

Article

# Professional Learning Communities of Student Teachers in Internship

Peter Theurl <sup>1,\*</sup>, Eva Frick <sup>1</sup> and Elvira Barrios <sup>2</sup>

<sup>1</sup> Department of Primary Education and Learning Development, University of Education Vorarlberg, Liechtensteinerstraße 33–37, 6800 Feldkirch, Austria; eva.frick@ph-vorarlberg.ac.at

<sup>2</sup> Didactics of Languages, Arts and Sports, Universidad de Málaga, 29013 Málaga, Spain; elvira.barrios@uma.es

\* Correspondence: peter.theurl@ph-vorarlberg.ac.at

**Abstract:** Since the early 1990s, professional learning communities (PLCs) have been widely recognized as an effective, extensively researched approach to professional development, school improvement, and student learning enhancement as well as leadership development within educational settings. Nevertheless, there remains a scarcity of research concerning the impact of this approach to professional development within the context of initial teacher education. The present study is one of the first to systematically examine the possibilities and potential of PLCs for student teachers in their practical pedagogical studies (internship). In particular, the study examines whether Student-Teacher PLCs (ST-PLCs) can be implemented in pre-teacher education and the perceptions of student teachers concerning their participation and professional learning within an ST-PLC. A total of 56 students from the University of Education Vorarlberg (Austria), the University of Málaga (Spain), and the European University Cyprus participated in the study, responding to an online questionnaire and engaging in focus-group interviews. The data collected indicated that ST-PLCs serve as a robust strategy for collaborative learning and the development of professional competencies. An analysis of the qualitative data showed that ST-PLCs are spaces where the reflection and analysis of teaching-related topics are stimulated, supported, shared, encouraged, and enhanced.

**Keywords:** professional learning communities (PLCs); collaborative learning; Student-Teacher PLCs; pre-service teacher education; teacher professional development



**Citation:** Theurl, P.; Frick, E.; Barrios, E. Professional Learning Communities of Student Teachers in Internship. *Educ. Sci.* **2024**, *14*, 706. <https://doi.org/10.3390/educsci14070706>

Academic Editors: Irit Sasson and Shirley Miedijensky

Received: 19 April 2024

Revised: 2 June 2024

Accepted: 18 June 2024

Published: 28 June 2024



**Copyright:** © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

Professional learning communities (PLCs) have become a prominent topic of discussion within the field of education [1,2]. They differ from other forms of teacher collaboration in that they are characterized by shared norms and values, with a focus on student learning, deprivatized practice, collaborative culture, and reflective practice [3–5]. The initial groundwork was laid by Susan Rosenholtz's study [6], Teachers' workplace: The social organization of schools, followed by the concept of "school as a learning organization" developed by Senge et al. [7]. Consequently, a range of collaborative models of teacher development has arisen, among which PLCs have emerged as being particularly effective [8].

In the domains of school and classroom development and instructional improvement, PLCs have long been regarded as one of the most effective and sustainable approaches [5,9–11]. Since approximately 2015, they have also proven successful in the professional development of school leaders [12]. The bulk of research on PLCs has been carried out within the United States context [1]. Additionally, there is still a lack of research addressing the effects of this modality of professional development in the context of initial teacher education [13], particularly in the European context, and more so with an international orientation [14,15].

The goal of the current study was to address this research gap by examining the impact of implementing PLCs in the practical component of initial teacher education in

three European higher education settings. This was achieved within the framework of a European Erasmus+ project, TePinTeach ("Professional Learning Communities as a means for bringing teacher professionalization in teacher education") [16], that contemplated introducing PLCs into teacher education.

### *1.1. Research on Student-Teacher PLCs*

Interest in ST-PLCs has for some time been reflected in research in only a handful of isolated studies but has visibly increased in recent years. Rigelman and Ruben [17] accompanied a group of student teachers in PLCs of students, teachers, and university lecturers during a one-year internship. Hoaglund et al. [18] developed a PLC training program for university lecturers in preparation for their work with ST-PLCs. Chou [19] set up a PLC comprising student teachers, mentors, and the researcher during a six-month internship within a school–university partnership in Taiwan. Dahl [20] investigated the role of ST-PLCs in the professional development of three Danish student teachers and Wing-mui So [21] established a video-based learning community, which was held online, with 25 student teachers and investigated the outcomes. Berger [22] used elements of PLCs in a model of cooperative learning for student teachers. Feldmann [23] and Funke-Tebart [24] described and investigated the use of ST-PLCs in the traineeship year in Germany. At the Westfälische Wilhelms-Universität Münster, researchers implemented a training concept for collegial cooperation in schools as part of the quality offensive for teacher training, with ST-PLCs at its core. The seminar concept was scientifically monitored and evaluated with the aim of anchoring it permanently in the curriculum [23,25,26]. Filipiak [27] evaluated a project within an inclusion-oriented teacher-training program at the University of Paderborn using special education and primary school teacher-training students who worked together in ST-PLCs with the aim of promoting the students' willingness and ability to cooperate. Leppert [28] described a concept of vocational teacher training in the Master's degree program in Business Education at FAU Nuremberg in which students acquired basic teaching-related skills, especially in lesson planning and curricular analysis in business education subjects, within the framework of PLCs. Student teachers and supervisors established PLCs during workshops designed to prepare student teachers for teaching competitions in China [29]. In a descriptive narrative design (data were obtained from autobiographical narratives, unstructured interviews, and field notes), Meihami [30] analyzed the role of PLCs in developing 12 Iranian EFL student teachers' imagined identity. More recently, Rümmele [31] surveyed students specializing in inclusive education who had spent a semester working on inclusion-specific topics in ST-PLCs.

In view of the current challenges schools face, such as the increasing diversity among students and the need for inclusive educational practices as well as cooperation in multi-professional teams, existing studies consistently highlight the importance of collaborative approaches to school, teaching, and professional development. Research studies continuously emphasize that PLCs are particularly effective at enhancing school and teaching practices. Therefore, it is crucial to provide student teachers with substantial engagement with PLCs during their studies. This helps future educators develop a readiness to implement innovations in their later work, fostering collaborative professional development instead of the lone-wolf mentality that still prevails in parts of the teaching profession [25,26,32].

The Erasmus+ project TePinTeach ("Professional Learning Communities as a means for bringing teacher professionalization in teacher education") [16] was a pioneering attempt to systematically expand the PLC concept from school and teaching development to the professional development of student teachers in the European context. From 2019 to 2022, ST-PLCs were introduced into teacher-education programs at universities in five European countries: Norway, Germany, Austria, Spain, and Cyprus. The effectiveness of these programs was assessed in the spring and fall of 2022 [16]. Barrios et al. [13], Sanchidrián et al. [14], Theurl et al., [33], Theurl et al. [15], and Theurl and Frick [32] explored and discussed these experiences with ST-PLCs in primary teacher-education school placements.

