

Article

Teacher Collaboration Networks and Labor Market Alignment in Modern Teacher Training

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Abstract

The teaching profession increasingly demands complex competencies, including collaboration, professional networking, and adaptability, beyond subject-specific knowledge, due to rapid educational, technological, and labor market changes. This study addresses the limited national data on the professional relational capital of teacher education students and examines how relational networks affect professional identity, commitment, and retention. A pilot questionnaire was developed from focus group interviews conducted in spring 2024 at the University of Nyíregyháza and analyzed with ATLAS.ti 7. The instrument includes four dimensions: parental influence, initiative during high school, initiative during university, and future employment plans, with indicators such as place of residence, cooperation patterns, network durability, domestic and international collaborations, and professional aspirations. Results indicate that students' relational networks are central to early professional socialization and engagement in collaborative teaching communities. Mapping these networks offers diagnostic and developmental insights, supporting targeted mentoring, inter-institutional cooperation, and international mobility. Findings suggest that deliberately developing relational capital during teacher training enhances professional preparedness, satisfaction, and retention. Overall, the study highlights the value of integrating professional networking and collaborative competencies into teacher education to promote sustainable career paths, align training with labor market expectations, and strengthen the quality, resilience, and long-term sustainability of the teaching workforce.

Keywords: professional capital; collaboration; teacher training; pilot questionnaire



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1. Introduction

In the context of our country's educational workforce, there are substantial vacancies, accompanied by a high proportion of teachers who are elderly, approaching retirement, or already retired. While these challenges may be partially mitigated by the growing number of young people entering teacher education programs, sustaining the attractiveness of the teaching profession remains a crucial issue. Although signs of positive change are emerging, fluctuations in recent years have further complicated the stability and professional functioning of the field. Broader labor market dynamics have also affected the teaching profession, as evolving demands increasingly highlight the importance of not only disciplinary knowledge but also transferable skills and competencies. These include the ability to collaborate effectively within and beyond the school environment, as well as across national borders (Mrázik, 2021). The teaching profession now requires increasingly complex knowledge and a diverse skill set. In particular, the development and application

of collaborative capacities have been linked to teacher retention. Strong professional collaboration fosters commitment to both the school and the career, thereby enhancing teacher persistence (Kraft et al., 2016; Vangrieken et al., 2015). Teaching thus presents challenges not only from pedagogical but also from psychosocial and labor market perspectives. Consequently, cultivating flexibility, adaptability, and resilience is essential for preparing future teachers. Equally important is the deliberate formation of a professional identity and the opportunity to engage with supportive professional communities. Higher education plays a pivotal role in this process, as teacher education programs constitute the foundation of professional socialization. Practices such as cooperative learning, project-based collaboration, and structured reflection help sustain pre-service teachers' commitment in the face of career challenges. Moreover, regular professional feedback, mentoring, and networking opportunities can further support teachers in establishing long-term professional belonging and in shaping the future of education as active and resilient participants.

2. Theoretical Background

In the twenty-first century, the redefinition of the teaching profession has placed particular emphasis on collaboration among teachers and the role of professional learning communities. The OECD (2025) report underscores that declining levels of teacher support represent a challenge across many education systems; reversing this trend requires a deliberate strengthening of collaborative practices both within teacher education and in schools more broadly. The literature consistently highlights that teacher collaboration not only enhances professional effectiveness but also reinforces teachers' professional identity, commitment, and retention (Vangrieken et al., 2015; Hargreaves & Fullan, 2012; Khasawneh & Khasawneh, 2023; Christensen & Moser, 2025). Increasingly, collaborative relationships, shared learning, and collective problem-solving are viewed as prerequisites for high-quality pedagogical practice. The long-term sustainability of the teaching profession is closely linked to the ongoing development of teacher identity. Scholarship emphasizes that teacher identity is not a fixed attribute but rather a dynamic process, shaped by interactions among colleagues, the school environment, and institutional expectations and supports (Beauchamp & Thomas, 2009; Zhang, 2024). This process fosters not only individual professional growth but also school cohesion and pedagogical innovation. Supporting collaboration among teachers is therefore a central factor in ensuring school success. Beyond promoting professional support and retention, collaboration also serves as a critical driver of pedagogical innovation, influencing and reshaping institutional culture (Vangrieken et al., 2015). Institutional culture, in turn, exerts a significant impact on the depth and quality of teacher collaboration, particularly in the context of globalization and rapidly shifting educational policy demands. Given the diverse cultural, economic, and social contexts in which education systems operate, the forms and outcomes of teacher collaboration vary considerably. As a result, approaches tailored to local conditions are essential for strengthening both teacher development and the broader effectiveness of schools (Pang & Wang, 2016).

