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Navigating EMI Courses Through Personalized Learning Networks: A Phenomenological Study on Vietnamese Students' Use of Digital Technology

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Abstract. This study explores how Vietnamese undergraduate students enrolled in English-medium instruction (EMI) economics courses use digital technologies to build and navigate personalized learning networks (PLNs). Amid growing EMI adoption in Vietnamese higher education, students face challenges related to language proficiency and disciplinary content comprehension. Grounded in Learning Culture Theory and employing a phenomenological approach, this study investigates the lived experiences of 24 EMI students in economics majors through focus group interviews. The findings from the thematic analysis reveal that students actively engage with a range of digital tools and platforms including social media, online forums, and collaborative apps to access course content, clarify concepts, and seek language support. These self-curated PLNs enable learners to access content, seek support, and exercise agency in managing academic tasks. The results also highlight variations in students' engagement strategies, with some preferring workplace-based mentoring or offline peer interactions over digital platforms. The study underscores the importance of student agency and digital competence in EMI contexts and demonstrates how learners adapt institutional and non-institutional resources to meet their needs. The paper concludes by emphasizing the need for EMI pedagogies that recognize learners' digital practices and integrate more responsive technological and academic support. In addition, implications are discussed for EMI policy implementation, teacher development, and future research in multilingual digital learning environments.

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1. Introduction

English-Medium Instruction (EMI), defined as the use of English to teach academic content in non-Anglophone countries, has become a hallmark of internationalized higher education worldwide (Dearden, 2014). Its expansion is driven by national language policies, university internationalization agendas, and disciplinary imperatives, resulting in diverse models shaped by local responses to global trends (Macaro et al., 2018). In Vietnam, EMI has been implemented as part of broader efforts to raise institutional competitiveness and promote global engagement. The National Foreign Language 2020 (NFL2020) project, launched in 2008, specifically encouraged the use of EMI at the tertiary level to enhance both English proficiency and the quality of higher education (Tran & Nguyen, 2018; Vietnamese Government, 2008).

This initiative was extended under the National Foreign Language Project 2020–2030, which emphasized curriculum reform, lecturer training, and internationalization of academic programs (Ministry of Education and Training, 2017). Policy documents such as Decision No. 2080/QĐ-Tatg (2021) and institutional guidelines from the Ministry of Education and Training (MOET) have positioned EMI as a strategic priority for modernizing Vietnamese universities and improving graduates' employability in a globalized economy. These national directives have led to a rapid increase in EMI programs, particularly in economics and business disciplines in which English proficiency is seen as essential for professional advancement. As such, EMI programs have become increasingly common in Vietnamese universities, particularly in economics-related disciplines (Vo et al., 2022).

Despite its growing adoption, EMI remains challenging in practice. A key concern is students' limited English proficiency, which can hinder their ability to understand subject content and engage with course materials effectively (Vo et al., 2022). While EMI is often positioned as a means to improve both language and academic skills, its success depends heavily on students' readiness and the availability of adequate instructional and linguistic support. Studies across various contexts have highlighted issues of comprehension, confidence, and uneven learning outcomes, raising questions about the sustainability and inclusiveness of EMI practices (Macaro et al., 2018).

In response to these challenges, digital technologies have emerged as critical resources in higher education, offering flexible, multimodal support that can complement and extend classroom instruction. For EMI learners in particular, digital tools provide alternative pathways to access disciplinary content, clarify difficult concepts, and strengthen English language skills. Platforms such as learning management systems (LMSs), educational apps, academic video channels, and social media facilitate not only individualized study but also peer collaboration and community building. These opportunities have given rise to

informal learning networks known as personalized learning networks (PLNs), which are self-directed, dynamic constellations of digital tools, platforms, and interpersonal connections that students curate to meet their specific academic and linguistic needs.

In EMI settings, PLNs can play a transformative role by helping students overcome both language-related barriers and disciplinary demands. For instance, learners may form informal study groups on Facebook to share resources, follow content-specific YouTube channels to reinforce lectures, or consult with alumni and mentors through online forums. These personalized networks enable students to engage with content at their own pace, to seek help from multiple sources, and to exercise greater agency in their learning journey.

To understand the self-initiated use of digital technology by the students in EMI contexts, the research borrows from Learning Culture Theory (Anderson-Levitt, 2002; Jin & Cortazzi, 2012) by which learning is understood to be a socially embedded practice attuned to shared meanings, institutional conventions, and cultural scripts. The theory is particularly suitable in the Vietnamese higher-education context in which global standards of pedagogy such as EMI confront local cultural and educational practices. The theory assists in elucidating how the students interpret and negotiate these crosscutting influences, especially in appropriating digital tools to establish PLNs. The theory guided the research orientation to everyday experience, cultural brokering, and socially mediated practices of learning and also shaped the study design and interpretative procedure.

