEL development. Students reflected on their emotional resilience, adaptability, and intercultural learning while presenting their findings.

The working language was English, with digital tools integrated to enhance collaboration. Tools like Zoom, Telegram, and WhatsApp facilitated synchronous discussions, while Google Classroom and Canvas provided structured environments. Platforms like Padlet, Sandbox, and AnswerGarden encouraged idea-sharing, and Canva, Blooket, and YouTube supported creative expression and gamification. Google Docs, Google Forms, and Buddycheck aided writing and peer collaboration. Each tool contributed to developing SEL competencies, as shown in Table 2.

The digital tools outlined in Table 2 played a crucial role in facilitating various aspects of SEL competencies throughout the COIL projects. These tools not only enabled collaborative learning but also contributed to data collection and monitoring of SEL development.

Data Collection

Data collection for the study employed both quantitative and qualitative approaches to capture a comprehensive understanding of the COIL projects' impact. Pre- and post-project questionnaires were administered to assess changes in SEL competencies, while qualitative data were gathered through project artifacts, student reflections, responses to open-ended survey questions, and written comments, providing deeper insights into participants' emotional and intercultural learning experiences.

Several data collection instruments were used at different stages of the projects:

- Pre-project survey: Administered at the start of each COIL project, the pre-project survey (created via Google Forms) collected demographic data (age, gender, cultural background, academic field) and explored participants' previous international experiences, familiarity with digital tools, and goals for collaboration. The survey included both closed-ended questions (multiple-choice, Likert scale) and open-ended questions to gather both quantitative and

Table 2. *Digital tools for SEL in COIL projects*

SEL competency	Digital tool	SEL development support
Self-awareness	Google Forms	Facilitated self-assessment and reflection through surveys.
	Padlet	Provided a space for personal reflections and vision boards.
Self-management	Google Classroom (TSNUK-THUAS COIL) Canvas (TSNUK-EhB COIL)	Assisted with time management through structured modules, goal-setting, and tracking deadlines.
Social awareness	Zoom	Facilitated real-time discussions to share experiences, and understand different perspectives.
	AnswerGarden	Gathered collective opinions to promote perspective-taking.
	Blooket	Used gamification to explore cultural similarities and differences.
	Padlet YouTube	Exposed students to diverse cultures and viewpoints through video sharing and peer comments.
Relationship skills	Zoom	Supported real-time teamwork, communication, and collaboration.
	Telegram/WhatsApp	Facilitated team communication and collaboration through instant messaging.
	Sandbox	Fostered teambuilding through real-time collaboration, goal-setting, and creative problem-solving.
	Google Classroom Canvas	Organized structured discussions and peer feedback to enhance teamwork.
	Google Docs	Enabled collaborative writing, idea sharing, and group projects.
	Buddycheck	Conducted peer evaluations to assess and improve team collaboration.
Responsible decision-making	AnswerGarden	Collected diverse viewpoints to support informed decision-making.
	Google Forms	Encouraged visual storytelling for advocacy project design.
	Canva	

qualitative data. Survey links were distributed via Google Classroom/Canvas and email (see Appendix A), establishing a baseline of participants’ profiles, experiences, and expectations.

- Online self-report questionnaire: Administered at both the beginning and end of each COIL project, this questionnaire (created via Google Forms) assessed participants’ core

SEL competencies. It included Likert-scale items (rated 1–5) to measure competencies across various SEL domains and a checkbox question to identify which competencies participants aimed to develop (see Appendix B). Links to the questionnaire were shared via Google Classroom/Canvas and email.

- **Post-project survey:** Administered at the end of each COIL project, the post-project survey (created via Google Forms) gathered participants' perceptions of the collaboration and identified areas for improvement. The survey included closed-ended questions (multiple-choice, Likert scale) for quantitative feedback, and open-ended questions for qualitative insights into students' experiences. Questions addressed the effectiveness of the COIL project in fostering knowledge and skills, challenges encountered, preferences for activities, suggestions for improvements, and overall satisfaction (see Appendix C). Survey links were distributed via Google Classroom/Canvas and email.
- **Written reflections:** At key stages of the project, participants were required to submit written reflections focusing on their emotional and intercultural learning, particularly regarding the evolution of their SEL competencies. The reflections, structured as open-ended prompts, allowed students to evaluate their personal growth, challenges, and collaboration in a digital international setting, offering valuable insights into their learning process (see Appendix D).