International perspectives on collaboration offer a range of models for strengthening teacher development. The concept of Professional Learning Communities (PLCs) first emerged in Anglo-Saxon countries (DuFour & Eaker, 1998), but adaptation processes are now evident in Asian contexts as well. OECD PISA data indicate that professional collaboration among teachers and collective learning within schools play a decisive role in the success of high-performing education systems such as Singapore, South Korea, and Hong Kong (OECD, 2013; Jensen, 2012). Effective PLCs reinforce teacher identity by creating opportunities for joint inquiry, the exchange of experiences, and critical reflection (DuFour, 2004; Christensen & Moser, 2025). Within these communities, teachers

not only learn from one another but also redefine their professional roles and commitments (Darling-Hammond & Bransford, 2005). Consequently, the role of school leadership extends far beyond organizational management to encompass the cultivation of a collaborative learning culture. PLCs cannot operate effectively without leadership support, as leaders are responsible for fostering a shared vision, building trust, and facilitating continuous professional development. Comparative international research suggests that decentralized, trust-based school systems—such as those in Finland and Canada—are more effective at balancing teacher autonomy and collaboration than centralized, control-oriented models (Sahlberg, 2011). This finding underscores that the effectiveness of PLCs is closely tied to the structural and cultural features of specific education systems, highlighting the need for pedagogical practices to be adapted carefully to local contexts.

Successful professional learning communities not only acknowledge but also actively utilize member diversity as a resource. Experienced teachers with decades of practice can serve as mentors, while novice teachers contribute fresh knowledge and new perspectives to community development (Feiman-Nemser, 2001). Such reciprocal support and knowledge sharing not only foster the advancement of professional competencies but also contribute to the renewal and long-term sustainability of the teaching profession. Embracing professional diversity enhances creative problem-solving and strengthens the overall quality of education (Wenger, 1998). Schools in which leadership deliberately promotes collaboration and provides sufficient time and resources for joint professional work achieve markedly better outcomes in terms of both teacher satisfaction and student performance (Katzenmeyer & Moller, 2009; Vescio et al., 2008; Khasawneh & Khasawneh, 2023). Intergenerational knowledge transfer thus becomes a mutually beneficial learning process that supports professional development and deepens engagement. This process is particularly valuable in schools with high teacher turnover, where guidance from more experienced colleagues can play a decisive role in retaining and supporting younger teachers (Smith & Ingersoll, 2004).

The study of teacher collaboration provides critical insights not only into teacher performance but also into teacher retention. Research indicates that the level of support received from colleagues during the early years of teaching is a key determinant of retention (Smith & Ingersoll, 2004). Professional isolation and feelings of loneliness frequently contribute to burnout and attrition. In contrast, supportive professional communities, structured opportunities for reflection, and mutually reinforcing professional relationships create a psychosocial safety net that mitigates the risk of leaving the profession (Johnson et al., 2012; Vangrieken et al., 2015). Collaboration exerts a significant influence on both job satisfaction and retention. Kraft et al. (2016) found that teachers engaged in active professional learning communities are less likely to leave the profession due to a stronger sense of connection to their school and work. This aligns with Hargreaves and Fullan's (2012) theory of professional capital, which emphasizes the integrated development of professional knowledge, collaborative skills, and decision-making competencies throughout teacher education and professional career. Professional capital comprises three interrelated dimensions: human capital (professional knowledge and skills), social capital (networks and collaboration), and decisional capital (judgment and autonomy). According to this framework, teaching communities operate effectively when these forms of capital mutually reinforce one another in everyday pedagogical practice. The objective of teacher education and ongoing professional development is the deliberate cultivation of this triple capital, which ultimately supports the qualitative renewal of the teaching profession. Prior research also highlights that teacher retention and professional growth largely depend on the accumulation of social and professional capital, nurtured through open, diverse professional networks and opportunities for professional

self-realization (Hornyák & Pusztai, 2022; Zhang, 2024). Accordingly, developing the professional network capital of pre-service teachers in higher education is essential to securing a sustainable future workforce, particularly in light of the challenges posed by teacher turnover.

