

UNDERSTANDING THE IMPACT OF INTERCULTURAL PROJECT-BASED LEARNING ON STUDENTS, STAFF AND HIGHER EDUCATION INSTITUTIONS

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Abstract

This paper discusses the experiences of a distributed interdisciplinary project-based learning program for students across continents. For the years 2020 until 2023, we received seed-funding for four annual projects to engage students from Germany (Europe), Namibia (Africa), Indonesia (Asia), and Peru (Latin-America) to collaborate over one semester on interdisciplinary projects contributing to the solution of some real-life client's problems in the partner countries. During this period, more than 150 students embarked on these projects with 116 of them being selected for a scholarship for an international mobility. With the guidance and support by academics from all partner universities, the students successfully completed each project expressing deep appreciation for the learning opportunities while overcoming challenges of working across widespread time zones, different cultures, changing requirements, and various technical difficulties.

While the primary aim of this distributed interdisciplinary and intercultural project-based learning program was to provide students with a truly Global Intercultural Project Experience (GIPE), in this paper we investigate on its impact in a broader sense as it was observed that this program also had a significant impact on both academic and administrative staff at all partner universities. Finally, we also reveal the impact of this four-year-program on the participating institutions themselves and conclude that the invaluable returns of such interdisciplinary project-based learning extend far beyond financial metrics. It encompasses enhanced student learning experiences, strengthened cooperation and mutual learning between academics and administrative staff, as well as institutional reputation, and societal impact.

Keywords: *Project-Based Learning, Collaborative Online International Learning, Intercultural Collaboration, Interdisciplinary Students Project.*

1. Introduction

Globalization demands that Higher Education Institutions (HEIs) adapt rapidly to provide students with the relevant 21st-century skills and knowledge essential for navigating an increasingly interconnected world. As economies and societies become more interlinked, the workforce faces complex, global challenges that require not only technological proficiency but also critical thinking, adaptability, and cross-cultural communication skills (Wilson, 2010).

In the ever-evolving landscape of higher education, traditional lecture-based methods are increasingly being supplemented or replaced by more interactive and student-centered approaches. Among these, Project-Based Learning (PBL) stands out as a particularly effective pedagogical strategy emphasizing experiential learning through real-world challenges (Bender, 2012). This educational approach encourages students to engage actively in projects that reflect genuine professional scenarios, fostering a deeper understanding and application of knowledge (Bell, 2010). PBL not only equips students with critical thinking, problem-solving, and collaborative skills but also prepares them for the dynamics of the modern workplace (Krajcik & Shin, 2014).

In today's increasingly interconnected world, complex global challenges such as climate change, public health, and technological innovation cannot be solved within the silo of a single discipline or cultural perspective. Instead, they require collaborative efforts that transcend traditional boundaries. Thus, Warr and West (2020) revealed that intercultural and interdisciplinary project-based learning (IPBL) is a key educational approach to address both, the interdisciplinary approach needed for solving real-world problems and the intercultural setting that fosters understanding, respect, and effective communication among diverse cultural groups (Gregersen-Hermans, 2017).

Collaborative Online International Learning (COIL) is nowadays receiving increased attention as an innovative, cost-effective instructional method that promotes intercultural learning through online collaboration between faculty and students residing in different countries or locations within the context of a course (Rubin, 2017). Although the idea of distributed student projects with online collaboration among different HEIs dates back to the late 1990s where it has already been successfully applied at least in the field of Software Engineering (Brereton, Gumbley & Lees, 1998), the international and intercultural aspect came into focus only during the last decade (Appiah-Kubi & Annan, 2020).

In order to respond to the before-mentioned challenges of globalization for higher education and based on prior successfully completed bilateral student software development projects between German and Namibian students, we designed a framework combining IPBL by solving some real-life client's problems with the international and intercultural setting of COIL extended by phases for short-term physical mobility to focus on a much denser intercultural exposure of students and staff in preparation for a successful online collaboration across continents and cultures.

Over four years, from 2020 until 2023, we have now run four annual student projects with interculturally and interdisciplinary mixed student groups collaboratively solving real-world problems for clients from Namibia, Indonesia, Peru and finally for a global client. Although this combined approach comes with increased complexity as regards governance, project management and administrative support, it did not only have the intended impact on the participating students, but has also shown significant impact on both academic and administrative staff, their collaboration and personal growth as well as the participating HEIs as such.

2. Related Work

There are several notable studies and initiatives that highlight the impact of interdisciplinary PBL in intercultural settings. These works emphasize the value of integrating diverse perspectives and disciplines to address complex problems, showing how such educational approaches prepare students for global challenges.

Hart (2019) explores how IPBL in intercultural groups enhances students' intercultural competence. It underscores the importance of reflective practice and structured interaction in developing the ability to navigate and appreciate cultural differences. The findings suggest that PBL environments, where students engage with real-world issues from multiple disciplinary perspectives, can significantly improve their intercultural skills alongside their academic learning.