### 1.2. Research Areas and Findings Regarding ST-PLCs

An overview of studies into PLCs within initial teacher education reveals the following research interests: (1) whether and how PLCs can be successfully implemented in the study program, (2) how they are accepted by students, (3) which conditions must be fulfilled for successful ST-PLC work, (4) whether and which competencies are acquired by students when working in ST-PLCs, (5) whether the ST-PLC experiences have an impact on the willingness of students to work in PLCs in their later profession as teachers, and (6) which objections and criticisms are raised by students against PLCs.

Research findings indicate the following: (1) The implementation of ST-PLCs appears to be feasible in general without major problems and is successful both in the context of longer-term curricular courses and shorter development processes, e.g., [13,19,29]. However, the quality of the work in the groups and the learning effect achieved heavily depend on the mandatory nature, structuring, and supervision of the ST-PLCs [34]. (2) In almost all studies, the acceptance of ST-PLCs by students is very high. PLCs are perceived as meaningful, effective, instructive, motivating learning, and collaborative opportunities [13,31,32,35], serving as environments where awareness of cooperative working methods in education is raised [13,26], leading to professional development [13,19,24,27,32] and fostering professional commitment [29]. However, it has been shown that acceptance is significantly lower in ST-PLCs that are more or less the responsibility of the students, which are less mandatory and less structured [34]. (3) The effective functioning of an ST-PLC relies on several key conditions, including but not limited to having adequate time and space resources, fostering an atmosphere of trust among members, promoting respectful and valued communication on an equal footing, ensuring everyone's right to contribute, equitably sharing the workload and offering mutual support, embracing shared responsibility, utilizing structured work formats like action plans, maintaining commitment to documentation such as meeting minutes, and providing supportive leadership and management for the ST-PLC [23,24,30–32]. (4) In the vast majority of studies, students report positive effects of ST-PLC work with regard to their professionalization, their ability to cooperate and communicate, their ability to be (self-) critical and reflect, their ability to actively and productively participate in group work processes, and the development of their didactic skills and general skills. Learning from each other and exchanging ideas makes work easier, creates a sense of community and security, and leads to learning outcomes from co-constructive processes [13,18,19,23,24,26,27,30–32,35]. (5) With regard to the students' attitude towards their use of the PLC format in their future career, there is generally approval. However, occasional doubts are expressed about its practicability in the school environment [18,23,24]. (6) Objections to and criticism of ST-PLCs primarily stem from the significant time, work, and organizational demands associated with this form of collaboration [18,23,25]. When ST-PLCs are held as online events, they are perceived as particularly challenging [27]. Additionally, negative aspects include the discussion of many and sometimes divergent views, the need for precise agreement [23], and occasional imbalances in the workload and assumption of responsibility among individual participants [31,32].

## 2. Materials and Methods

### 2.1. Context and Participants

ST-PLCs were implemented within the school placement component of the teacher-education programs at the University of Málaga (Spain) (ES), the European University Cyprus (CY), and the University of Education Vorarlberg (Austria) (AT). In the case of Spain, the 16 participating student teachers (12 female and 4 male) were in the age range of 20–22 years. All the students had entered the Bachelor's Degree in Primary Education after completing the two-year non-compulsory secondary education (Bachillerato) and a compulsory university entrance exam. The 14 participating student teachers from Austria (12 female and 2 male) were between 19 and 21 years old. After graduating from high school, they took an aptitude test (entrance exam) at the university and attended the Bachelor's degree program in Primary Education. The 16 student teachers in Cyprus

(15 female and 1 male) were in the age range of 21–24 years. They were all in their third year of the Bachelor studies in Early Childhood Education and attended the second phase of their internship.

## 2.2. Intervention

In Austria, groups comprising a minimum of three and a maximum of six student teachers were formed, with one faculty member serving as the leader and facilitator. To start, the students were given a basic introduction to the PLC concept as well as PLC documentation and action plans [36]. The duration of every PLC meeting was 90 min and they were carried out every other week. The students in Austria completed an internship in their second and third semesters of study in which they spent one day a week at a school, became familiar with the daily routine of a school and a classroom as well as the specific work of a teacher, and had to plan, conduct, and reflect on lessons from the very beginning. At their placement school, they were supported by an experienced teacher (mentor) in whose class they completed their internship and were accompanied by a university lecturer. In addition to this placement at a school, there was an accompanying seminar at the university in which the PLC work was carried out. Oral and written reflections of their experiences as well as of themselves in the role of teachers were the main aspects of this seminar. In the case of Spain, the PLC experience occurred during a 9-week internship for student teachers in their final year of the Bachelor's Degree in Primary Education. During this period, students were placed in primary schools where they adhered to the school's full-time timetable under the guidance of an experienced teacher. Additionally, they participated in biweekly seminars at the university where they were provided with input concerning the notion of a PLC and documentation within the PLC, and with the program understanding of the action plan. As part of their requirements, students were required to produce a reflective portfolio and maintain a reflective diary. Additionally, they were encouraged to participate in ST-PLCs to share, discuss, and reflect on their progress with their action plan as well as on the design and implementation of lessons in their assigned schools. The students were given the chance to decide on the PLC composition and number of meetings. In Cyprus, one-third of the participants attended the student-teacher internship in the fourth year of their studies, while two-thirds participated in a science education course in their third year. During the internship, students spent eight weeks at their training school. Additionally, they met with the instructor for four weeks, three hours per week at the university. As part of the course requirements, the student teachers had to prepare reflective journals and portfolios as well as design and implement lesson plans. In the science education course, students met with their instructor for 13 weeks, 3 hours per week. During these sessions, they were asked to prepare lesson plans, reflections, presentations, and peer reviews. Approximately half of these students also participated in the internship. PLC meetings in Cyprus lasted for one hour, with course instructors serving as moderators. Although the internship students' meetings were held in person, those for the science education course were conducted online.