In Vietnamese higher education, limited attention has been given to how EMI students independently navigate the linguistic and academic demands of these programs – particularly through the use of digital technologies. Existing research has largely focused on instructional practices and policy frameworks, often overlooking the informal, student-driven strategies that shape everyday learning experiences. This gap is especially relevant in contexts in which formal academic support may be limited, and students must rely on self-curated digital resources to succeed.

Situated within this context, the present study investigates how Vietnamese undergraduate students who are enrolled in EMI Economics programs use digital technologies to construct and navigate PLNs. It aims to understand how students draw on both institutional resources and informal digital practices to support their engagement with EMI coursework. Based on focus group interviews, the study addresses the following research questions:

How do Vietnamese EMI students use digital tools and social networks to develop personalized learning networks that support their learning?

Sub-questions:

- Which types of digital tools and platforms do EMI students use to support their learning, and how do they combine formal and informal resources?

- How do students exercise agency in curating and navigating their PLNs to address linguistic, academic, and social challenges in EMI contexts?

2. Literature Review

2.1 EMI and Students' Learning in EMI Settings

The global spread of EMI in higher education is largely driven by institutional and national goals such as attracting international students, enhancing global university rankings, and preparing graduates for participation in globalized labor markets. Doiz et al. (2011) identified three primary institutional motivations for EMI adoption: internationalization, graduate employability, and institutional prestige. Complementing this, Wilkinson (2011) categorizes EMI rationales into five areas – practical, survival, financial, idealistic, and educational – based on evidence from Maastricht University. These motivations reflect how EMI has become both a symbol and a tool of global competitiveness in higher education.

However, EMI implementation varies widely across national and institutional contexts. For example, in South Korea, EMI has been adopted particularly by elite universities as part of broader internationalization and branding efforts (Bolton et al., 2023). In China, EMI is frequently used to boost global competitiveness and expand into the international higher education market, often through centralized, top-down policymaking with limited grassroots consultation (De Costa et al., 2022). Such top-down approaches are common, and studies across Europe (Orduna-Nocito & Sánchez-García, 2022) and Asia (Galloway & Ruegg, 2022) have highlighted the gap between institutional EMI language policies and the practical realities and preferences of faculty and students. This often results in EMI being implemented due to institutional mandates rather than educator initiative or student choice, raising questions about pedagogical ownership and teacher agency (Yuan, 2021).

Nonetheless, research has found that the students are open to EMI if they perceive that EMI provides access to improved English proficiency and broader access to international academic resources. For instance, Lan (2022) found the international students in Taiwan perceived EMI as useful while they were obtaining academic communication skills. Similarly, Chinese and Qatari studies found that students perceive that EMI grants them access to future academic and career advancement (Graham et al., 2021; Li & Pei, 2024).

Although EMI is believed to have various advantages, learners commonly encounter serious problems involving academic content and language ability. In Chinese EMI, students have expressed difficulties involving academic terms, disciplinary terms, and conventions of writing, and these are likely to affect their general academic achievement (Li & Pei, 2024). As identified by Aizawa (2024), first-year EMI students commonly experience difficulties regarding understanding lectures and accommodating new academic expectations. Real-time listening comprehension, particularly when involving content-laden lectures, has been found to have cognitive demands that are unevenly distributed among learners (Ducker, 2024).

In order to deal with these difficulties, learners use a variety of strategies such as careful listening, structured notetaking, and group work. For instance, Yuan (2024) noticed that note-taking serves a central role in enabling EMI learners to process dense lecture information. In the Thai setting, Ngamchatturat et al. (2024) identified strategy-sharing, group reviewing, and individualized vocabulary journaling as common strategies used by learners to enhance comprehension and retention.

Using the learner's first language (L1) continues to be a common and effective facilitating strategy; it facilitates learners in developing deep conceptual understanding and filling the linguistic gaps, particularly regarding dense content in EMI classrooms (Cui et al., 2024; Karakaş, 2023). These results illustrate the importance of EMI pedagogy that not just conveys subject material but rather enhances academic literacy, language use, and strategic learning. An understanding of the multilingual and self-regulated nature of EMI learning itself can encourage teachers to develop more inclusive and effective pedagogy.