Data Analysis

The data from the pre-project survey, pre-/post-project self-assessments, post-project survey, and student reflections were analyzed using both quantitative and qualitative methods to assess the development of SEL competencies in collaborative digital learning spaces.

Quantitative data from the pre- and post-project self-assessments were analyzed using descriptive statistics. The data were cleaned to ensure consistency and completeness, and mean scores and percentage changes were calculated to measure shifts in SEL competencies. Satisfaction was assessed through frequency distributions and mean scores based on participants' responses to closed-ended questions in the post-project survey. Trends in students' interest and perceived benefits were identified by examining responses regarding future COIL participation.

Qualitative data from open-ended survey questions and student reflections were analyzed thematically. The process involved familiarizing with the data, coding responses to identify key ideas, and grouping these codes into categories. These categories were then refined into themes reflecting SEL development, challenges in collaborative digital spaces, and the impact of intercultural collaboration on emotional resilience and interpersonal skills. The themes were then interpreted.

The quantitative and qualitative data were synthesized to provide a comprehensive understanding of the COIL project's impact on SEL competencies. Quantitative shifts in SEL competencies were contextualized by qualitative insights into students' experiences, allowing for a deeper understanding of how collaborative learning spaces foster emotional resilience, social awareness, and interpersonal skills. This integrated approach offered a holistic view of students' SEL development throughout the project.

Results

Quantitative Results

The quantitative analysis assessed the development of SEL competencies across five domains: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Pre- and post-project self-assessment scores were analyzed using a Likert scale

from 1 (*strongly disagree*) to 5 (*strongly agree*) to identify trends and quantify changes in students' competencies. The results were summarized by calculating the average scores and percentage changes (see Table 3).

The analysis revealed significant improvements in various SEL domains, with notable differences between groups. Self-management demonstrated the greatest improvement across all groups, particularly among Ukrainian students (18.48% increase). Belgian students showed the highest progress in self-awareness (13.84%), followed by their Ukrainian counterparts (10.16%). The Ukrainian group made the largest progress in relationship skills (8.25%) and social awareness (4.56%). Belgian students saw the most notable increase in responsible decision-making (7.38%). The Dutch group exhibited the smallest gains overall, with only a minimal improvement in social awareness.

Table 3. Pre- and post-project self-assessment results

SEL competence	Pre-project mean	Post-project mean	Difference in mean	Percentage change
Self-awareness				
Ukrainian	4.23	4.66	0.43	10.16%
Dutch	3.90	4.11	0.21	5.38%
Belgian	3.90	4.44	0.54	13.84%
Self-management				
Ukrainian	3.95	4.68	0.73	18.48%
Dutch	3.46	3.69	0.23	6.64%
Belgian	3.63	4.22	0.45	11.93%
Social awareness				
Ukrainian	4.38	4.59	0.20	4.56%
Dutch	4.49	4.50	0.01	0.22%
Belgian	4.11	4.24	0.13	3.16%
Relationship skills				
Ukrainian	4.12	4.46	0.34	8.25%
Dutch	4.10	4.22	0.12	2.92%
Belgian	4.05	4.07	0.02	0.49%
Responsible decision-making				
Ukrainian	4.20	4.38	0.18	4.28%
Dutch	4.11	4.17	0.06	1.45%
Belgian	3.79	4.07	0.28	7.38%

Additionally, a frequency distribution and mean score analysis of post-project surveys provided insights into students’ satisfaction and perceptions of their COIL experiences. The TSNUK-THUAS collaboration had a higher mean satisfaction score of 4.44, compared to 3.64 for the TSNUK-EhB project. Over 60% of Ukrainian students reported being satisfied or extremely satisfied, reflecting strong positive feedback. Among Dutch participants, 57% expressed moderate satisfaction, with fewer indicating higher satisfaction. No Ukrainian or Dutch students reported dissatisfaction. Belgian participants had a more balanced distribution, with 42% satisfied, 45% moderately satisfied, and 3% dissatisfied. A few Belgian students were undecided (see Figure 4).