Professional learning communities thus play a pivotal role not only in fostering pedagogical innovation but also in reinforcing teacher identity and sustaining engagement within the profession. It is imperative that both educational institutions and higher education programs actively support teacher collaboration by providing appropriate structures, resources, and opportunities, while also acknowledging the social dimension inherent in professional learning (Christensen & Moser, 2025; Khasawneh & Khasawneh, 2023).

2.1. Challenges and Opportunities in Teacher Education: Professional Relationships and Cooperation for the Professional Development of Teachers

The teaching profession today faces increasingly complex challenges that can only be effectively addressed through a comprehensive, well-structured, and continuously evolving teacher education system. Evolving labor market expectations and the multifaceted nature of the profession necessitate that teacher education extends beyond the mere transmission of theoretical knowledge to include the development of pedagogical skills, collaborative competencies, and emotional intelligence. Collaboration skills have become essential for teachers, enabling effective professional practice not only within schools but also in international contexts. The cultivation of these skills not only expands professional knowledge but also significantly influences teacher commitment and retention (Vangrieken et al., 2015; Johnson et al., 2012; Khasawneh & Khasawneh, 2023; Christensen & Moser, 2025; Zhang, 2024). Hargreaves and Fullan's (2012) theory of professional capital underscores that teacher success and satisfaction are shaped not only by individual knowledge and skills but also by active engagement in professional communities and collective learning. Teacher education has a responsibility to foster these elements, preparing educators who can actively participate in professional communities, build supportive networks, and engage in continuous professional development. Empirical evidence further supports the importance of teachers' professional relational capital, cultivated through diverse networks, commitments, and opportunities for self-realization during higher education, in sustaining motivation and professional persistence (Hornyák & Pusztai, 2022). Extracurricular initiatives, cross-border professional relationships, and personal development activities all contribute to sustaining engagement and enhancing teachers' resilience in the face of professional challenges.

Furthermore, international experience has underscored the significance of professional learning communities, commonly referred to as Professional Learning Communities (PLCs). These communities provide not only opportunities for knowledge sharing and collaboration but also for joint problem-solving, innovation, and support for both personal and professional development. It is particularly important to deliberately integrate the concept of PLCs into teacher education programs, as international research in contexts such as China, Hong Kong, and South Korea has demonstrated that these communities contribute to teachers' job satisfaction, student achievement, and retention (Pang & Wang, 2016; Wang, 2015; Park & Kim, 2014). Consequently, teacher education should prioritize the cultivation of professional capital, collaboration, and engagement in professional learning communities. These elements not only enhance the quality and efficiency of teachers' work but also serve as crucial mechanisms for sustaining teaching careers and improving retention. A teacher education system that actively supports professional development, collective learning, and networking can reduce turnover, increase the attractiveness of the profession, and contribute to long-term improvements in educational quality (Khasawneh & Khasawneh, 2023; Christensen & Moser, 2025; Zhang, 2024).

2.2. The Transformation of the Teaching Career in Light of the Challenges of the Labor Market: The Importance of the Network in Professional Development

Examining the professional networks of teacher education students is particularly important in light of current labor market demands, as the teaching profession has become an increasingly complex and dynamic career. Owing to changes in education systems, digitalization, and globalization, the role of the teacher extends beyond knowledge transmission, encompassing the development of a new type of professional career in which collaboration skills, professional networking, and continuous learning are central.

