# DIGITAL HEALTH BIP: A MULTI-INSTITUTIONAL BLENDED INTENSIVE PROGRAM FOR ENHANCING DIGITAL HEALTH COMPETENCIES IN PHYSIOTHERAPY STUDENTS

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## Abstract

Introduction: Blended Intensive Programs (BIP) combine short-term mobility with online collaboration in higher education. These initiatives aim to facilitate joint program development for students and academics within Higher Education Institutions (HEI), focusing on areas such as Digital Health and Emerging Technologies in Health Care. This study examines the self-reported impact of a BIP designed to address participants' awareness and knowledge of integrating digital health into their practice.

Methodology: A consortium of nine institutions across eight countries developed a two-month BIP that ran from March 4 to April 30, 2024. The program included 11 teachers and 34 students, consisting of three online sessions and an in-person week. The curriculum covered digital health technologies and their applications in physiotherapy, with a focus on patient care strategies. An online questionnaire with Likert scale and open-ended questions was used to collect participants' feedback on their experiences and learning outcomes.

Results: Out of 34 participants, 20 responded to the survey. The data indicated that most respondents reported increased awareness about Digital Health, while most noted enhanced knowledge of integrating digital health technologies into practice. Many participants identified the role of innovation in addressing health-related problems. Regarding program structure, a significant portion of respondents reported feeling well-informed, and a large majority noted effective teacher support during lectures. Overall program quality was rated as either Very Good or Good by all respondents, with all participants indicating they would recommend the program to others. The survey also revealed generally positive feedback on the relevance of lectures and activities, as well as on the availability of program documents and support during workshops and student presentations.

Conclusions: The survey data indicates that the BIP may have contributed to participants' understanding and integration of digital health in practice. The program structure, which combined short-term mobility with online collaboration, received generally positive feedback from participants. These findings suggest potential benefits in incorporating BIPs into healthcare education for promoting interdisciplinary collaboration and innovation in digital health. However, the study's limitations, including the small sample size and reliance on self-reported data, should be considered when interpreting the results. Future research could explore the long-term impact of such programs on students' career trajectories and contributions to digital health initiatives. Such studies might benefit from larger sample sizes, longitudinal designs, and objective measures of learning outcomes to provide a more comprehensive evaluation of the effectiveness of BIPs in healthcare education and to derive ideas for the further development of the BIPs.

Keywords: Blended Intensive Programs, Digital Health, internationalization.

## 1 INTRODUCTION

As the world becomes increasingly interconnected, shared spaces have emerged across various fields, with technology playing a crucial role in facilitating these developments. This trend has impacted the job

market and professional environments through the processes of internationalization and globalization. In response to these changes, educational institutions are incorporating technological competencies into their curricula to prepare individuals for the demands of digitally advanced work environments [1].

Exchange programs between Higher Education Institutions (HEIs) have promoted collaboration, resulting in a growing number of students and professionals working with international partners. For example, physiotherapy education programs have begun incorporating international experiences that may also fulfil clinical education requirements [2]. These initiatives aim to provide students with a broader understanding of innovative health practices and technological advancements, thereby enhancing patient care and fostering technological proficiency within the physiotherapy profession.

One such opportunity is the Blended Intensive Program (BIP) in higher education, which combines short-term mobility with online collaboration to foster innovative learning and teaching methods [3]. These programs facilitate joint curricular development among students, academics, and staff in HEIs, empowering participants to develop innovative solutions. The importance of BIP lies in its ability to bridge theoretical knowledge and practical application, particularly in the context of digital health technologies in physiotherapy.

A focus of these programs could be applied to enhance students' understanding of digital health technologies and their applications in physiotherapy, discussing innovative strategies for improving patient care and outcomes. Topics such as telehealth, telerehabilitation, artificial intelligence (AI), virtual reality (VR), robotics, online patient engagement, health records systems, and ethical considerations like privacy and security are integral to the curriculum [2]. By addressing these subjects, the programs could equip students with the knowledge and skills necessary to tackle complex healthcare challenges and to leverage technology effectively in patient care.