The mode of operation of all PLCs was based on the "Model of structured and supported ST-PLC work" [37], and the model of Wiliam [38]. The so-called "model of structured and supported ST-PLC work" was developed in order to ensure the high-quality requirements and constitutive features of PLCs as well as a uniform approach within the framework of ST-PLC work. This contains four levels that build on each other in the reflection process and are structured as a cycle, which contains the following:

- Centerpiece "ST-PLC": The center symbolizes the ST-PLC. The student teachers' PLC forms the basis for the success of the ST-PLC work. Students are provided with foundational knowledge of the PLC concept.
- Dimensions of the PLC process: The six dimensions "Identify", "Analyze", "Plan", "Reflect", "Practice", and "Evaluate" build on each other in terms of content but are also considered to be a closed cycle. The basic ST-PLC work takes place within the framework of these six dimensions. After identifying a problem or a topic that is

considered by the students to be focal point for their pedagogical studies, the next step—“Analyze”—takes place. This step is used for an in-depth examination of the previously identified problems or topics with the aim of developing operational goals and adequate measures, which are then set out in a clearly structured action plan [36]. This serves as the basis for targeted, further professional development and is fulfilled in the step “Plan”. One goal is to achieve a critical-reflective attitude and to deal with issues in greater depth. Therefore, a (critical) examination of the measures takes place in the fourth dimension, “Reflect”. The measures set in the action plan are then implemented in practice in schools (“Practice”). In the sixth dimension, “Evaluate”, the overall process is subjected to critical evaluation and reflection. The goals that were set are examined to ascertain whether and to what extent they have been achieved. Indicators for this are the defined measures in the action plan. If the objectives are successfully achieved, the process begins anew with the identification of topics, the setting of targets, and corresponding measures. If the realization of the goals is less successful, the previous measures are revised or new measures are taken and documented in the action plan.

- The reflection level “Reflection-IN-Action” illustrates the importance of holistic reflection on the entire process.
- It is also important to place reflection at the meta-level, which is the aim of “Reflection-ON-Action”. In particular, it is intended to be a meta-analysis of the functioning of the group, its structures and processes, and the effectiveness of the ST-PLC work as a whole.

The entire process is based on the five aspects of the “Effective Formative Assessment” according to Wiliam [38] (p. 37), which are regarded as decisive factors for an adequate implementation of the processes in the sense of successful PLC work.

A total of 56 ( $n = 56$ ) student teachers in their second and third semesters (AT), their fourth year (ES), and their third and fourth year (CY) who collaborated in ST-PLCs during their internship participated in the study.

### 2.3. Aims of the Study and Research Question

The present study examined the possibility of implementing ST-PLCs in pre-service primary education teacher-training internships in Austria, Spain, and Cyprus, with a special emphasis on developing a reflective attitude in prospective teachers. The focal points of the research were as follows:

- The basic possibility of establishing and implementing an ST-PLC within the framework of teacher-training studies;
- Acceptance of ST-PLCs by students;
- Effectiveness of ST-PLCs regarding the acquisition of competencies, especially in courses with pedagogical and practical components;
- Acquisition of competencies regarding personal professional development;
- Perspectives regarding acceptance and use of PLCs in future professional life;
- Development of a reflective attitude.

More specifically, the study addressed the following research question: What effects do prospective primary education teachers perceive from participating in an ST-PLC?

### 2.4. Research Methodology

This research employed a concurrent mixed-method design [39] to collect, analyze, and integrate both quantitative and qualitative data within a single study [40]. By using quantitative survey data, the goal was to obtain information on the prevalence of certain perceptions. On the other hand, open questions in the questionnaire and focus groups were used to gather qualitative data for an in-depth exploration of participants’ attitudes, perceptions, and experiences. Focus groups encouraged participants to collectively share and reflect on their experiences, revealing shared beliefs and differing viewpoints and providing a supportive environment for articulating their thoughts. This combination of

quantitative and qualitative data allowed for data triangulation, strengthened the credibility and reliability of the research findings, and provided a more comprehensive understanding of the research problem.

Students were asked to complete an anonymous online questionnaire consisting of 22 items to be answered on a five-point Likert scale divided into the categories of 'Overall Impressions', 'Professional Development' (related to two aspects, pedagogical practice and personal), and 'Impact on Future Work as a Teacher' plus open questions concerning their ST-PLC experience.

The categories of the questionnaire were deductively developed according to the research question. Originally, the questionnaire comprised six categories, but the categories 'Professional Development Benefits of Participating in a PLC: New Knowledge, Ideas, Views' and 'Professional Development Benefits of Participating in a PLC: New Strategies' were consolidated into the category 'Professional Development—Pedagogical Practice' for the analysis.

Participation in the questionnaire was voluntary. Additionally, insights were gathered from the open reflections provided by students in the open questions and the focus-group interviews conducted at the end of their school internship period.

The mixed-method design provided a comprehensive understanding of the research question. Furthermore, it allowed for the triangulation of data, which enhanced the validity and reliability of the findings by cross-verifying the results.

The quantitative data were analyzed using IBM SPSS Statistics 28 to identify trends and patterns regarding the reception and effectiveness of ST-PLCs among the participants and graphically represented.

A qualitative thematic analysis was used to identify salient themes concerning student teachers' perceived impact of their ST-PLC experience from the questionnaire and the focus-group interview data [41]. The initial analysis produced an basic coding framework. Subsequently, the authors convened to review the preliminary codes. Following thorough deliberation, a finalized coding framework was formulated and the codes were subsequently consolidated into the themes 'impact on practical pedagogical knowledge', 'Impact on reflective and analytic skills', 'Impact on self-confidence', 'Impact on the view of teacher collaboration', and 'Impact on emotional well-being'. The information was analyzed using ATLAS.ti software, version 9.

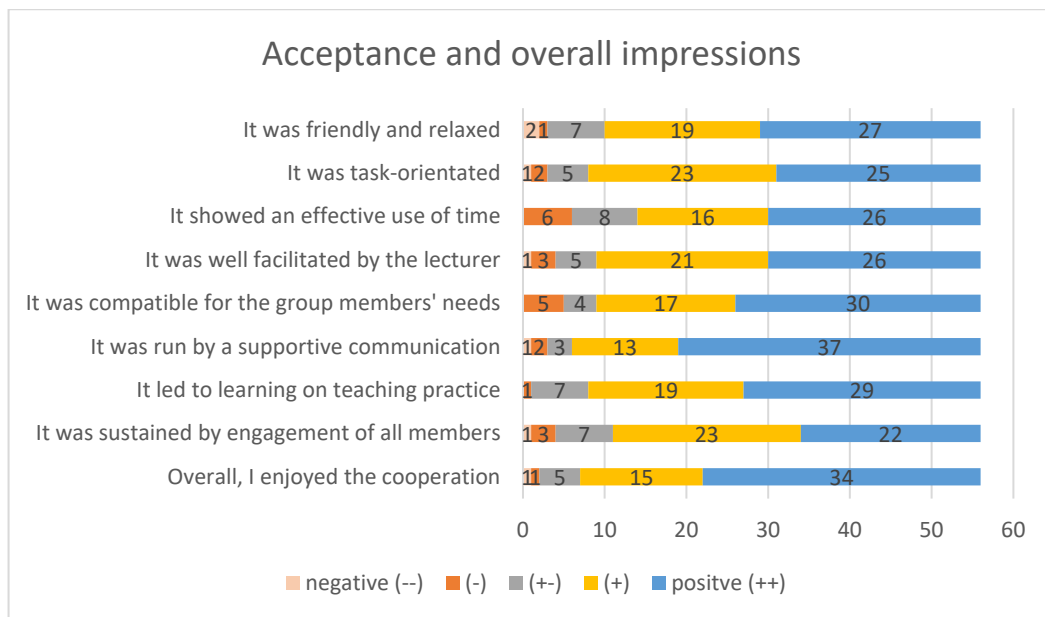
Focus-group interviews served as an additional opportunity to expand and deepen the participants' answers to the open questions in the questionnaire in order to gain a more comprehensive understanding of their experiences with and assessments of ST-PLCs.