Labor market expectations increasingly require teachers to function not only as independent professionals but also as active members of well-functioning professional communities (Mrázik, 2021). Investigating the networks of teacher education students thus provides insight into the extent to which they are already building supportive and professional resources during their training, which promote work effectiveness, adaptability, and ongoing professional development in a changing labor market (Hargreaves & Fullan, 2012). A strong and diverse network of contacts not only offers support in the early stages of a teaching career but also contributes to retention and the adoption of professional innovations and best practices (Hornyák & Pusztai, 2022). A defining feature of this new type of professional career is that teachers do not work in isolation; rather, they are active participants in professional learning communities (PLCs) where they share experiences, address challenges collaboratively, and work together on solutions (Vangrieken et al., 2015). Such collaborative engagement enhances the quality of teaching practice while increasing job satisfaction and professional commitment, which are critical factors for teacher retention (Kraft et al., 2016). Therefore, consciously developing the professional networks of teacher candidates early in their education can lay the foundation for a collaborative culture that is increasingly valued in contemporary labor markets.

The labor market increasingly values teachers who can adapt to complex challenges, continuously innovate, and actively engage in professional communities, including at the international level (OECD, 2013). In this context, network capital—that is, teachers' professional contacts—plays a pivotal role, as it provides access to the latest research, innovative teaching practices, and professional support (Hornyák & Pusztai, 2022). Accordingly, teacher education should place particular emphasis on cultivating students' professional networks, facilitating entry into professional communities, and fostering effective collaboration, all of which contribute to the long-term success of teaching careers and enhance adaptability within the labor market.

Examining and developing the networks of teacher education students is therefore essential not only for professional development but also for meeting labor market expectations and shaping a new type of collaborative teaching career. This approach enhances the attractiveness of the teaching profession for young people, reduces turnover, and supports the sustainability of teacher education and the broader education system in a continually evolving, complex social and economic environment.

3. Methods

Developing a questionnaire to examine the professional networks of teacher education students is of particular importance, as it enables the collection of objective, structured, and reliable data on the scope and quality of professional relationships. Networks are a complex phenomenon that manifest across multiple dimensions, including professional support, collaboration, mentoring, and both formal and informal interactions. Consequently, a systematic measurement tool is required to capture these factors effectively. The questionnaire provides insight into the extent and quality of students' participation in professional networks, the types of relationships they maintain, and the influence of these connections

on motivation, professional development, and retention. Such knowledge is critical for teacher education programs to respond effectively to labor market expectations, as contemporary professional career development involves not only the acquisition of knowledge and skills but also the cultivation and expansion of professional relationships. Moreover, the measurement tool facilitates comparative analyses of students' networks across different institutions and regions, contributing to the enhancement of teacher education programs and the design of targeted support systems. Data derived from this approach allow for a deeper understanding of the factors that foster professional commitment and retention among students, ultimately supporting the strengthening of the teaching profession and mitigating teacher shortages.

The questionnaire was informed by a focus group interview conducted with 12 teacher education students at the University of Nyíregyháza, Hungary, who participated on a voluntary basis, in the spring of 2024. A focus group of 12 participants can be considered sufficient for the development of the pilot questionnaire, as the aim of this qualitative inquiry was not statistical generalization or representativeness, but rather the exploration of relevant experiences, themes, and dimensions. This method provided students with the opportunity to freely express their thoughts within a guided framework. The number of participants ensured the inclusion of diverse perspectives and experiences, while still allowing the discussion to remain both manageable and in-depth. In qualitative research, sample size is determined by the principle of saturation: data collection continues until no new themes or insights emerge, which is typically achieved with 10–15 participants (Krueger & Casey, 2014). International studies in the field of educational research also frequently employ samples of a similar size when preparing questionnaires or investigating pedagogical phenomena (Brinkmann & Kvale, 2018). This sample size is methodologically appropriate at the pilot stage, as it enables the establishment of a coding framework and secures the content validity of the questionnaire. Using ATLAS.ti 7 text analysis software, the resulting system of codes and subcodes within the code families delineated the thematic structure of the pilot questionnaire.

4. Results

Preparing for a teaching career involves not only acquiring professional knowledge but also developing a network of personal and professional relationships. Teaching is increasingly recognized as a social and collaborative profession (Hargreaves & Fullan, 2012), making it essential for teacher education to emphasize factors that support students' professional connections and integration into learning communities. Achieving this requires a reliable and validated measurement tool capable of capturing the multiple dimensions of relational capital.