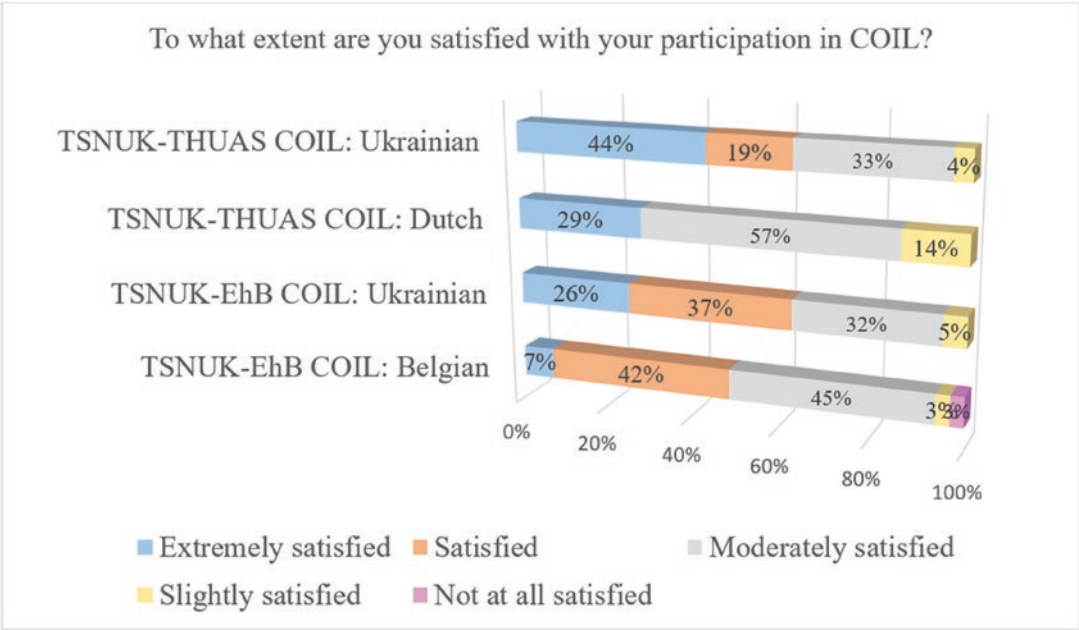


Figure 4. Participant satisfaction in the COIL project

When asked about their experience of discomfort during the COIL project, the majority of students reported no issues. However, participants in the TSNUK-EhB project experienced higher levels of discomfort, particularly among Ukrainian and Belgian students (32% each), compared to a smaller proportion of Dutch participants (see Figure 5).

Regarding the overall sentiment toward the COIL project, most students expressed positive feelings, although responses varied by nationality and project. Among Dutch participants, 86% reported positive feelings, while 14% were neutral. Ukrainian participants also mostly expressed positivity. Belgian participants had a more mixed response, with 48% positive, 31% neutral, and 17% negative. A small portion remained undecided. Overall, students in the TSNUK-THUAS collaboration reported more positive sentiments compared to those in the TSNUK-EhB project (see Figure 6).