### 3. Results

#### 3.1. Quantitative Data

##### 3.1.1. Acceptance and Overall Impressions of ST-PLCs

Regarding student teachers' acceptance of ST-PLCs and their overall impressions, the data depicted in Figure 1 indicate a fundamentally positive attitude. Aspects such as supportive communication, compatibility with group members' needs, learning opportunities in teaching practice, and the friendly, relaxed atmosphere within ST-PLCs were perceived as particularly positive.

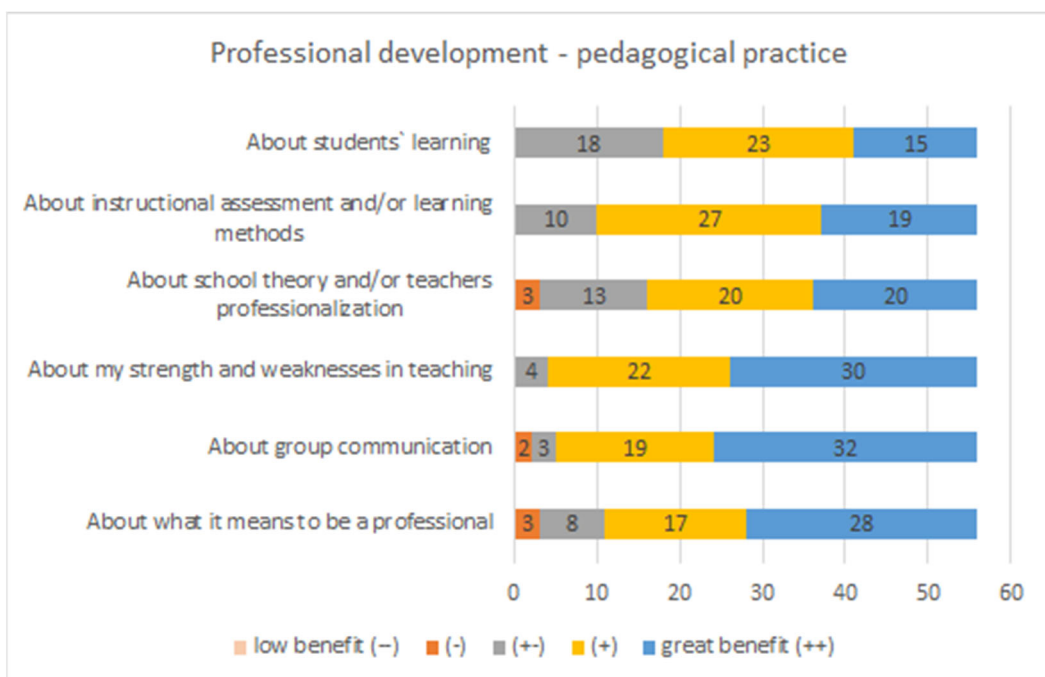


**Figure 1.** Acceptance and overall impressions of ST-PLCs (results in frequencies).

Furthermore, the significance of a facilitator for the effective functioning of a PLC from the students’ perspective became evident. Lastly, the data revealed that PLCs were viewed as a stable, effective, and engaging concept of cooperative work.

### 3.1.2. Professional Development Related to Pedagogical Practice

As Figure 2 indicates, a significant number of participants stated having gained an insight into their strengths and weaknesses in teaching and into instructional assessments through their involvement in ST-PLCs. They perceived to have acquired insights into the field of teacher professionalization and had enhanced their communicative skills. Despite mostly favorable results, the findings also showed that some students did not fully benefit from insights into student learning within the context of ST-PLCs.



**Figure 2.** Professional development—pedagogical practice (results in frequencies).

### 3.1.3. Professional Development Related to Personal Gains

As depicted in Figure 3, students acknowledged having developed strategies to analyze problems and express their frustrations and concerns related to teaching. They considered that they had gained confidence in their teamwork skills and in accepting feedback. On the other side, the results also showed that some students encountered challenges in developing differentiated questioning strategies.

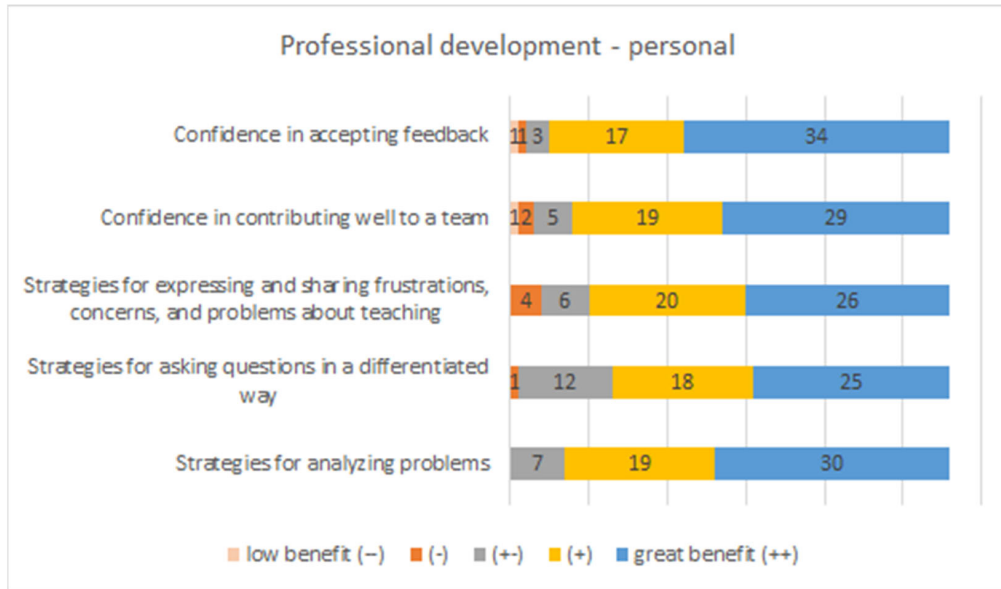


Figure 3. Professional development—personal gains (results in frequencies).