Interview research revealed four principal dimensions in the formation of students' professional networks: the influence of the parental home, the initiative characteristic of high school years, the initiative characteristic of higher education, and considerations related to future employment. Analysis of focus group data, converted into text and examined using ATLAS.ti 7 software, identified specific indicators within each dimension. For the influence of the parental home, the indicators included place of residence, the need to expand contacts, the supportive role of the parental network at each educational stage, and the significance of parental networks in relation to future employment. Concerning the initiative demonstrated during high school, additional indicators comprised the degree of initiative, forms of collaboration with school libraries, the effectiveness of these collaborations, and the durability of established contacts. In the context of higher education, indicators encompassed the degree of initiative, the fertilizing effect of secondary school networks, the importance of expanding professional networks, strategies for developing

network capital, collaboration with domestic and international peers, challenges in forming professional networks, opportunities for knowledge expansion, and the formulation of future plans. Finally, indicators related to future employment included intentions to pursue a teaching career after graduation, the importance of establishing collaborative relationships with other teachers, the role of expanding professional networks, and plans for continuing further studies. Based on these dimensions and indicators, the questionnaire was developed (Appendix A). Table 1 provides a summary of the dimensions and indicators constituting the questionnaire, with the third column indicating the number of corresponding questions.

Table 1. Dimensions, indicators of the research and the questions and variables that form the basis of the results.

<i>Dimension</i>	<i>Indicators</i>	<i>Question Number</i>
1. The influence of the parental home	• place of living	3
	• need for connection expansion	24
	• supporting effect of the network at each school level	25
	• importance of the relationship system developed by the parental home in connection with future employment	26
2. Initiative typical of the years spent in high school	• <i>degree of initiative</i>	4a, b
	• <i>forms of cooperation with peers</i>	5
	• <i>efficiency of cooperation</i>	6
	• <i>durability of the relationship system</i>	8
3. The initiative characteristic of university years	• degree of initiative	9
	• fertilizing effect of the high school network	10
	• importance of expanding professional connections	11
	• ways to build relationship capital	12
	• cooperation with students from Hungarian universities	13, 14
	• cooperation with students from foreign universities	15, 16
	• difficulties in establishing professional relationships	17
	• ways to expand knowledge	18a, b, c, d, e
	• future plans	19, 20, 21
4. Future employment plans	• <i>commitment to the teaching profession</i>	27
	• <i>importance of developing cooperation between teachers</i>	28
	• <i>role of expanding professional networks</i>	29
	• <i>continuing further studies</i>	30

The measurement tool designed to map the network of professional relationships identifies four principal dimensions: the influence of parental background, initiatives typical of high school years, professional activities developed during university, and future employment plans. Family background—including place of residence, parents' networks, and their supportive influence—can shape career orientation decisions and significantly affect students' prospects for employment. The quality and durability of social initiatives and peer collaborations established during high school reflect students' early social experiences, which can form the foundation for later professional cooperation. Networking developed during university—such as collaboration with peers from domestic or international institutions, seeking professional connections, and establishing future goals—is

directly associated with students' commitment and persistence in their careers. Finally, future employment intentions—including dedication to a teaching career, recognition of the value of professional collaborations, and plans for further education—demonstrate the extent to which students appreciate the importance of relationship capital for success in the labor market.

5. Discussion

The questionnaire not only provides a snapshot of students' relational resources but also enables the monitoring of their development over time. This is particularly relevant in the context of a teaching profession that now offers diverse career pathways, such as participation in institutional innovation, engagement with horizontal learning communities, or international professional mobility. For teacher education institutions to effectively support students in navigating these challenges, it is essential to have access to a reliable, purposefully developed measurement tool. A structured examination of professional networks can therefore serve as the foundation not only for targeted student support but also for the qualitative enhancement of teacher education programs.

The presented measurement tool captures not only the presence of relational capital but also its development and potential impact, particularly with regard to commitment to the teaching profession and the formation of professional identity. As the teaching profession increasingly emphasizes networking, collaborative learning, and participation in professional learning communities (Vangrieken et al., 2015; Lomos et al., 2011), assessing these variables provides a basis for both structural and content-related development in teacher education. Such a questionnaire is especially valuable for teacher education institutions, as it offers opportunities to intervene in the professional socialization of students for diagnostic and developmental purposes—for example, through mentoring programs, inter-institutional collaboration, or international mobility initiatives.