In Vietnam, EMI has similarly expanded as part of the national and institutional efforts to internationalize higher education; however, local studies reveal complex student experiences shaped by linguistic, technological, and cultural factors. Research has shown that while EMI programs are often policy driven, students demonstrate significant agency in adapting to academic and linguistic demands (Nguyen et al., 2024; Vo et al., 2022). Motivation and learner autonomy have emerged as key factors influencing success, with studies highlighting the role of self-determination (Degrave et al., 2023) and self-regulated use of digital tools (Vo, 2023).

Translanguaging practices are also common, as students strategically draw on Vietnamese and English to navigate content (Le Hoang Ngo, 2021). From a longitudinal view, Nguyen (2024) found that students' ability to succeed in EMI depends not only on language proficiency but also on their access to resources and cultural capital. These findings underscore the need for EMI approaches in Vietnam that recognize student agency and provide sustained academic and technological support.

2.2. Students' Use of Digital Technologies in EMI Settings

Digital technologies have become ever more central to higher education, particularly in EMI settings wherein they provide opportunities and challenges for pedagogy and learning. Current research highlights the variability in the level of digital literacy of EMI students and teachers, differing in the level of confidence and effectiveness with which teachers and students employ technology in academic ways (Vo, 2021). Within EMI classrooms, the use of digital tools can aid or impair learning, depending on how closely they align to pedagogic aims and learners' needs (Heugh et al., 2022).

Students use digital tools for a variety of purposes, including accessing course materials, viewing academic content, communicating with peers, and collaborating on assignments. However, this engagement is not always deep or

reflective. Vo (2021) observed that while many Vietnamese EMI students accessed LMSs and digital resources regularly, their use often remained task-focused, involving activities such as checking deadlines or downloading materials. This mirrors findings from broader EMI contexts in which students report using technology frequently but often require clear guidance from instructors to move beyond surface-level engagement (Lin & Tsou, 2025).

Moreover, Li et al. (2025) highlights the importance of structured technology training for both students and the faculty, emphasizing that digital empowerment enhances learner motivation, collaboration, and comprehension when EMI platforms are thoughtfully implemented. These observations emphasize the significance of strategic integration of digital technologies in EMI courses. Supported by pedagogy and institutional infrastructure, such technologies have the potential to foster deeper learning, encourage multilingual use, and enhance students' self-management of their studies.

A key development in this area is the emergence of PLNs, which are self-directed networks of peers, mentors, and digital tools curated by students to support learning (Trust, 2012). In EMI contexts, PLNs can help students navigate linguistic and academic challenges. Students engage with platforms such as blogs, YouTube, and social media to access content, to collaborate, and to reflect (Gaufman & Möller, 2022). Mhlongo et al. (2023) found that alignment with students' learning styles and support from teachers and peers encouraged adoption of these technologies. Furthermore, Vo (2023) showed that Vietnamese students used technology for self-regulated language learning outside class, demonstrating strategic use of PLNs to address EMI-specific challenges.

Despite these promising findings, systematic evaluation of digital integration in EMI remains limited. Querol-Julián and Camiciottoli (2019) argue that more rigorous assessment is needed to understand the impact of PLNs and digital tools on language and content learning. In short, while digital tools are widely used in EMI contexts, their effectiveness depends on purposeful integration. Hence, PLNs represent a promising means of supporting self-directed, context-sensitive learning, although more research is needed to explore their depth and pedagogical integration.

2.3. Learning Culture Theory in Higher Education

This study draws on Learning Culture Theory (Anderson-Levitt, 2002; Goh, 2021; Jin & Cortazzi, 2012) to examine how Vietnamese students in EMI settings use digital technologies. This perspective shifts the focus from individual learning styles or national educational traditions to the shared meanings, practices, and values that shape how people teach and learn in a particular setting. As Anderson-Levitt (2002) explains, learning culture includes "shared ways of thinking and behaving in educational settings" (p. 193), encompassing classroom practices, institutional norms, and students' and teachers' expectations.

Learning culture is dynamic and socially constructed. It is not simply inherited from national traditions but is continually shaped by context, policy, and

interaction. Jin and Cortazzi (2012) emphasize that learning culture is negotiated between all participants in educational contexts, including students, teachers, and administrators, and is influenced by broader sociocultural impacts. This view enables researchers to move beyond essentialist assumptions, for example, that Asian students are passive learners, and instead, consider how specific contexts shape students' learning experiences and choices.

In EMI contexts, learning culture becomes even more complex due to the interplay of local educational traditions, global academic norms, and the medium of English. Students are expected not only to engage with academic content in a second language but also to adopt new modes of learning such as critical thinking and independent study, which are often associated with Western education models. These expectations may conflict with local understandings of teaching and learning, leading to tensions, adaptations, or resistance (Yuan, 2021).