### 3.1.4. Impact on Future Work as a Teacher

Figure 4 clearly indicates that the ST-PLC experience had a positive impact on students' willingness to participate in professional development and collaborative work in their future work as teachers. To illustrate, 23 out of 30 of respondents manifested that the ST-PLC experience made them more open to cooperating in PLCs once they became teachers.

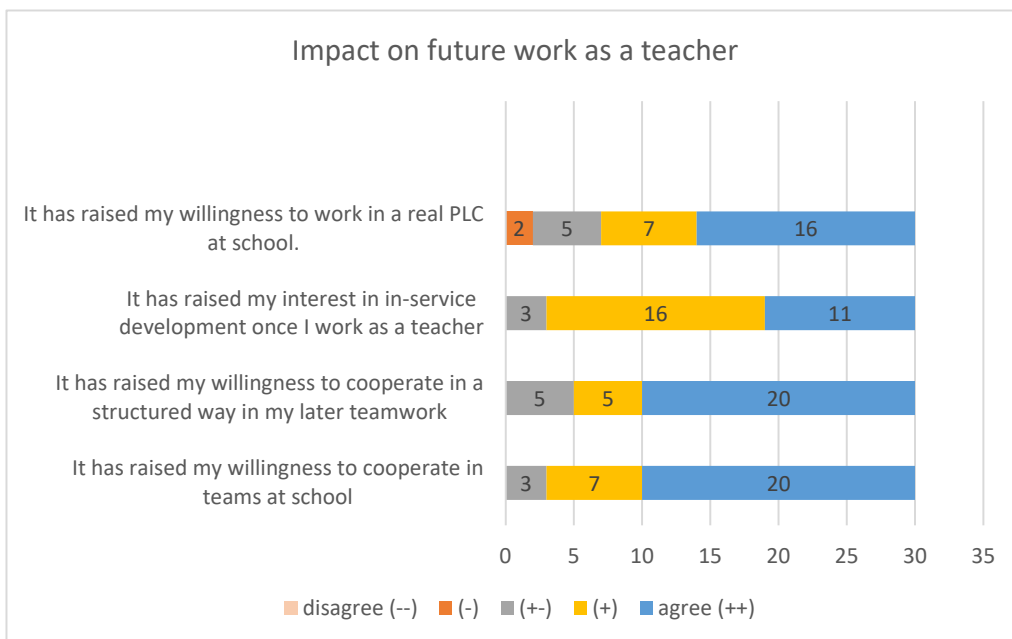


Figure 4. Impact on future work as a teacher (data from Spain and Austria only) (results in frequencies).

### 3.2. Qualitative Data

The following five impact factors were identified:

- Impact on practical pedagogical knowledge

The student teachers in the study were highly appreciative of the learning they obtained from participating in a PLC by collectively sharing and discussing their experiences and pedagogical knowledge. In this sense, they attributed this learning to the collective sharing and discussion of experiences and pedagogical knowledge. Specifically, they viewed this learning as gaining access to practical experiences from other members of the ST-PLC situated in different school contexts or to the ideas put forward by them. Additionally, they viewed the ST-PLC as a valuable source of ideas and practical suggestions regarding activities, resources, materials, classroom management, and evaluation procedures.

*[. . .] we began to exchange points of view and different perspectives on teaching activities. Gradually, we used these [PLC] sessions to share our problems and to propose solutions, discussing and cooperating to help us improve our teaching. More and more ideas were offered so that each one of us could improve in aspects that present us with the greatest challenge. (Ana (Names are pseudonyms))*

*This has been the case with classroom management. By participating in a PLC, I have learnt strategies I did not know or thought of. In this respect, working collaboratively has the benefit of facilitating the introduction of new innovations in our practice while feeling supported and accompanied by the PLC members. (Cristina)*

- Impact on reflective and analytical skills

ST-PLCs are intricately linked to analysis and reflection by the participants, who perceive them as environments where reflection is not only encouraged but also nurtured by the support of others. ST-PLCs thus serve as catalysts to foster a critical-reflective attitude and the recognition of the importance of dealing with professional topics in a critical-reflective way.

The work within ST-PLCs includes reporting on the experience gained in practice and further analyses of the effectiveness of the teaching experiences in cooperation with peers. This represents “Reflection-ON-Action” [42], or the process of reflecting on past experiences, actions, or decisions after they have occurred. In ST-PLCs, student teachers critically analyze their actions, consider the outcomes, and evaluate their effectiveness. “Reflection-ON-Action” is often seen as a way to gain insights, learn from mistakes, and improve future performance. Additionally, participating in an ST-PLC is also recognized as an awareness-raising experience of educational issues and perspectives that the informants had never thought about.

This reflection is enhanced through group deliberations and discussions focused on action plans, teaching practices, and their underlying rationale. Feedback and targeted questions are employed to encourage ST-PLC members to delve deeper into the discussed issues. Furthermore, the documentation linked to the PLC, particularly the agenda and, most importantly, the action plan, are considered to be highly beneficial for framing and organizing reflection within the ST-PLC and also at an individual level.

This enhancement of reflective and analytic competence is seen by some participant student teachers as an improvement in a crucial professional teacher competence, not only in itself but as an essential meta-cognitive aid that facilitates the development of other teacher competences associated with, e.g., classroom management, instructional planning, or the ability to effect change in their teaching practices.

*The PLC meetings have helped me to better see what my strengths and weaknesses are, as well as my progress during over weeks, by analyzing it and sharing results, and receiving the opinion or feedback of the colleagues in order to always continue improving. (Sonia)*

*[. . .] participating in a PLC has been an exceptional help in the analysis of the principles underlying practice, discussing them with the rest of the group and visualizing new forms of action. (Soledad)*

- Impact on self-confidence

Closely related to an enhanced reflective ability, a further benefit is the perceived increase in the self-confidence experienced by the student teachers. This dual growth in reflection and self-assurance empowers them to be more inclined to innovate and experiment with new practices, feeling better equipped to monitor and evaluate their effectiveness. The supportive environment perceived in the ST-PLC is also seen as a catalyst for innovation as the encouragement, ideas, and advice from ST-PLC members provides student teachers with a range of strategies and the confidence to experiment with new approaches in the classroom.