The examination of teacher education students' professional networks and collaboration skills—grounded in the previously presented analyses and dimensions—can be extended in multiple directions. The development of relational capital and its influence on professional commitment and labor market integration is a complex process shaped by numerous factors. Future refinements of the questionnaire should take into account the role of school-based practice and mentoring support, as well as the development of digital competencies and online professional networking.

The limitations of the study primarily arise from the use of a 12-member focus group and the qualitative research design. Due to the small sample size, the findings cannot be considered representative and therefore are not generalizable to the broader population of teacher education students in a statistical sense. Another limiting factor is that data collection was conducted at a single institution, the University of Nyíregyháza, which means that the results are strongly embedded in the local institutional context and may differ in other settings. The nature of focus group research also entails the possibility that certain perspectives may have dominated the discussion, while others remained less articulated, potentially constraining the diversity of viewpoints. Moreover, given the pilot character of the study, the codes and categories should be regarded as guiding elements for the development of the questionnaire rather than as conclusive research outcomes.

6. Conclusions

The teaching profession is undergoing substantial transformations in the twenty-first century. Beyond pedagogical challenges, evolving labor market expectations demand the development of new skills and competencies. In addition to subject-specific knowledge and methodological preparedness, there is an increasing emphasis on professional collab-

oration, networking, and the ability to pursue an adaptive career path (Kraft et al., 2016; Hargreaves & Fullan, 2012). Examining the professional networks and collaboration skills of teacher education students is therefore not only a theoretical concern but also a critical factor in teacher success and retention. The research dimensions presented—such as the influence of parental background, high school and university initiative, methods of building professional relationships, and future employment plans—clearly structure the factors that shape the professional identity of teacher education students. Variables including the effect of contact networks, quality of cooperation, degree of initiative, and future plans enable students to be mapped along developmental trajectories, highlighting patterns of relationships and collaboration. Such studies contribute to the personalization of teacher training and assist in identifying potential dropout risks (Smith & Ingersoll, 2004).

A practice-oriented approach is increasingly emphasized in teacher education, exemplified by the School Career Socialization Practice at the University of Nyíregyháza in Hungary. This program allows students to acquire, through collaboration with partner institutions, the cooperation patterns essential for their future professional practice. Evidence suggests that students who integrate themselves into professional networks during their training achieve smoother transitions into the workforce and demonstrate lower attrition rates (Hornyák & Pusztai, 2022).

Labor market expectations underscore that future teachers must possess not only professional knowledge but also advanced social and collaborative competencies. Contemporary teaching careers extend beyond instruction to involve complex, networked operations in which professional relationships, collaboration, and community learning are indispensable. The literature confirms that teacher collaboration enhances both student achievement and teachers' professional satisfaction and retention (Vangrieken et al., 2015; Jensen, 2012). Consequently, reliable measurement tools and questionnaires are essential for capturing these dynamic relationships. Based on the dimensions and indicators identified in research, a well-structured measurement instrument can be developed to serve both diagnostic purposes and the advancement of training programs. Such data collection enables teacher education institutions to respond to students' actual needs and, over time, prepare professionals capable of thriving in the evolving educational and labor market environment.

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Informed Consent Statement: Data derived from interviews do not contain any identifiable information.

Data Availability Statement: Data is not available due to ethical or privacy restrictions.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Questionnaire