Besides Learning Culture Theory, the present study borrows from the important concepts in the field of learner autonomy and digital agency. Learner autonomy, according to Benson's (2016) definition, is the ability of learners to manage their own learning, including the making decisions concerning the resource, the way of approaching the task, and the aims of the investigation. In EMI contexts, autonomy is usually moderated by the use of digital tools, and the learners must proactively select and manage the routes of learning. Klemenčič's (2015) concept of student digital agency broadens the idea in terms of the capacity of the student to make intentional decisions regarding the application of technology in the complex environment of learning. Both ideas can be useful in understanding how EMI students self-organize the PLNs and negotiate the linguistic and academic obstacles in terms of self-direction.

This study takes a sociocultural view of learning culture, focusing on how Vietnamese students in EMI contexts navigate and negotiate the expectations of digital and English-mediated learning environments. Specifically, it examines how they adopt and adapt digital tools to construct PLNs, how they align (or do not align) with institutional norms of self-directed and autonomous learning, and how their strategies are shaped by shared understandings of success, language, and knowledge. In doing so, the study contributes to a more nuanced understanding of learning in EMI settings that recognizes students not as passive recipients of global educational practices but as active agents operating within locally situated learning cultures.

3. Methodology

This study adopted a phenomenological approach to explore the lived experiences of students in EMI courses, focusing on how they use digital technologies to navigate academic challenges. It specifically examined how students develop and use learning networks to support their academic success. Phenomenology is appropriate for research investigating subjective meanings and collective understanding of individuals within defined circumstances (Creswell, 2018). Considering the study's objective to identify how students experience and build PLNs to meet institutional, linguistic, and cultural

imperatives, a phenomenological lens enabled deep insights into students' perspectives and the role of digital tools in shaping their EMI learning experiences, offering rich qualitative data at the intersection of language learning and technology use. In addition, the use of Learning Culture Theory alongside concepts of learner autonomy (Benson, 2016) and digital agency (Klemenčič, 2015) influenced the design of the interview questions and guided the thematic analysis. The theories helped to identify how the cultural context of the students, the sense of responsibility, and technology decision-making come together in the formation of learning behaviors within EMI contexts.

3.1 Research Setting

The study was conducted at a public autonomous university in Vietnam that offers undergraduate programs in economics-related disciplines such as finance, accounting, business management, and marketing. Unlike many Vietnamese universities, EMI is integrated into mainstream programs rather than limited to international tracks. Since 2017, students in the High-Quality and Advanced Programs have received instruction in core subjects through EMI, with each course lasting 11–15 weeks and delivered via weekly three-hour lectures. To support language development, students also completed six modules of Business English that were taught using the Market Leader series and locally developed materials, emphasizing communication skills in professional contexts.

Students had access to a range of digital resources, including an e-learning system embedded in subject modules and individual accounts on English Discoveries Online (EDO) for self-paced language practice. In 2016, the university launched an LMS, enhancing access to learning materials, discussions, and blended activities. Classrooms were equipped with multimedia tools, and students had access to campus-wide Wi-Fi and the e-library, reflecting institutional efforts to promote independent, technology-supported learning in EMI environments.

3.2 Participants

Participants were undergraduate students enrolled in EMI programs across economics-related disciplines. While the study did not seek to compare participants based on demographic variables, the sample was purposively selected to ensure diversity in academic majors, years of study, and digital experience. However, individual differences in English proficiency, economic background, or technology access were not separately analyzed, as the focus remained on shared lived experiences across participants rather than subgroup comparisons. Students were recruited from EMI classes recommended by subject teachers, and 26 students were initially selected.

After two withdrew, 24 students participated in four focus groups. The final sample included 15 females and 9 males aged 18–20 years. Eighteen participants were third-year students and six were in their first year. Participants represented majors such as accounting, marketing, finance, and business management. The participants also represented a range of self-reported English proficiency levels and academic performance. Some students were highly confident and digitally fluent, while others had limited prior exposure to using digital platforms for academic purposes. This variation allowed for a richer understanding of how

different learners construct PLNs to meet their EMI-related needs. Informed consent forms were signed prior to participation.

3.3 Research Instrument

Focus group interviews were the primary data collection method, chosen for their ability to generate rich insights through group interaction (Harskamp & House, 2019). This method encouraged participants to share diverse perspectives and explore collective and individual experiences with digital technologies in EMI settings (Guest et al., 2017). As the study adopted a phenomenological approach, focus groups were particularly appropriate for capturing the lived, socially co-constructed nature of students' experiences in developing PLNs. The interactive nature of the focus groups allowed the participants to reflect, elaborate, and build upon each other's comments, revealing how learning is negotiated and shaped through peer dialogue, which is a key aspect of EMI learning in digitally mediated environments.