Oladiran, Uziak, Eisenberg, and Scheffer (2011) report on the Global Engineering Teams (GET) program that promotes project-oriented tasks in virtual student teams working in collaboration with industry partners. Students from different countries and disciplines collaborate on engineering design projects. It illustrates how technology can facilitate international collaboration among students, allowing them to apply their diverse knowledge and cultural perspectives to create innovative solutions.

The UNESCO Chair in Problem Based Learning (UCPBL) established at Aalborg University in 2007 represents a concerted effort to promote PBL in engineering education across different cultural contexts. It focuses on developing pedagogical frameworks and resources that facilitate the implementation of PBL in a way that encourages intercultural exchange and understanding.

Focusing on sustainability challenges, Sulkowski, Kowalczyk, Ahrendsen, Kowalski, and Majewski (2020) highlight a program where students from various disciplines and countries collaborate on projects aimed at promoting sustainable development. The initiative showcases how combining PBL with an intercultural and interdisciplinary focus can lead to innovative approaches to sustainability, encouraging students to think critically about environmental, economic, and social issues from a global perspective.

These related works collectively underscore the effectiveness of interdisciplinary problem-based learning in fostering not just academic growth, but also intercultural competence and collaborative skills (Brassler & Dettmers, 2017). Thus, there is no lack of evidence that by bringing together students from different backgrounds and disciplines to work on real-world problems, educators can create rich, transformative learning experiences that prepare students for the complexities of the modern world. However, as Saubert and Cooper (2023) have reported, there is only little research yet on how IPBL in an international yet intercultural context benefits academic and administrative staff involved in such programs or the HEIs as such, e.g. by Elam (2018) or Chang et. al. (2022).

3. The GIPE Framework (Global Intercultural Project Experience)

In an effort to strengthen internationalization efforts at German Universities of Applied Sciences, the German Academic Exchange Service (DAAD) awarded a four year (2019-2023) funding for the GIPE

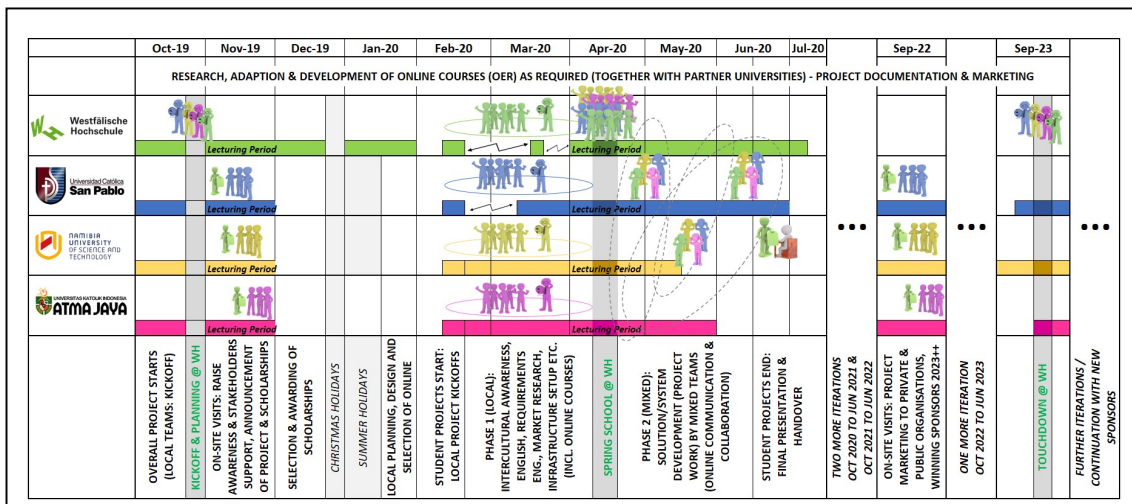
framework program offering selected students from participating institutions in Germany (Westfälische Hochschule), Indonesia (Atma Jaya Catholic University of Indonesia, Jakarta), Namibia (Namibia University of Science and Technology, Windhoek), and Peru (Universidad Católica San Pablo, Arequipa) the opportunity to gain a truly Global Intercultural Project Experience (GIPE) by working in a multi-cultural team on an international project for a real client (Meyer et. al., 2022a).

3.1. Project Overview

The annual student projects took place from February to June/July (subject to different academic calendars and lecturing periods) proceeded by client and project selection, evaluation of students' applications and awarding scholarships as well as requirements gathering and detailed project planning together with the selected client. They were run in four phases (see Figure 1):

1. On-line collaboration preparation: A virtual global kick-off event brings all stakeholders together. Students then get prepared for the various project tasks through targeted trainings. Students join the project in intervals depending on the home universities lecturing schedules.
2. Two-week face-to-face phase: All participating students and one representative lecturer from each university meet in Germany for team-building, intercultural exposure and mixed-team-setup ('Spring School').
3. On-line collaboration: the students continue working on their project tasks in mixed teams using various on-line collaboration tools. They are instructed ('guided') by academic staff from all partner institutions and different disciplines, e.g. in the 2021 project, a business sub-project ('stream') was guided by a lecturer/researcher team from Peru and Indonesia while another stream focusing on the developing of an educational adventure game was guided by a German academic together with a colleague from Namibia.
4. One-week project-touchdown and hand-over: The German students travel to the client situated in Namibia, Peru or Indonesia (alternating) offering true international exposure.