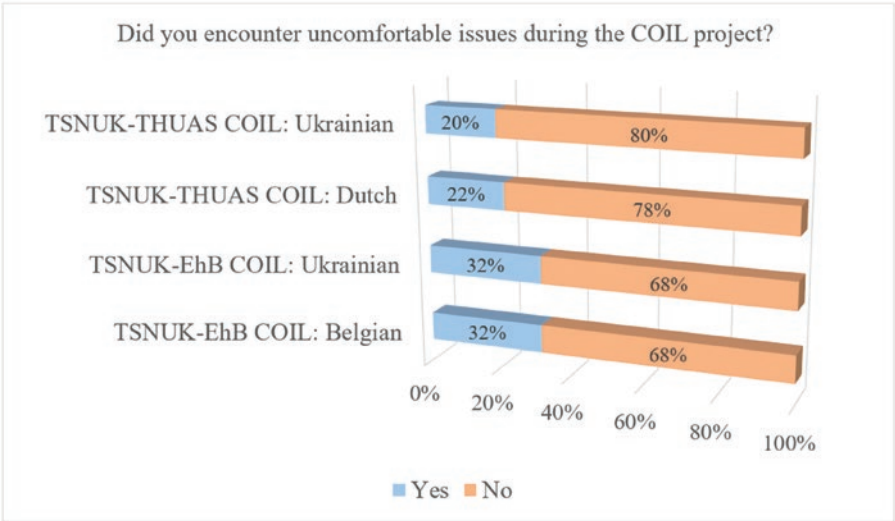


Figure 5. Perceptions of discomfort during the COIL project

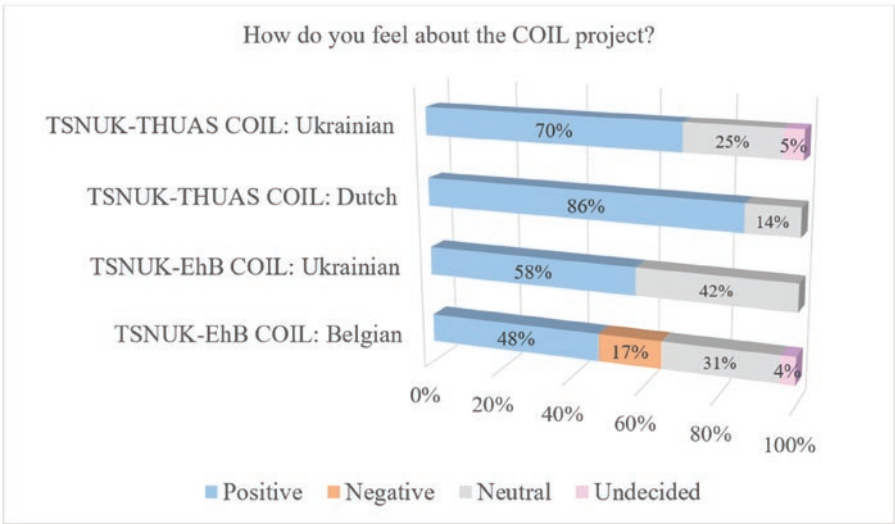


Figure 6. Overall sentiment toward the COIL project

This analysis highlights the varied experiences and perceptions across the two COIL projects. While the TSNUK-THUAS collaboration achieved higher satisfaction and positive sentiment overall, the TSNUK-EhB project revealed some areas for improvement, particularly concerning discomfort and its impact on participants’ feelings.

Qualitative Results

The qualitative data collected from open-ended survey questions and student reflections across the TSNUK-THUAS and TSNUK-EhB COIL projects were analyzed thematically to explore participants' experiences, challenges, and learning outcomes. This analysis reveals key themes that highlight both commonalities and differences in participants' perceptions and their development of SEL competencies in collaborative digital learning environments.

Communication and Engagement

A significant challenge across both projects was establishing effective collaboration due to unclear instructions, uneven participation, and differing communication styles. For instance, a Dutch participant in the TSNUK-THUAS project expressed frustration over the lack of engagement from Ukrainian peers: "In our meetings, the input the Ukrainian students gave was next to none." This uneven participation often placed additional burdens on some students, as another Dutch student reflected, "It took a lot of my energy because I had to take all the initiative." In the TSNUK-EhB project, communication difficulties arose primarily from language barriers and differing communication styles. A Belgian participant noted, "At first, I tried to speak very formal English, but after a while, this changed, and I spoke basic English." Similarly, Ukrainian students navigated direct communication styles, noting, "Ukrainians are more direct, while Belgians are more reserved."

To address these challenges, facilitators provided clearer guidelines on roles, expectations, and communication protocols. Students completed team charters and meeting minutes to ensure accountability and structure, while regular check-ins encouraged open dialogue and adaptive strategies. Simplified English and flexible communication styles helped reduce language barriers. Joint poster and video creation activities promoted collaboration and intercultural understanding.