Interview questions were shared with the participants via email three days in advance. Discussions were scheduled at mutually convenient times and locations. All sessions, with 5–7 participants in each session, were conducted in Vietnamese to ensure participants' comfort and authenticity in expression. Each focus group lasted 45–60 minutes, was audio-recorded with permission, and followed agreed-upon ground rules to ensure respectful dialogue. Recordings were transcribed, and summaries were shared with participants for member checking to verify the accuracy of the interpretations.

3.4 Data Analysis

Data were thematically analyzed using both manual methods and NVivo 11 software to manage and code the transcripts. An abductive approach (Hurley et al., 2021) guided the analysis, allowing us to generate themes from the data while interpreting them through theoretical constructs from Learning Culture Theory and digital agency. Thematic analysis followed the framework of Clarke and Braun (2017) and was structured through the four-phase process of Vaismoradi et al. (2016): initialization, construction, rectification, and finalization. This iterative process helped to identify both common patterns and distinctive elements in students' experiences with digital tools in EMI learning.

The study was conceptually informed by Learning Culture Theory, affecting its methodology and its analysis. Viewing the students as agents operating in institutionally and culturally structured learning contexts, the phenomenological study design was used to determine how the student makes sense in EMI contexts. The theory informed the development of the interview questions revolving around the values, behaviors, and socialization of the students and the interpretation of the evidence in terms of collective practices, agency, and cultural adaptation.

3.5 Trustworthiness

Lincoln and Guba's criteria of credibility, dependability, confirmability, and transferability were applied to ensure trustworthiness (Adler, 2022). Credibility was enhanced through prolonged engagement, member checking, and accurate

representation of participants' experiences. Dependability was supported by consistent procedures and a code-recode strategy during the analysis. Reflexivity and a research journal helped to maintain confirmability, while thick descriptions of context and participant quotations enabled readers to assess transferability.

As part of the process of reflexivity, we undertook a reflexive journal during data gathering and analysis. In the journal, we recorded assumptions, development of interpretations, and coding- and thematic-development decisions. Systematic reflection assisted us in remaining alert to our own role as lecturers in a parallel EMI context, and how this might influence data interpretation. Member checking was similarly used: a summary of the discussion of each focus group was returned to the participants to ensure the representation was correct and misinterpretation was reduced. Each of these steps assisted in the research becoming credible, confirmable, and trustworthy as a whole.

3.6 Ethical Considerations

Ethical integrity was maintained through informed consent, confidentiality, and the building of participant trust. Students received information sheets and were informed of their right to withdraw, after which they provided written consent. Interview recordings were conducted with permission and stored securely. Participants were anonymized using codes, and all identifying information was withheld. Summaries of the discussions were returned to the participants for validation, thus ensuring accurate representation of their views.

4. Findings

One salient theme that emerged from the focus group discussions was the way students constructed and relied on PLNs to support their learning in EMI Economics courses. These networks were organically formed and were multifaceted, comprising both human and digital resources that students selectively accessed to overcome linguistic and disciplinary challenges.

4.1 Collaborating with Peers and Engaging in Informal Class Communities

All students reported participating in informal learning networks with their classmates, most commonly through class-specific Facebook groups. These groups served as interactive platforms for information exchange, assignment discussions, and emotional support. The students valued the peer-led nature of these groups in which they could engage in open discussion without the presence of instructors:

"We all use Facebook to chat and exchange information. The class monitor often posts announcements from the teachers. Everyone can raise questions, share opinions, and discuss assignments. We do not add our teacher into this group so that we can speak comfortably." (Student 1 - Focus Group 4)

This finding highlights the student's agency in creating safe, peer-managed digital spaces for collaborative problem-solving, which served as a crucial supplement to the formal learning environment.

4.2 Seeking Advice from Broader Social Networks

Beyond their immediate peer groups, students actively engaged with wider social and academic networks, including senior students, alumni, and subject-specific online communities. Many joined public or private Facebook groups and other online forums where they could interact with individuals who had prior experience with EMI courses or specialized knowledge in economics:

"It is easier to talk to others in virtual social groups. In the groups that I joined, everyone is willing to share their opinions and experience. I learn a lot from them. Some people even contact me privately to offer help or extra information." (Student 3 – Focus Group 1)

These interactions reflect a growing tendency among EMI learners to use digital platforms not only for academic support but also for networking and informal mentoring, thus expanding their access to practical insights and diverse perspectives.