Figure 1. The Masterplan for the GIPE Framework 2019-2023



Due to travel restrictions during the Covid-19 pandemic, the 2020 students project was held entirely online ('pure COIL') while in 2021 at least the hand-over to the client in Indonesia could take place later the year and with only a few students travelling. Nevertheless, even without any meeting in person, both student projects were completed successfully and the results appreciated by the respective clients. However, in (Meyer et. al., 2022b) we explicitly discuss the importance of physical meetings during the two-week Spring School which is essential for our approach.

3.2. Impact on Students

Summarizing from the students' perspective, the Global Intercultural Project Experience (GIPE) was enriching in many ways: culturally, academically, and professionally. Reviewing the sentiments expressed by the students confirms observations made by the guides, that though the students experienced many new challenges they equally appreciated the learning and the multicultural context. Working in an interdisciplinary team on a project for a real client required a steep learning curve in a short time. The students received structured technical training and were exposed to new tools and techniques, and learned good project management practices using professional tools. GIPE thus exhibits similar impact on the

participating students as observed by other researchers before, e.g. (Hart, 2019). Student engagement was significantly enhanced as students are actively involved in the learning process. By working on projects that are meaningful and relevant to their interests, students are more likely to find the material and tasks engaging and motivating. This increased engagement not only makes the learning experience more enjoyable but also improves retention and comprehension of the material.

The IPBL approach underlying GIPE has also shown to be particularly effective in fostering critical thinking and problem-solving skills. As students were presented with complex, real-world problems that do not have straightforward solutions, this required them to think critically, analyze various aspects of the problem, and devise innovative solutions. To succeed, students must integrate knowledge from multiple disciplines, evaluate different design options, and consider practical constraints such as cost and materials. This process mirrors real-world engineering challenges, thereby equipping students with the skills necessary to tackle similar problems in their professional careers.

Another significant impact we have observed is the development of collaboration and communication skills as students have to work together to achieve common goals. This collaborative approach helps students develop essential teamwork skills, such as effective communication, conflict resolution, and the ability to work with diverse groups of people, especially in the intercultural GIPE setup. Our findings confirm earlier research, e.g. by Hmelo-Silver (2004), indicating that students who engage in PBL demonstrate improved interpersonal skills, showed greater proficiency in collaborative problem-solving and were better at articulating their ideas compared to those in traditional learning environments. These skills are invaluable in the modern workforce, where teamwork and communication are often key to success.

Furthermore, GIPE encourages self-directed learning and autonomy requiring students to take greater responsibility for their own learning. They must manage their time, set goals, conduct research, and make decisions about how to proceed with their projects. This increased autonomy helps students develop important self-management skills, such as time management, and independent problem-solving.

3.3. Impact on Staff

IPBL within higher education institutions as implemented in GIPE poses significant challenges but also opportunities for both academic and administrative staff.

Academic staff must often venture beyond their traditional disciplinary boundaries, necessitating a proactive engagement with unfamiliar content, teaching methods and rubrics, which stimulates professional growth but also demands substantial adaptability and commitment to interdisciplinary collaboration. The cooperation of academics from different continents when guiding and finally also grading the students, resulted in further and deeper cooperation, joint research and publications lasting much beyond the individual projects.

The international group of students and staff to be handled formed a challenge also for administrative staff in the international offices and departments, but also offered opportunities for personal growth and professional development. The adoption of IPBL requires the development of new frameworks for curriculum design, assessment, and resource allocation, pushing staff to innovate and potentially reconfigure institutional policies and practices to support these holistic education models. Ultimately, while IPBL may burden staff with initial hurdles, it also promotes a dynamic educational environment that encourages continuous learning, adaptability, and innovation, potentially leading to enhanced job satisfaction and a more cohesive institutional culture.

3.4. Impact on Higher Education Institutions

IPBL within higher education institutions as implemented in GIPE is a transformative approach that fosters collaboration across various disciplines and cultures, enriching the educational experience not only for the students but everyone involved. Additionally, having students from around the world on the campus for two weeks and inviting local students to join in for some open sessions and social events offered a low-threshold international and intercultural experience for all, helped promoting internationalization and exchange and finally led to an increased interest in student exchanges not only to the participating partner universities. As higher education continues to evolve, integrating PBL into the curriculum can not only provide a more enriching, relevant, and effective learning experience for students and staff. It can also contribute to the profile of the institution and result in a competitive advantage when attracting the best students and also staff.

4. Conclusions

Interdisciplinary Project-Based Learning as implemented in GIPE offers numerous advantages in higher education, from enhancing student engagement to developing critical thinking, collaboration, and real-world application skills. By fostering a more active and student-centered learning environment, IPBL

prepares students not only to succeed academically but also to excel in their future careers. Moreover, it has shown significant impact also on administrative and academic staff as well as on HEIs themselves.

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