Emotional Impact and Wartime Context

For Ukrainian students, the ongoing war posed a significant emotional challenge. Participation in the projects sometimes evoked painful memories, affecting their comfort and engagement. One participant shared, "Being involved in such a project triggered memories of the war and past traumas, making me feel extremely uncomfortable." Many international students were initially unaware of the situation in Ukraine, creating a gap in understanding. To bridge this, facilitators provided background information on the challenges faced by Ukrainian participants and encouraged open conversations about emotional well-being, fostering empathy and a supportive atmosphere. Belgian students, in particular, offered emotional support, though one reflected, "I tried to offer as much support as I could, but I still felt like there were things left unsaid." Regular emotional check-ins, reflection activities, and active listening helped create psychologically safe spaces that supported emotional resilience, self-management, and empathy, which are core SEL competencies, and promoted sensitivity and solidarity in intercultural collaboration.

Cultural Exchange and Social Awareness

Both COIL projects offered rich opportunities for cultural exchange, fostering SEL competencies such as empathy, social awareness, and cross-cultural understanding. To deepen these exchanges, facilitators designed activities combining cultural exploration with collaboration. In the TSNUK-THUAS project, students researched their partners' countries, cities, and universities using online resources and completed the interactive "Discovering Our Partners" quiz on Blooket. In the TSNUK-EhB project, collaborative storytelling, cultural sharing, and co-created

videos highlighting similarities and differences enhanced intercultural dialogue. Belgian students valued Ukrainian traditions, with one noting, “I really enjoyed learning about Ukrainian culture and our shared heritage.” Ukrainian participants reflected on differences in family values and holiday customs, such as “We celebrated Christian holidays on different days.”

Beyond cultural exchange, these reflections highlighted shared aspects of identity, reinforcing mutual understanding and respect. Such exchanges encouraged students to develop a greater appreciation for diversity and a deeper understanding of global perspectives.

Personal Growth and Skill Development

Participants in both projects reported significant personal growth, particularly in adaptability, flexibility, and intercultural communication. Belgian students expressed increased openness to different cultural perspectives. One participant shared, “We were all flexible and understanding toward each other,” while another reflected, “I became more aware of how cultural backgrounds influence communication and decision-making.” Ukrainian students similarly highlighted their growth in adaptability, with one noting, “I now see my thoughts and actions as more adaptable and open, appreciating different perspectives.” These outcomes emerged through intentionally diverse team formations, reflective tasks, and role rotation, which exposed students to varied communication and decision-making styles. These experiences strengthened SEL skills like resilience, patience, and collaboration, while fostering critical thinking and the ability to navigate complex intercultural settings.

Time Management and External Challenges

Time management emerged as a significant challenge, especially as students balanced COIL activities with academic and personal responsibilities. External barriers such as power outages and unstable internet further complicated participation. “Power cuts made it difficult to keep up with the workload,” shared one Ukrainian student. Belgian participants also struggled with scheduling across time zones: “It was hard to find meeting times that worked for everyone.” To mitigate these issues, facilitators encouraged the use of asynchronous tools (e.g., shared drives, recorded updates) and required planning aids such as Gantt charts and meeting agendas. These strategies improved coordination and helped students develop essential skills in time management, self-regulation, and responsible decision-making. As one Belgian student noted, “I learned to better organize my time and be flexible with deadlines.” Navigating these real-world constraints strengthened students’ adaptability — an essential competency for both academic and professional environments.

Team Dynamics and Collaboration

Managing team dynamics was another key theme, with participants navigating challenges related to varying engagement levels, time zones, and differing expectations. Belgian students noted logistical difficulties, with one sharing, “It was difficult to communicate because not everyone was free at the same moment.” However, mutual respect and shared goals emphasized by Ukrainian students contributed to successful collaboration. As one Ukrainian participant stated, “We agreed that we all had a common goal.” To tackle these issues, teams completed charters, documented meetings, and jointly developed posters to clarify responsibilities and ensure equal contribution. Additionally, icebreakers and team-building activities helped build trust, while collaboratively creating common goals and mottos reinforced a shared sense of purpose. These strategies fostered conflict resolution, empathy, and cooperation, strengthening critical SEL skills in negotiation, flexibility, and intercultural communication essential for effective global teamwork.

Discussion

Development of SEL Competency Through COIL

This study provides evidence that COIL projects foster key SEL competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. To date, no research has explicitly examined how COIL supports SEL development, especially in wartime contexts, making these findings an extension of the literature on SEL, intercultural learning, and crisis-responsive education.