*[. . .] through the PLC I feel that I have more confidence in myself as a teacher, because I have been able to learn and improve, leaving aside the shame of sharing and that of being observed from the perspective of others. (Cristina)*

*In my experience, a PLC is constantly trying out new strategies to improve student learning, so people within the team must feel free to innovate. Teachers can never know what teaching works best for their students unless they are given the freedom to try out new strategies. PLCs can make this happen by having teachers collect evidence and use data and protocols to determine which strategies were most effective. (Luisa)*

- Impact on the view of teacher collaboration

The ST-PLC experience led the student teachers in the study to consider reflection as a central aspect of teacher collaboration. For some students, the concept of teacher collaboration seemed to take on a new meaning that was inextricably linked to deliberation and reflection. PLCs were seen as a model for both pre- and in-service teachers to collaborate in school-related matters, develop their professional competencies, and improve student learning. In this context, the typical meetings they observed during their teaching internship aligned with the principles and practices of PLCs. They noted the absence of structured reflection, clearly defined goals centered on professional growth and student learning, a lack of trust among the staff, and a dearth of sharing and discussing the underlying concepts and principles guiding their pedagogical choices as factors distinguishing these teachers' meetings from PLCs.

*Being a teacher requires collaboration between the members of a school, sharing, reflecting and seeking to promote improved educational practice. So, I think these meetings have brought me closer to the reality of education. (Julia)*

*On the other hand, if this educational school followed a PLC approach, that is, if the school was conceived as a large PLC as defined above, the interpersonal relationships at the school would benefit, and relationships of trust and professional development could be established. (Cristina)*

- Impact on emotional wellbeing

Student teachers perceived their ST-PLCs to be sources of emotional and psychological support when needed. The student teachers described their ST-PLCs as non-judgmental environments characterized by respect, understanding, and open dialogue. The shared status of all ST-PLC members and, therefore, their shared experiences and challenges were perceived to facilitate self-disclosure, openness, and trust within the group.

*Thanks to the PLC work, I have been able to connect with classmates that experience situations that are similar to mine, help, support and listen to each other. This has not only allowed us to 'let off steam' sometimes, but it has also served as therapy in which we could find ideas to solve those things that made us drown in a glass of water. (Pilar)*

#### 4. Discussion

Teacher-education programs frequently face criticism due to the perceived lack of relevance between the content taught at university and its applicability in real school settings [43]. Furthermore, there is an ongoing debate within this field regarding the role

of practical experiences in school environments in shaping teacher education [44]. In the present study, the teacher-education internship programs aligned with the perspective of [45], who, discussing the role of the school placement experience in teacher preparation, contended that “being educated as a professional teacher involves more than being part of the current system. It is also a matter of being able to question practice, to learn from experiences through reflection and deliberation with others and to plan for the unknown” (pp. 640–641). One approach to professionalization and continuous professional growth that promotes collaborative reflection and discussion and has been linked to significant educational enhancement is teachers’ involvement in PLCs, e.g., [46]. In recent years, there has also been an increasing number of approaches that aim to exploit the potential of PLCs in the training of future teachers, utilizing PLCs as a means of professional development during their studies, e.g., [13,14,20,23,30,32].

In this study, ST-PLCs, characterized by reflective discussions, emerged as valuable and effective tools for professionalizing pre-service teachers during their school internship as, according to the student teachers, the work was task-orientated, time was used well, everyone contributed, and it was tailored to the individual students’ needs. Participants expressed overwhelmingly positive views about ST-PLCs, recognizing them as spaces where they could develop their practical teaching competencies, improve their communication skills, share their concerns and problems related to teaching with others, and receive support in a trusting environment. Among the key competencies cultivated through participation in ST-PLCs are a reflective and analytical mindset and the awareness that this represents a key competency for teaching professionals, described as a key element of professional practice [35]. Finally, working in ST-PLCs contributes to the prospective teachers’ readiness for collaborative work and professional development in the future, and their self-confidence to innovate and try out new methodological approaches increases.

The integration of quantitative and qualitative findings provided explanatory depth to the quantitative results. It was achieved by juxtaposing quantitative with qualitative themes. The quantitative data, for instance, showed a high level of acceptance of ST-PLCs among the participants and perceived benefits in professional and personal development; the qualitative data (themes such as the supportive atmosphere of ST-PLCs, the enhancement of reflective and analytical skills, and the increase in self-confidence and collaborative abilities) elucidated the reasons behind these perceptions.

These study findings were consistent with previous research on the impact of PLCs in teacher education in other contexts. For instance, prior studies have also found that student teachers highly value the acquisition of practical knowledge such as classroom management strategies, as demonstrated in Chou’s study [19]. Additionally, research suggests that students engaged in PLCs demonstrate a stronger commitment to their future teaching profession compared with those who have not participated in PLCs [29]. Meihami [30] pointed out that ST-PLCs have a constructive role in developing student teachers to become collaborative and reflective teachers who see themselves as learners. In numerous previous studies, ST-PLCs proved to be meaningful, motivating, and effective learning opportunities [13,31,32,35] in which an awareness of the importance of cooperative work in education could be acquired [13,26] and professional development took place in terms of both academic and personal skills [13,19,24,27,32]. Additionally, the importance of a facilitator for the successful implementation of a PLC became apparent from the student teachers’ point of view in our study. A recent study [34] demonstrated that self-managed student PLCs are not highly effective concerning competence acquisition and also lead to a low willingness to cooperatively engage in schools at a later stage, whereas other studies have emphasized the positive effect of supportive and structured PLC leadership [26,31].

Research on in-service teachers’ PLCs has identified similar positive impacts as those observed in pre-service teachers. To illustrate, PLCs have been found to benefit professional teacher learning, e.g., [47–49], facilitating the adoption of new teaching practices [48,49], enhancing teachers’ perception of efficacy [50–52], and promoting their critical reflection [53].

Some limitations of the study should be acknowledged. Although the aim of the study was not to produce generalizable conclusions, it is true to say that the study was conducted at three European higher education institutions with a limited number of participants. Although some of the findings corresponded well with existing research findings as outlined above, further studies must be conducted in other contexts and with different student-teacher populations in order to validate (or disconfirm) our findings. Additionally, the study used self-reported data, which may have been affected by self-report bias, potentially influencing the accuracy and validity of the findings. This limitation could be mitigated by including a performance assessment. Although self-reported data provide valuable insights into participants' perceptions and experiences, performance assessments offer concrete evidence of the acquired skills and competencies, thus strengthening the validity and reliability of the study findings.

Notwithstanding these limitations, the implementation of ST-PLCs in teacher education in the three participating institutions proved successful, with ST-PLCs garnering high acceptance. By adhering to criteria-based definitions of PLCs, employing the "Model of structured and supported ST-PLC work" [37] as well as the session frameworks proposed by [38] Wiliam (2007), and aligning PLC work with scientific evidence on factors such as group size, meeting intervals, and facilitator support, ST-PLC initiatives are able to meet high-quality standards. Consequently, ST-PLCs have emerged as an effective tool for professionalizing pre-service teachers.