Another aspect of these programs could be the development of competencies related to technological proficiency, including digital literacy, ethical understanding, and adaptability to emerging technologies. Digital literacy is essential for health professionals to communicate effectively with clients and colleagues in both local and remote settings and to engage with advanced technological tools [4]. Ethical understanding enables health professionals to navigate issues such as patient privacy and data security responsibly. Adaptability to emerging technologies allows practitioners to stay current with advancements in the field and to implement new solutions effectively.

Understanding advancements in digital health technologies is crucial for effective participation in modern healthcare and for comprehending patient care contexts in different settings [2]. Collectively, these components could equip physiotherapy students with the skills and knowledge necessary to navigate and contribute effectively to the evolving field of digital healthcare. By engaging with pressing digital health topics and developing essential competencies, students could be better prepared to address the challenges of a technologically advanced world and to promote improved patient care and outcomes on both local and global scales [5],[6].

## 2 METHODOLOGY

The Blended Intensive Program (BIP) titled "Digital Health - Innovation and Emerging Technologies in Health Care" was implemented in the spring of 2024 (from March 4 to April 30, 2024), involving nine institutions across eight European countries. The program aimed to increase participants' awareness and knowledge to effectively integrate digital health into their practice. It provided an overview of digital health technologies and their applications in physiotherapy, discussing innovative strategies for using digital health to improve patient care and outcomes. Key topics included telehealth, telerehabilitation, artificial intelligence (AI), virtual reality (VR), robotics, online patient engagement, health records systems, and ethical considerations such as privacy and security.

The BIP was structured as a two-month program, involving 11 teachers and 34 students, divided into two distinct phases: online sessions and a face-to-face week. The program's design facilitated both virtual and in-person engagement, providing a platform for exploration of digital health technologies and fostering collaboration among participants.

The first phase of the program consisted of three online sessions facilitated by one of the partner institutions. The initial two sessions introduced participants to the core concepts of digital health technologies and their applications in healthcare. Students were divided into national groups and tasked with preparing presentations on the specific realities of their respective countries and professional contexts concerning the discussed topics. These presentations were then shared in mixed international

groups during the third online session, encouraging cross-country exchange and comparative analysis. This phase aimed to provide a foundation for understanding digital health practices from various national and professional perspectives.

The second phase of the program was conducted in person over the course of a week. Each day was dedicated to one of the key digital health topics, with sessions led by different partner institutions. During this week, students were organized into multinational groups and tasked with developing a proposal to address specific challenges in integrating digital health technologies into healthcare practice. This phase emphasized interdisciplinary collaboration and problem-solving, allowing students to apply theoretical knowledge to practical issues in digital health. The week concluded with group presentations, where participants proposed innovative solutions to challenges such as implementing telehealth, telerehabilitation, AI, VR, robotics, online patient engagement, and health records systems. The proposals integrated a multidisciplinary approach, addressed ethical implications like privacy and security considerations, and aimed to improve patient outcomes. The final presentations, which lasted 10–15 minutes, summarized the digital health issue, the proposed solution, and its potential impact on healthcare practice.

After completing the program, each student submitted an individual reflection on their experience in exploring and proposing how digital technologies can be used in physiotherapy. This task encouraged personal reflection on integrating digital technologies into practice. Students considered their thought process in selecting their topic, new insights gained, their approach to developing innovative solutions, and how a multidisciplinary perspective enhanced their proposals. They also reflected on how this experience would influence their future professional practice.

The methodology adopted for the BIP provided a structured learning experience that enhanced participants' understanding of digital health technologies and their applications in healthcare. By combining online sessions, in-person collaboration, and reflective practice, the program facilitated the application of multidisciplinary approaches to real-world challenges in digital health.