The competencies identified correspond closely with established SEL frameworks that emphasize emotional resilience, interpersonal skills, and ethical reasoning (Brush et al., 2022; CASEL, n.d.; Elias et al., 2003). As students navigated intercultural communication and digital collaboration, their self-awareness and self-management improved. The COIL environment encouraged reflection on emotional responses to challenges such as time zone differences, platform accessibility, institutional policies, and cultural stereotypes. One Ukrainian student noted, “I had to reflect on my own biases before engaging in conversations, which made me more aware of my own thinking process.” This heightened self-awareness, combined with the need to manage stress, frustration, and uncertainty, fostered emotional regulation and resilience. The Ukrainian group showed the highest self-management gains (18.48%), likely driven by the dual pressures of virtual collaboration and wartime instability.

Social awareness grew as students interacted with culturally diverse peers. Both COIL projects facilitated rich cultural exchanges, deepening understanding of different values and traditions, consistent with prior research on intercultural competence through virtual collaboration (Fernández-Cézar et al., 2024; Hackett et al., 2024; Huertas-Abril et al., 2024). Belgian students’ learning about Ukrainian history enhanced their appreciation of diversity, while Ukrainian students gained insight into Belgian society, reinforcing global perspectives and shared identity. These interactions nurtured empathy and openness to different viewpoints. A Belgian student reflected, “I gained a deeper understanding of the challenges my Ukrainian peers face, and it helped me approach them with more empathy.” Sharing personal stories and cultural insights further strengthened mutual respect and global citizenship, confirming COIL as a powerful tool for international collaboration and global learning (COIL Connect, 2021; Gelashvili & Blanco, 2024; Rubin, 2017).

Relationship skills improved as students collaborated on real-world challenges, negotiating logistical and intercultural differences, including work ethics, internet connectivity, academic calendar mismatches, communication styles, and divergent approaches to problem-solving and teamwork. These experiences fostered conflict resolution, effective communication, and trust-building, echoing findings by Hackett et al. (2024) on COIL’s potential to enhance interpersonal competence. Ukrainian students’ 8.25% increase in relationship skills likely reflects their resilience and adaptability under wartime conditions, supporting evidence that context intensifies SEL growth (Brush et al., 2022).

Growth in social awareness and relationship skills was more modest for the Dutch group, possibly due to prior intercultural experience, suggesting that students with established intercultural competence may experience less pronounced but still valuable development.

Overall, these findings demonstrate that COIL offers a structured and impactful environment for SEL development, especially in contexts marked by adversity.

Perceived Impact of COIL on Social-Emotional Development

Student feedback reveals a multifaceted impact on well-being, interpersonal relationships, and cultural awareness. Emotional responses ranged widely, highlighting COIL’s dual nature as both a space for growth and a source of affective and intercultural challenges.

Overall, COIL was perceived positively, echoing prior research (Gelashvili & Blanco, 2024). Ukrainian students reported the highest satisfaction, appreciating opportunities for social connection amid wartime stressors. However, participants in the TSNUK-EhB project encountered difficulties stemming from language barriers, divergent communication styles, and the emotional toll of war-related discussions. In this context, peer support was vital in providing reassurance and fostering psychological safety.

The evidence suggests COIL reduces isolation, nurtures belonging, and builds resilience, especially for trauma-affected learners, while reinforcing its capacity to cultivate intercultural empathy and solidarity. Nonetheless, discomfort and emotional strain caused by war, language anxiety, and communication breakdowns necessitate intentional scaffolding to create emotionally safe learning environments, as emphasized in SEL research (Osher et al., 2016; Peddigrrew et al., 2022; Pentón Herrera, 2024; Sangeetha & Sridhivya, 2025; Schwartz et al., 2023; Smith, 2023), although this perspective is not yet widely linked to COIL.

Differences between the two projects demonstrate how facilitation affects emotional outcomes. The TSNUK-THUAS project, with clearer expectations and structured communication, saw higher satisfaction. In contrast, challenges in the TSNUK-EhB project underscore the importance of deliberate design to support emotional well-being and intercultural dialogue. These contrasts point to the importance of careful COIL structure in optimizing SEL in international digital collaboration, notably during times of instability and change.