4.2.1 Combining Formal and Informal Communication Channels

In the study, students demonstrated a clear distinction between formal and informal communication channels and used both to optimize their learning experience in the EMI context. While Facebook and online forums were frequently chosen by the students for informal peer interactions such as discussing ideas, sharing resources, and providing emotional support for one another, LMSs and email were predominantly used for formal communication with teachers and academic consultants. This dual-channel approach reflected the students' ability to navigate the academic environment effectively by engaging in more casual, collaborative discussions with their peers while also seeking professional, structured guidance for academic matters. One student remarked,

"I prefer Facebook for quick questions or sharing notes with friends, but when it comes to assignments or clarifying something with my professor, I always use LMS or email. It's like we know where to find the right support – Facebook for peer help, LMS for official things." (Student 2 – Focus group 2)

This distinction highlights how students manage their learning through a blend of both formal institutional structures and informal community-driven resources, allowing them to address various aspects of their coursework and their personal learning needs.

While most participants valued the flexibility and autonomy offered by PLNs, some also expressed frustration with the overwhelming volume of digital resources and the difficulty in evaluating their credibility. One student noted, *"Sometimes, I just Googled things and found answers on Reddit or random websites, but I wasn't sure if it was right."* Another participant reflected, *"There's so much stuff shared in our Zalo group that I don't know what to focus on anymore – it gets confusing."*

These comments highlight that although PLNs enable self-directed learning, they also demand a high level of critical digital literacy, which not all students have fully developed. Moreover, the informal nature of many digital learning sources sometimes made students question the academic reliability of what they were

using. In some cases, this led to reliance on peer summaries or past assignments, which, while convenient, might not always align with current course requirements.

4.2.2 Offline Interaction and Face-to-Face Preferences

Despite the convenience of digital tools, several students still expressed a preference for face-to-face communication, particularly when working on group assignments. Students often formed study groups outside class hours and participated in student-run academic clubs, which provided structured opportunities for discussion and knowledge-sharing:

"My economics club meets every two weeks to discuss different topics. We sometimes organize quiz shows or competitions related to our subjects. The members in the club always share with each other their experience and useful materials." (Student 4 – Focus Group 3)

These offline interactions offered a sense of belonging and community, which enhanced students' motivation and engagement with EMI content.

4.2.3 Workplace Networks as Learning Resources

Interestingly, one student preferred to limit her engagement in online academic groups, citing concerns about information overload. Instead, she relied on communication with her colleagues and supervisor at her part-time job who provided practical advice that closely aligned with her academic needs:

"I like communicating with my workmates and my supervisor in my part-time job. They often give me advice related to my subject, which is often practical and applicable to what I am dealing with. I can also improve my communication skills and expand my network." (Student 5 – Focus Group 1)

Sharing this point, several students described how their part-time jobs, internships, or professional contacts served as valuable components of their PLNs. These workplace networks were not only sources of technical or disciplinary knowledge but also spaces where students could practice English in more authentic contexts. One participant shared, *"When I didn't understand an economics term in class, I asked my supervisor at work who explained it in English with real examples."* Another noted, *"In my internship group chat, people shared reports and articles that helped me understand what my lecturer was talking about."*

These examples illustrate that students' learning extended beyond formal classrooms and peer groups into semi-professional domains. However, such access varied depending on students' work experience and confidence in using English professionally, suggesting a need for institutional scaffolding to help students use these networks more equitably. This case illustrates how workplace-based learning networks can serve as valuable extensions of PLNs, especially for students seeking real-world applications of economic concepts.

Overall, students demonstrated a high degree of initiative and digital literacy in forming and managing their PLNs. These networks included digital platforms (e.g., Facebook, LMSs), personal relationships (e.g., peers, mentors, colleagues),

and institutional supports (e.g., academic advisors, clubs). Moreover, PLNs enabled students to compensate for EMI-related challenges by creating multidimensional support systems tailored to their individual needs. While most students valued the flexibility and reach of online networks, others preferred selective or face-to-face interactions, indicating that personalization also involved selecting, filtering, and balancing sources of input. This finding suggests that EMI learners are not passive recipients of instruction but active agents in constructing distributed learning ecosystems that extend far beyond the classroom.

Specifically, although most students accepted peer-oriented digital collaboration, others manifested overt variation in approaches. One respondent proactively excluded online academic forums to avoid being overwhelmed by information and relied on office mentors instead. Others opted for face-to-face study groups over online communication because of skepticism regarding the trustworthiness or affective tone of online communication. These contrasting cases reflect the scope of students' digital dispositions and the proactive stance they assumed in choosing networks that were appropriate for their cognitive and affective needs. These variations point to the scope of PLN behaviors from socially embedded to individualized, providing evidence of the non-uniform acceptance of digital engagement to being purposefully negotiated.