**Author Contributions:** Conceptualization, P.T., E.F. and E.B.; methodology, P.T., E.F. and E.B.; formal analysis, P.T., E.F. and E.B.; investigation, P.T., E.F. and E.B.; resources, P.T., E.F. and E.B.; writing—original draft preparation, P.T., E.F. and E.B.; writing—review and editing, P.T., E.F. and E.B. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by European Commission through the Erasmus+ Project TePinTeach—Professional Learning Communities as a Means for Bringing Teacher Professionalization in Teacher Education (<http://www.tepinteach.eu/>), project code KA203–1–DE01–KA203–005028.

**Institutional Review Board Statement:** Ethical review and approval were waived for this study due to the fact that at the time of data collection for the study this was not compulsory in our institutions.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Data are contained within the article.

**Acknowledgments:** We would like to thank the students who participated in the study.

**Conflicts of Interest:** The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

## References

1. Christensen, A.A. A global measure of professional learning communities. *Profess. Dev. Educ.* **2022**, 1–17. [CrossRef]
2. Hairon, S.; Goh, J.W.P.; Chua, C.S.K.; Wang, L.Y. A research agenda for professional learning communities: Moving forward. *Profess. Dev. Educ.* **2017**, *43*, 72–86. [CrossRef]
3. Bonsen, M. Professionelle Lerngemeinschaften in der Schule. In *Schulentwicklung und Schulwirksamkeit*; Holtappels, H.G., Höhmann, K., Eds.; Beltz Juventa: München, Germany, 2005; pp. 180–195.
4. Buhren, C.; Rolff, H.-G. *Handbuch Schulentwicklung und Schulentwicklungsberatung*, 2nd ed.; Beltz: Weinheim, Germany, 2018.
5. Vescio, V.; Adams, A. Learning in a professional learning community: The challenge evolves. In *The SAGE Handbook of Learning*; Scott, D., Hargraves, E., Eds.; Sage: Thousand Oaks, CA, USA, 2015; pp. 274–284.
6. Rosenholtz, S. *Teachers' Workplace: The Social Organization of Schools*; Longman: London, UK, 1989.
7. Senge, P.; Cambron-McCabe, N.; Lucas, T.; Smith, B.; Dutton, J.; Kleiner, A. *Schools That Learn. A Fifth Discipline Fieldbook for Educators, Parents, and Everyone Who Cares about Education*; Crown Business: New York, NY, USA, 2012.
8. Rolff, H.-G. *Handbuch Unterrichtsentwicklung*; Beltz: Weinheim, Germany, 2015.
9. Bonsen, M.; Rolff, H.-G. Professionelle Lerngemeinschaften von Lehrerinnen und Lehrern. *Z. Pädagogik* **2006**, *52*, 167–184.
10. Huber, S.; Hader-Popp, S. Von Kollegen lernen: Professionelle Lerngemeinschaften. In *Praxis Wissen Schulleitung*; Bartz, A., Fabian, J., Huber, S.G., Kloft, C., Rosenbusch, H., Sassenscheidt, H., Eds.; Wolters Kluwer: München, Germany, 2005; pp. 1–8.

11. Timperley, H.; Wilson, A.; Barrar, H.; Fung, I. *Teacher Professional Learning and Development*; Educational Practices Series 18; UNESCO International Bureau of Education: Geneva, Switzerland, 2008. Available online: [http://www.iaoed.org/downloads/EdPractices\\_18.pdf](http://www.iaoed.org/downloads/EdPractices_18.pdf) (accessed on 14 April 2024).
12. Kansteiner, K.; Stamann, C.; Buhren, C.; Theurl, P. *Professionelle Lerngemeinschaften als Entwicklungsinstrument im Bildungswesen*; Beltz Juventa: Weinheim, Germany, 2020.
13. Barrios, E.; Sanchidrián, C.; Carretero, A. Comunidades Profesionales de Aprendizaje en la formación práctica inicial de profesorado: La perspectiva del alumnado. In Proceedings of the Actas del VII Congreso de Innovación Educativa y Docencia en Red (In-Red 2021), Valencia, Spain, 13–15 July 2021; pp. 251–266. [CrossRef]
14. Sanchidrián, C.; Barrios, E.; Theurl, P. Professional Learning Communities for Student Teachers: Possibilities according to the Erasmus+ TePinTeach Project. In Proceedings of the Actas del XVII Congreso Nacional y IX Iberoamericano de Pedagogía, Santiago de Compostela, Spain, 7–9 July 2021; pp. 783–789. Available online: <https://www.usc.gal/libros/module/xeprotected/open?productId=1017&action=download> (accessed on 14 April 2024).
15. Theurl, P.; Barrios, E.; Frick, E.; Sanchidrián, C. Professional learning communities of student teachers in internship. In Proceedings of the 20th Biennial EARLI-Conference, Thessaloniki, Greece, 22–26 August 2023.
16. Kansteiner, K.; Barrios, E.; Skoulia, T.; Theurl, P.; Emstad, A.B.; Louca, L.; Sanchidrián, C.; Schmid, S.; Knutsen, B.; Frick, E.; et al. TePinTeach–Evaluation Report. 2022. Available online: <http://www.tepinteach.eu/deliverables/#IO5---Evaluation-Report:-Evaluation-of-the-chances-of-the-student-teacher-PLCs-and-student-teachers-%E2%80%93-mentors-PLCs> (accessed on 14 April 2024).
17. Rigelman, N.M.; Ruben, B. Creating foundations for collaboration in schools: Utilizing professional learning communities to support teacher candidate learning and visions of teaching. *Teach. Teach. Educ.* **2012**, *28*, 979–989. [CrossRef]
18. Hoaglund, A.; Birkenfeld, K.; Box, J. Professional learning communities: Creating a foundation for collaboration skills in pre-service teachers. *Education* **2014**, *134*, 521–528.
19. Chou, C.H. Investigating EFL elementary student teachers’ development in a professional learning practicum. In *Teachers’ Professional Development in Global Contexts*; Mena, J., García-Valcárcel, A., García-Peñalvo, F.J., Eds.; Brill: Leiden, The Netherlands, 2019; pp. 23–41.
20. Dahl, K.K.B. Professional development lost in translation? ‘Organising themes’ in Danish teacher education and how it influences student-teachers’ stories in professional learning communities. *Res. Comp. Int. Educ.* **2019**, *14*, 357–375. [CrossRef]
21. Wing-mui So, W. Quality of learning outcomes in an online video-based learning community: Potential and challenges for student teachers. *Asia-Pac. J. Teach. Educ.* **2012**, *40*, 143–158. [CrossRef]
22. Berger, M. Kollaboratives Problem-Based Learning. Ein hochschuldidaktischer Ansatz zum Aufbau professionellen Wissens durch problemorientierte und gemeinschaftliche Lernprozesse bei Lehramtsstudierenden. In *Professionelle Lerngemeinschaften als Entwicklungsinstrument im Bildungswesen*; Kansteiner, K., Stamann, C., Buhren, C., Theurl, P., Eds.; Beltz Juventa: Weinheim, Germany, 2020; pp. 261–272.
23. Feldmann, J. Professionelle Lerngemeinschaften in der universitären Lehrer\*innenbildung – eine Vorbereitung auf die unterrichtsbezogene Kooperation im Schulalltag. In *Professionelle Lerngemeinschaften als Entwicklungsinstrument im Bildungswesen*; Kansteiner, K., Stamann, C., Buhren, C., Theurl, P., Eds.; Beltz Juventa: Weinheim, Germany, 2020; pp. 240–251.
24. Funke-Tebart, O. Professionelle Lerngemeinschaften in der zweiten Phase der Lehramtsausbildung – Konzept, Erfahrungen, Perspektiven. In *Professionelle Lerngemeinschaften als Entwicklungsinstrument im Bildungswesen*; Kansteiner, K., Stamann, C., Buhren, C., Theurl, P., Eds.; Beltz Juventa: Weinheim, Germany, 2020; pp. 261–273.
25. Bensen, M.; Feldmann, J. Professionelle Lerngemeinschaften in der universitären Lehrerbildung. *Bundesarbeitskreis Semin.-Fachleiter/Innen EV (BAK)* **2018**, *2*, 24–38.
26. Steinkühler, J. Die Anregung von unterrichtsbezogener Zusammenarbeit in der universitären Lehrer\*innenbildung: Ein Seminkonzept zur kollegialen Kooperation im Lehrberuf. *Herausford. Lehr.\*Innenbildung—Z. Konzept. Gestalt. Diskuss.* **2022**, *5*, 108–125. [CrossRef]
27. Filipiak, A. Gelingende Kooperation durch professionsübergreifende Kommunikation in Professionellen Lerngemeinschaften. In *Kommunikationskompetenz. Zwischen Etablierter Praxis und Aktuellen Herausforderungen in den Schulpraktischen Studien*; Schöning, A., Cordes-Finkenstein, V., Mell, R., Eds.; Leipziger Universitätsverlag: Leipzig, Germany, 2022; pp. 51–60.
28. Leppert, S. „Çu vi parolas Prozess’peranto?“—Ein integrativer Ansatz zur kollaborativen Rekonstruktion von digital transformierten Unternehmensprozessen im Masterstudium der Wipäd Nürnberg. In *Digital Literacy in der Beruflichen Lehrer: Innenbildung: Didaktik, Empirie und Innovation*; Gerholz, K.-H., Schlottmann, P., Slepcevic-Zach, P., Stock, M., Eds.; wbv Publikation: Bielefeld, Germany, 2022; pp. 151–165.
29. Cheng, C.; Zhao, J. The impact of professional learning communities on pre-service teachers’ professional commitment. *Front. Psychol.* **2023**, *14*, 1153016. [CrossRef]
30. Meihami, H. Exploring the role of professional learning community in EFL student-teachers’ imagined identity development. *J. Lang. Identity Educ.* **2023**, 1–18. [CrossRef]
31. Rümmele, K. Schon wieder eine Gruppenarbeit?! Professionelle Lerngemeinschaften als kollaboratives Entwicklungsinstrument im Lehramtsstudium. *Erzieh. Unterr.* **2024**, *3–4*, 315–323.