1. Gender: Male/Female (Please underline!)
2. What field of study do you study? (Please underline!)

- a, humanities
 - b, real
 - c, mixed
 - d, arts
 - e, sports
3. Permanent residence (Please underline!)
- a, county seat
 - b, city
 - c, village
 - d, bush farm
4. How much did you consider yourself to be an initiator in high school?
(Rate on a five-point scale: 1—Not true at all. . .5—Totally true)
- a, in the class community 1 2 3 4 5
 - b, in the case of the subject(s) related to your current field of study 1 2 3 4 5
5. Where did you collaborate with your peers the most? (You can mark one answer!)
- 1. in classes
 - 2. outside of school
 - 3. in professional circles/talent care sessions
 - 4. in online forums
6. How effective did you find this cooperation indicated above?
(Rate on a five-point scale: 1—Not at all true. . .5—Totally true) 1 2 3 4 5
7. Who, apart from the teachers and fellow students of your institution, were involved in the cooperation? Write your answer here: _____
8. Did you manage to cultivate these relationships during your university years? Yes/No
9. How proactive do you consider yourself during your university studies?
(Rate on a five-point scale: 1—Not at all true. . .5—Totally true) 1 2 3 4 5
10. Did the network of relationships you acquired in high school influence your ability to take
Yes/No (Please underline!)
11. Do you consider it important to expand your professional connections during your university years? Yes/No
12. In what way are you currently building your network capital? (Multiple answers can be marked!)
- a, university classes
 - b, extracurricular programs related to higher education
 - c, entertainment venues
 - d, involvement in programs related to your place of residence
 - e, cooperation with students from other domestic universities
 - f, cooperation with foreign students
- Other: _____
13. Do you cooperate with students from other domestic universities in developing and implementing projects? Yes/No
14. How regularly? (If you answered Yes to the previous question.)
- a, 1 time during my university years
 - b, 2 times
 - c, 3 or more times
15. Do you cooperate with students from other foreign universities in developing and implementing projects? Yes/No
16. How often? (If you answered Yes to the previous question.)
- a, 1 time during my university years

- b, 2 times
c, 3 or more times
17. What factors make it difficult to establish professional relationships? (You can mark more than one answer!)
- a, excessive class load
 - b, lack of information
 - c, lack of motivation
 - d, working while training
 - e, private reasons
 - Other: _____
18. What sources and opportunities do you use to expand your knowledge?
Rate on a five-point scale:
(1—Not at all true. . . 5—Completely true)
- a, personal contacts 1 2 3 4 5
 - b, online professional forums 1 2 3 4 5
 - c, social media platforms 1 2 3 4 5
 - d, online databases 1 2 3 4 5
 - e, institutions collecting original sources (see libraries, archives, museums. . .) 1 2 3 4 5
 - Other: _____
19. Do you consider it important to study abroad or receive scholarships in the future?
Yes/No
20. Are you looking for this opportunity? Yes/No
21. To what extent do you have sufficient information about study abroad or scholarship programs? (Rate on a five-point scale: 1—Not true at all. . . 5—Completely true) 1 2 3 4 5
22. Where do you find out about these opportunities? _____
23. Do you know of any organizations that support student collaboration at the national and international levels? Yes/No
If Yes, name of the organization: _____
24. Is expanding knowledge/knowledge-related relationships important in your family?
Yes/No
25. To what extent did the relationship system established by your parents' home help you at each school level?
(Rate on a five-point scale: 1—Not at all true. . . 5—Totally true)
- Primary school 1 2 3 4 5
 - Secondary school 1 2 3 4 5
 - University 1 2 3 4 5
26. How important do you consider the relationship system established by your parents' home to be for your future employment?
(Rate on a five-point scale: 1—Not at all true. . . 5—Totally true)
- 1 2 3 4 5
27. Do you plan to work as a teacher in the future? Yes/No
28. Do you consider it important to establish cooperation between teachers/educators?
Yes/No
29. How important do you consider expanding your network of contacts for your future employment? (Rate on a five-point scale: 1—Not at all true. . . 5—Completely true) 1 2 3 4 5
30. Do you plan to complete further studies or training in the future? Yes/No