5. Discussion

This study highlights the vital role of students' PLNs in navigating the challenges of EMI courses. Through the lens of Learning Culture Theory, which views learning as socially and culturally situated (Lave & Wenger, 1991), these findings underscore that learning is not merely individual but is shaped through community interactions and contextual engagement.

Students in this study demonstrated strong agency and autonomy by actively seeking strategies and resources to adapt to EMI challenges. Their use of digital technologies to build and maintain PLNs reflects Van Lier's (2008) notion of agency as the ability to act and take responsibility within a learning environment. Students engaged with both formal tools (e.g., LMSs, email) and informal platforms (e.g., Facebook, online forums), showcasing a dual-channel strategy for academic and peer support. This interplay between individual and collective agencies illustrates how students used both formal and informal resources to create socially situated learning environments. In line with Lave and Wenger's (1991) concept of communities of practice, this dual approach fostered a sense of ownership and agency, enabling students to navigate language barriers and academic content more effectively.

The adoption of both formal (e.g., LMSs, institutional email) and informal (e.g., Facebook, messaging apps, online forums) digital platforms to construct PLNs align with recent studies that show how EMI students use a combination of structured and socially driven tools to support academic engagement. For example, Vo (2021) found that Vietnamese EMI learners regularly navigated between official university platforms and informal digital spaces to manage their studies and to seek peer support. Similarly, Yu et al. (2021) observed that students

in Macau created and maintained digital communities beyond the classroom, drawing on trusted peer networks to clarify concepts, exchange materials, and manage emotional stress.

Building on these insights, the current study extends existing work by showing how EMI students intentionally balance formal, institution-sanctioned resources with peer-driven, informal channels, assigning each a distinct communicative or affective function. In particular, students often segregate formal and informal platforms, reserving peer-led networks for emotional safety, academic solidarity, and flexible communication, often excluding instructors to maintain psychological comfort and autonomy. This pattern reflects a nuanced strategy of boundary management in multilingual digital learning environments.

Self-efficacy also emerged as a key factor in students' proactive learning. Students' confidence in managing EMI demands, despite linguistic challenges, aligns with the view of Bembenuddy et al. (2024) that self-efficacy fuels motivation and persistence in learning. Digital competence further strengthened students' confidence. Their ability to navigate LMSs, social media, and various online resources reflects the definition of Vuorikari et al. (2022) of digital competence as the skills, knowledge, and attitudes required for effective digital engagement.

This competence enabled students to personalize learning experiences and practice self-regulated learning, consistent with the findings of Saeheng (2017) on technology-supported autonomous learning. Moreover, multimodal platforms such as videos, podcasts, and forums enhanced engagement and comprehension, allowing students to interact more deeply with academic content. These findings resonate with Sabaté-Dalmau and Moncada-Comas (2023) who stress the benefits of multimodal resources in EMI contexts.

Students benefited from multimodal learning environments that facilitated both language development and content mastery. The integration of text, visuals, and interactive media helped to bridge linguistic and academic gaps, supporting a more holistic learning experience. This approach aligns with research on Content and Language Integrated Learning (CLIL) and EMI that emphasizes the value of multimodal input for comprehension and retention (Hyon, 2017; Lo & Lin, 2015). Students also used digital platforms for peer collaboration, indicating a shift from individual to collective agency. Their learning networks enabled interaction, negotiation of meaning, and co-construction of knowledge, which are hallmarks of communities of practice.

The findings also revealed that students in EMI contexts were not passive recipients of information. They exercised individual agencies through digital tools and collective agencies through peer collaboration. This supports Klemenčič's (2015) argument that contemporary higher education empowers students to take control of their learning by selecting resources and strategies that meet their needs. Collective agency was especially visible in group tasks in which more proficient students often led and supported others. These peer-supported activities illustrate how collaborative learning helped students to overcome

language challenges and to build a sense of community. Such digitally enabled learning networks are key to fostering shared responsibility and enhancing the overall EMI experience.

Correspondingly, the outlier cases of students preferring offline practice in learning clubs or practice in the workplace complicate the picture. These students appeared to prefer depth overreach or familiarity over scale in the construction of their network. Their selective participation would mean filtering according to individual comfort, cognitive demand, or informational trust. This would reflect the idea that although digital technologies offer broad opportunities for networked learning, these students would negotiate the options in different ways based on individual preference, perceived effectiveness, or prior experience. Recognizing these forms of variation further complicates the conception of digital agency in EMI contexts.