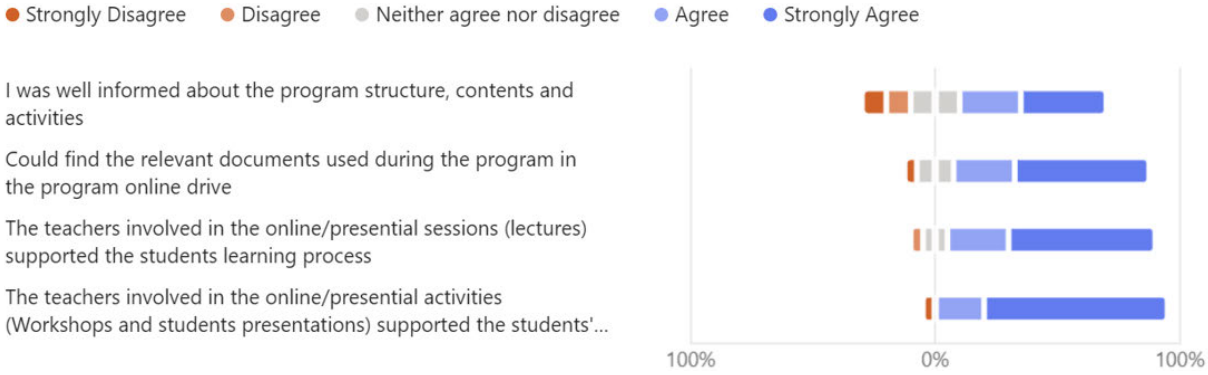
An online questionnaire was then distributed to all the students to gather both quantitative and qualitative data regarding their experiences. The quantitative component included Likert-scale questions to assess participants' perceptions of the program's content, structure, support, and collaborative elements. The qualitative component included open-ended questions, allowing participants to provide more detailed feedback on their learning outcomes and overall experience.

## 3 RESULTS

We received 20 survey responses out of a total of 34 student participants, resulting in a response rate of approximately 58.8%. When asked about the about the Blended Intensive Program's content and activities, overall, participants expressed a positive view of the BIP content and activities. Most respondents agreed that the program enhanced their knowledge of digital health, innovation, and the role of technology in their profession. Although there is a small proportion of neutral and disagreeing responses regarding the relevance of certain sessions and activities, the general trend reflects satisfaction with the program's ability to foster knowledge and skills development in these key areas (Graph 1).

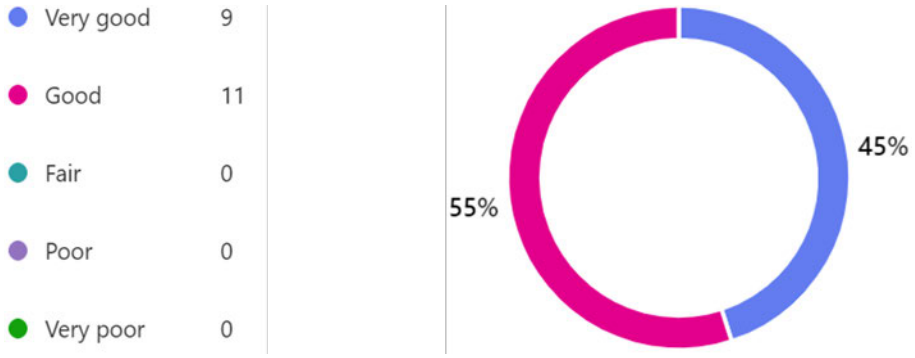

*Graph 1. Student feedback about the Blended Intensive Program's content and activities*

In relation with the general support, based on the responses (Graph 2), the responses indicate that participants generally had a positive experience regarding the support and collaboration provided by the BIP, particularly in terms of teacher involvement in both lectures and activities. The feedback suggests that most students felt supported throughout the learning process. However, there is a small proportion of neutral or disagreeing responses regarding how well-informed participants were about the program structure and contents, suggesting potential room for improvement in communication and information before the beginning of the program.