References

- Beauchamp, C., & Thomas, L. (2009). Understanding teacher identity: An overview of issues in the literature and implications for teacher education. *Cambridge Journal of Education*, 39(2), 175–189. [CrossRef]
- Brinkmann, S., & Kvale, S. (2018). *Doing interviews*. SAGE Publications Ltd. [CrossRef]
- Christensen, A. A., & Moser, C. (2025). Professional learning communities and teacher outcomes. *Teaching and Teacher Education*, 156, 104920. [CrossRef]
- Darling-Hammond, L., & Bransford, J. (2005). *Preparing teachers for a changing world: What teachers should learn and be able to do*. Jossey-Bass.
- DuFour, R. (2004). What is a “professional learning community”? *Educational Leadership*, 61(8), 6–11.
- DuFour, R., & Eaker, R. (1998). *Professional learning communities at work: Best practices for enhancing student achievement*. Solution Tree.
- Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record*, 103(6), 1013–1055. [CrossRef]
- Hargreaves, A., & Fullan, M. (2012). *Professional capital: Transforming teaching in every school*. Teachers College Press.
- Hornýák, Á., & Pusztai, G. (2022). Social and cultural impacts of becoming an innovative teacher. *PedActa*, 12(1), 27–38. [CrossRef]
- Jensen, B. (2012). *Catching up: Learning from the best school systems in East Asia*. Grattan Institute. Available online: <https://grattan.edu.au/report/catching-up-learning-from-the-best-school-systems-in-east-asia/> (accessed on 1 July 2024).
- Johnson, S. M., Kraft, M. A., & Papay, J. P. (2012). How context matters in high-need schools: The effects of teachers’ working conditions on their professional satisfaction and their students’ achievement. *Teachers College Record*, 114(10), 1–39. [CrossRef]
- Katzenmeyer, M., & Moller, G. (2009). *Awakening the sleeping giant: Helping teachers develop as leaders* (3rd ed.). Corwin Press.
- Khasawneh, Y. J., & Khasawneh, M. A. H. (2023). An examination of teacher collaboration in professional learning communities and collaborative teaching practices. *Journal of Education and e-Learning Research*, 10(3), 446–452. [CrossRef]
- Kraft, M. A., Marinell, W. H., & Yee, D. S.-W. (2016). School organizational context, teacher turnover, and student achievement: Evidence from panel data. *American Educational Research Journal*, 53(5), 1411–1419. [CrossRef]
- Krueger, R. A., & Casey, M. A. (2014). *Focus groups: A practical guide for applied research*. SAGE Publications.
- Lomos, C., Hofman, R. H., & Bosker, R. J. (2011). Professional communities and student achievement—A meta-analysis. *School Effectiveness and School Improvement*, 22(2), 121–148. [CrossRef]
- Mrázik, J. (2021). A kollegiális reflexió. In E. Juhász, T. Kozma, & P. Tóth (Eds.), *Társadalmi innováció és tanulás a digitális korban* (pp. 139–153). Debreceni Egyetemi Kiadó.
- OECD. (2013). *PISA 2012 Results: What students know and can do. Student performance in mathematics, reading and science* (Vol. I). OECD Publishing. Available online: <https://www.oecd.org/pisa/keyfindings/pisa-2012-results-volume-I.pdf> (accessed on 11 December 2024).
- OECD. (2025). *Teacher support for student learning: Insights from PISA*. OECD Education Policy Perspectives, No. 124. OECD Publishing.
- Pang, N. S. K., & Wang, T. (2016). Professional learning communities: Research and practices across six educational systems in the Asia-Pacific region. *Asia Pacific Journal of Education*, 36(2), 193–201. [CrossRef]
- Park, H., & Kim, K. (2014). *Korean education in changing economic and demographic contexts*. Asia-Pacific Educational Research Association. Springer. Available online: <http://ndl.ethernet.edu.et/bitstream/123456789/42133/1/645.Hyunjoon%20Park.pdf> (accessed on 9 January 2020).
- Sahlberg, P. (2011). *Finnish lessons: What can the world learn from educational change in Finland?* Teachers College Press.
- Smith, T. M., & Ingersoll, R. M. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal*, 41(3), 681–714. [CrossRef]
- Vangrieken, K., Dochy, F., Raes, E., & Kyndt, E. (2015). Teacher collaboration: A systematic review. *Educational Research Review*, 15, 17–40. [CrossRef]
- Vescio, V., Ross, D., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education*, 24(1), 80–91. [CrossRef]
- Wang, T. (2015). Contrived collegiality versus genuine collegiality: Demystifying professional learning communities in Chinese schools. *Compare: A Journal of Comparative and International Education*, 45(6), 908–930. [CrossRef]
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press.
- Zhang, J. (2024). Exploring the mediating role of teacher identity between professional learning community and teacher resilience. *Humanities and Social Sciences Communications*, 11(1), 1–10. [CrossRef]

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