Whereas PLNs grant students flexibility and peer support, our data indicated significant challenges that aligned with the concerns of recent studies. Students expressed confusion about the credibility of information obtained through informal channels such as social media, echoing the finding of Nguyen and Habók (2021) that the digital literacy of English as a Foreign Language / English-Medium Instruction (EFL/EMI) students in Vietnam is significantly varied and has a negative impact on their critical use of online sources.

Furthermore, the majority of the students expressed feeling overwhelmed by the abundance of shared sources – phenomena aligned with Skulmowski and Xu's (2022) characterization of 'cognitive overload' online. Holistically, these issues present a strong case for EMI programs to install structured digital literacy courses, as encouraged by Pham and Nguyen (2022), to enable the students to appraise information critically and effectively integrate institutional and informal instruments into their PLNs.

6. Conclusion

This study explored how students in EMI courses develop PLNs using digital technologies to navigate language-related challenges. The findings revealed that students demonstrated high levels of autonomy and digital competence by constructing networks that spanned both formal tools (e.g., LMSs, email) and informal platforms (e.g., Facebook, online forums). This dual-channel approach facilitated meaningful peer and instructor interactions, supported self-regulated learning, and enhanced learners' sense of self-efficacy.

Framed by Learning Culture Theory, the study contributes to the growing body of EMI research by illustrating the central role of student agency in co-constructing digitally mediated learning environments. It highlights how students' digital competence not only supports individual autonomy but also fosters engagement and collaboration in linguistically and culturally complex settings. By foregrounding students' strategic use of both institutional and social technologies, the study offers a more nuanced understanding of how EMI learners adapt to academic demands through personalized digital pathways.

In addition to its theoretical advances, the study holds practical implications for practice and policy. For teachers, the study highlights the need to recognize and integrate students' self-directed strategies for their PLNs into course lessons. Educators can complement students' use of informal sites by facilitating blended activities offering peer-to-peer collaboration, emphasizing responsible use of social media and helping students to organize academic materials online. Challenging students to reflect on their strategies for their PLNs as part of the courses could similarly promote wider metacognitive awareness and independent practice.

Institutionally, policy planners and curriculum designers must think about integrating digital literacy courses for both students and teachers as a core part of EMI programs. Teacher education programs must train EMI teachers to take notice of and capitalize on the learners' digital habits while facilitating equitable access to technological resources. Additionally, policies facilitating the blending of formal and informal learning spaces through investments in shared online platforms, analytics, and multilingual online content can improve the responsiveness and inclusivity of EMI programs. In understanding the student as an active agent of the digital classroom, institutions are encouraged to reconsider the hard boundaries of curriculum delivery and to adopt a newer, more flexible, and networked model of learning that is better attuned to 21st-century EMI premises.

Despite its valuable insights, the study is limited by its specific contextual focus and reliance on self-reported data. In particular, the exclusive use of focus group interviews without incorporating other sources such as classroom observations, behavioral tracking, or digital usage analytics may constrain the external validity of the findings. While this is consistent with the study's phenomenological orientation of seeking depth of lived experience, future research would benefit from methodological triangulation. Mixed-method or longitudinal studies incorporating digital footprints, classroom ethnography, or platform-based analytics would offer a more comprehensive and generalizable understanding of how EMI students construct and engage with their PLNs across time and contexts.

The findings are also limited by the specificity of the sample. All participants were enrolled in economics-related EMI programs at a single Vietnamese university, which may constrain the transferability of results to other academic or cultural settings. While this focus allowed for a coherent analysis of disciplinary learning cultures, future research could broaden the scope to include students from multiple institutions and diverse disciplinary backgrounds. Comparative studies across fields such as engineering, humanities, or health sciences within or beyond Vietnam would help to determine whether similar patterns of PLN construction and digital engagement hold across different EMI contexts.

Additionally, focusing on shared tendencies in a narrow, context-based sample may have downplayed more differentiated or contradictory experiences. For instance, quieter participants in focus group interviews might have different views about digital learning that were not shared. Moreover, our theoretical

framework centered on agency and learning culture imposes certain accounts of learner autonomy and use of digital media. Future work could employ alternative lenses such as institutional analysis of discourse or critical digital literacy to reveal relationships of power, inequalities of access, or system-level limitations of EMI digital practices. These additional viewpoints, in turn, would further enrich the digitally mediated understanding of what it means to learn in multilingual settings.

Ultimately, this study advances understanding of how EMI students actively shape their learning experiences through digital means and offer actionable guidance for creating more responsive, inclusive, and effective EMI practices in global higher education.

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