COIL's Role in Enhancing Academic Engagement

This study confirms prior COIL research showing that intercultural digital collaboration boosts academic engagement through increased motivation, ownership, and application of course concepts (Fernández-César et al., 2024). It adds further insight by highlighting the connection between academic engagement and social-emotional growth, showing how emotional investment and empathy deepen academic involvement.

COIL significantly enhanced students' engagement by integrating digital tools with cross-cultural collaboration, creating an immersive learning environment that fostered motivation, active participation, and essential academic competencies such as communication, collaboration, critical thinking, and problem-solving. Applying theoretical knowledge to real-world challenges encouraged deeper interaction with course content while developing key skills through dynamic international teamwork.

The opportunity to collaborate with international peers, improve language skills, and gain diverse cultural perspectives made academic work more engaging and relevant. Despite challenges like uneven participation and fluctuating motivation, the cross-cultural element remained a strong motivator, inspiring meaningful contributions to discussions and team projects.

Digital tools were vital in facilitating engagement. Synchronous platforms like Zoom, Telegram, and WhatsApp enabled real-time communication and relationship-building, while asynchronous tools such as Google Classroom, Padlet, and Canvas offered flexibility for self-paced contributions. However, success depended on students' self-regulation skills. Some thrived in structured settings, while others struggled with time management, resulting in inconsistent participation.

COIL also fostered academic engagement through real-world problem-solving. Tackling global challenges that required interdisciplinary collaboration and critical thinking brought academic content to life, deepening students' commitment to learning. This hands-on approach not only enhanced their academic experience but also equipped them with skills essential for future careers.

Although COIL posed challenges, including initial technology hurdles, time zone coordination, and uneven participation, students adapted over time, improving digital literacy and collaboration skills. Ultimately, COIL proved a powerful tool for enhancing academic engagement, enabling students to apply knowledge in meaningful contexts, develop professional competencies, and broaden their global perspectives.

Conclusion

This study highlights the transformative potential of COIL to foster critical SEL competencies and enhance academic engagement in digital and cross-cultural learning environments. By bridging cultural divides and promoting collaborative problem-solving, COIL fosters emotional resilience, intercultural empathy, and academic growth, even in crisis contexts such as wartime.

To maximize its impact, educators should implement structured communication frameworks that promote balanced participation and sustained engagement. Emotional support mechanisms are especially vital for students affected by conflict or trauma, ensuring safe and reflective spaces that support psychological well-being. Flexible project design, featuring asynchronous collaboration and adaptable scheduling, can accommodate diverse time zones and personal commitments, while intercultural exchanges build cultural sensitivity and mutual respect.

For teacher education, integrating SEL into preparation programs is crucial for cultivating inclusive, emotionally supportive, and culturally responsive digital learning environments. Prioritizing cross-cultural communication skills, emotional resilience, and differentiated instruction will better equip future educators to support learners globally.

Future research should explore:

- the longitudinal effects of COIL on SEL development, particularly in post-war recovery settings;
- variations in COIL's impact across different socio-political and cultural contexts;
- the influence of specific technological platforms and tools, both synchronous and asynchronous, on student engagement and emotional outcomes;
- effective language mediation strategies to overcome linguistic challenges in multilingual COIL collaborations;
- facilitation models that optimize SEL outcomes in emotionally sensitive contexts;
- trauma-informed COIL design integrating SEL principles; and
- patterns of equity and inclusion in participation, with approaches to amplify marginalized voices in intercultural digital spaces.

By addressing these areas, future research can inform the development of COIL practices that not only enhance academic and social-emotional outcomes but also prepare students to thrive as empathetic, resilient, and globally engaged citizens.

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Appendix A: Sample Pre-Project Survey Questions

The survey was used to collect pre-project demographic data and assess participants’ expectations and experiences related to the COIL project.