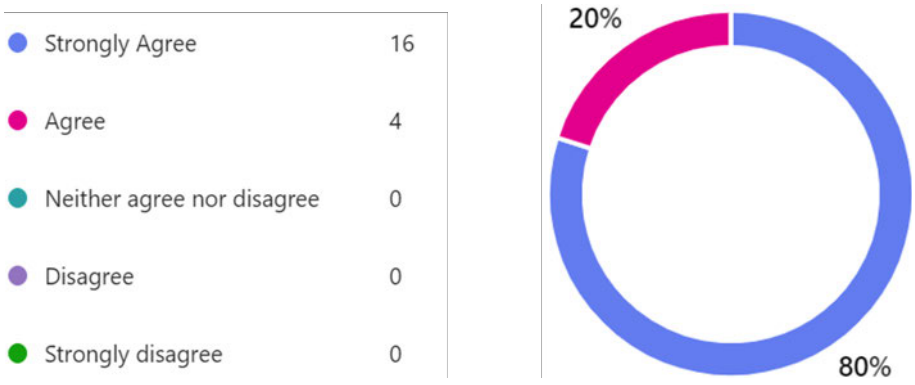

*Graph 2. Student feedback about the Blended Intensive Program's support and collaboration*

When asked about program general quality (Graph 3), most participants rated the overall quality of the Blended Intensive Programme positively, with 55% considering it "Good" and 45% rating it as "Very Good." None of the respondents expressed negative or neutral feedback, indicating a highly favorable view of the program's overall quality among participants.




*Graph 3. Student feedback about the quality of this Blended Intensive Program in general*

Finally, most participants expressed a strong willingness to recommend the Blended Intensive Programme, with 80% strongly agreeing and 20% agreeing. There were no neutral or negative responses, suggesting that the overall experience of the program was highly positive, and participants would endorse it to their peers. (Graph 4).




*Graph 4. Student recommendation of the Blended Intensive Program*

## 4 CONCLUSIONS

The results of this study tend to show that the Blended Intensive Program (BIP) was well-received by participants, particularly in enhancing their knowledge of digital health, innovation, and the role of technology within their professional contexts. Most respondents expressed satisfaction with the content and activities of the program, though some indicated areas for improvement, particularly regarding the relevance of certain sessions. Despite these minor reservations, the overall feedback highlights the program's effectiveness in fostering knowledge and skill development in these key areas.

In terms of support and collaboration, participants reported feeling well-supported by the teachers, both in lectures and activities. While there was some feedback suggesting a need for clearer communication regarding program structure and contents, most participants were satisfied with the level of guidance provided throughout the program. Most positive ratings of the program's overall quality further emphasize the program’s success, with no negative or neutral feedback reported.

Finally, participants demonstrated a strong willingness to recommend the BIP to their peers, reflecting a highly favorable view of the program. While the study presents valuable insights into the potential of BIPs in healthcare education, it is important to consider the limitations, such as the relatively small sample size and reliance on self-reported data. Future research could focus on the long-term impacts of such programs on students' academic path and explore larger, more diverse samples to better understand the role of BIPs in fostering innovation and interdisciplinary collaboration in healthcare education.

## ACKNOWLEDGEMENTS

The contributions of various partners have played a significant role in the implementation of this project. The participation of students, teachers from different European institutions like Escola Superior de Saúde do Alcoitão / Alcoitão School of Health Sciences (PORTUGAL), University of Applied Sciences Joanneum (AUSTRIA), Hochschule für Gesundheit Bochum (GERMANY), Hogeschool Leiden (NETHERLANDS), Utrecht University of Applied Sciences (NETHERLANDS), Western Norway University of Applied Sciences (NORWAY), Facultat de Ciències de la Salut Blanquerna - Universitat Ramon Llull (SPAIN), University of Lincoln (UNITED KINGDOM), and JAMK University of Applied Sciences (FINLAND), has supported the project and facilitated the development of an international network of professionals and institutions focused on education and global competencies. The Blended Intensive Program (BIP) was funded by the European Commission's Erasmus+ program under Key Action 1 (KA131) Mobility for higher education students and staff.

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