Category	Question	Type	Example options
Demographics	Gender	Multiple-choice	Male, female, other
	Age	Open-ended	(e.g., 18, 19)
	Cultural background	Open-ended	(e.g., Ukrainian, Belgian)
	Region	Open-ended	(e.g., Kyiv, Brussels)
	Native language	Open-ended	(e.g., Ukrainian, Dutch)
	Current level of study	Multiple-choice	Bachelor’s, master’s, other
Experience and technology	International experience	Yes/No	Yes, no
	Online collaboration participation	Yes/No	Yes, no
	Networking platforms	Checkboxes	LinkedIn, Facebook, TikTok, Snapchat, Instagram, other
	Comfort with digital tools	Likert scale (1–5)	1 (<i>not comfortable</i>) to 5 (<i>very comfortable</i>)
	Confidence in cross-cultural communication	Likert scale (1–5)	1 (<i>not confident</i>) to 5 (<i>very confident</i>)
	Preferred communication tools	Checkboxes	Email, Telegram, WhatsApp, Zoom, Slack, Other
	Reliable internet access	Yes/No	Yes, no
Motivation and expectations	Reason for participation	Checkboxes	Improve English, explore new educational experiences, broaden perspectives, collaborate across disciplines, academic credit, other
	Anticipated gains	Open-ended	(e.g., personal development, new skills, cultural understanding)
	Participation concerns	Yes/No	Yes, no (if yes, specify: open-ended)

Appendix B: SEL Competency Self-Assessment

The self-assessment tracked changes in SEL competencies at both the beginning and end of the project. All items are rated on a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Competency	Sample question
Self-awareness	I reflect on my growth and understand how my emotions influence my behavior. I believe in my ability to succeed in challenging situations.
Self-management	I control my impulses and maintain a positive outlook despite setback. I persist in achieving my goals despite obstacles.
Social awareness	I empathize with others and appreciate diverse perspectives. I am open to learning about different cultures and practices.
Relationship skills	I communicate effectively and adapt my style when interacting with diverse groups. I handle conflicts constructively, seeking mutually beneficial solutions.
Responsible decision-making	I analyze information from multiple sources before forming an opinion. I evaluate the potential outcomes and long-term impact of my decisions.

Appendix C: Sample Post-Project Survey Questions

This survey gathers post-project feedback on COIL collaboration, including challenges, preferences, suggestions for improvement, and overall satisfaction.

Question	Type	Example options
How do you feel about the COIL project?	Multiple-choice	Positive, neutral, negative, undecided
Should students be involved in COIL projects during wartime?	Yes/No	If no, specify: open-ended
How difficult was it to participate in the COIL project? Explain your rating.	Likert scale (1–5) Open-ended	1 (<i>very easy</i>) to 5 (<i>very hard</i>)
Did you gain or improve any knowledge/skills?	Yes/No	If yes, specify: open-ended
How satisfied are you with participation?	Likert scale (1–5)	1 (<i>very dissatisfied</i>) to 5 (<i>very satisfied</i>)
What did you like most about the COIL project?	Open-ended	
What did you like least about the COIL project?	Open-ended	If yes, specify: open-ended
Suggestions for improving this COIL project?	Yes/No	
Would you participate in another COIL project?	Yes/No	If no, specify: open-ended
What types of international collaborations would you like to participate in?	Open-ended	

Appendix D: Sample Reflection Prompts

Participants were required to submit reflections on their emotional, cultural, and collaborative learning experiences during the COIL project.

Task 1: Your First Intercultural Encounter. Think about your first interaction with international peers during the COIL project. Name this encounter in a way that captures its significance for you. Briefly describe your thoughts and feelings at that moment, using these prompts:

- What happened when you first met your international peers?
- How did you feel in the situation at the time?
- What similarities or differences did you notice between yourself and your peers?

Task 2: Communication and Adaptation in a Digital Space. Reflect on how communication shaped your COIL experience by considering the following:

- How comfortable were you interacting across cultures?
- Did you adjust your communication style? How?
- How did you handle sensitive topics?
- What strategies helped build trust and group cohesion?

Task 3: Emotional and Intercultural Learning. Consider how your COIL experience influenced your emotions and cultural awareness. Respond to the following prompts:

- How have your thoughts, feelings, and actions changed since meeting your team?
- What similarities and differences do you now recognize between you and your teammates?
- What skills or insights did you gain in navigating cultural diversity online?

Task 4: Drawing Conclusions and Future Learning. Reflecting on your experience in the COIL project, consider the following:

- What are your key takeaways, and how has it contributed to your SEL development?
- How can you apply these insights to future collaborations?
- What advice would you give to future participants?