32. Theurl, P.; Frick, E. Professionelle Lerngemeinschaften als Mittel der Professionsentwicklung bei Lehramtsstudierenden. In *Kooperationsfeld Grundschule-Fokus Grundschule Band 3*; Holzinger, A., Kopp-Sixt, S., Luttenberger, S., Wohlhart, D., Eds.; Waxmann: Münster, Germany, 2024; pp. 323–335.
33. Theurl, P.; Frey, A.; Frick, E.; Kikelj-Schwald, E.; Pichler, S.; Rümmele, K. Professionelle Lerngemeinschaften im Bachelorstudium „Lehramt Primarstufe“ – neue Wege in den pädagogisch-praktischen Studien. *F&E Edition* **2023**, *28*, 93–107.
34. Reintjes, C.; Thönes, K.V.; Winter, I. Individuelle Professionalisierung durch die Ausbildungselemente Unterricht unter Anleitung und professionelle Lerngemeinschaften aus der Perspektive von Lehramtsanwärter:innen. In *Professionalisierung von Lehrkräften im Beruf*; Porsch, R., Gollub, P., Eds.; Waxmann: Münster, Germany, 2023; pp. 25–52.
35. Auhl, G.; Daniel, G.R. Preparing pre-service teachers for the profession: Creating spaces for transformative practice. *J. Educ. Teaching* **2014**, *40*, 377–390. [[CrossRef](#)]
36. Frick, E.; Theurl, P. *Aktionsplan*; Pädagogische Hochschule Vorarlberg: Feldkirch, Austria, 2020; (unpublished, available on request).
37. Theurl, P.; Frick, E.; Barrios, E.; Efstathiadou, M.; Emstad, A.B.; Kansteiner, K.; Knutsen, B.; Lanström, P.; Louca, L.; Rahm, L.; et al. Modell der strukturierten und unterstützten S-PLG-Arbeit. 2022. Available online: <https://www.tepinteach.eu/deliverables/#IO3--Final-version-of-the-toolkit-withactivities-to-train-student-teachers-and-mentors-for-successful-PLCs> (accessed on 14 April 2024).
38. Wiliam, D. Changing classroom practice. *Educ. Leadersh.* **2007**, *65*, 36–42.
39. Tashakkori, A.; Teddlie, C. *Handbook of Mixed Methods in Social and Behavioral Research*; Sage: Thousand Oaks, CA, USA, 2003.
40. Creswell, J.W. *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Approaches to Research*, 4th ed.; Pearson: Boston, MA, USA, 2012.
41. Guest, G.; McQueen, K.M.; Namey, E.E. *Applied Thematic Analysis*; Sage: Thousand Oaks, CA, USA, 2011.
42. Schön, D. *The Reflective Practitioner: How Professionals Think in Action*; Basic Books: New York, NY, USA, 1983.
43. Korthagen, F.A. How teacher education can make a difference. *J. Educ. Teaching* **2010**, *36*, 407–423. [[CrossRef](#)]
44. Ulvik, M.; Smith, K. What characterises a good practicum in teacher education? *Educ. Inq.* **2011**, *2*, 517–536. [[CrossRef](#)]
45. Ulvik, M.; Helleve, I.; Smith, K. What and how student teachers learn during their practicum as a foundation for further professional development. *Profess. Dev. Educ.* **2018**, *44*, 638–649. [[CrossRef](#)]
46. Admiraal, W.; Schenke, W.; De Jong, L.; Emmelot, Y.; Sligte, H. Schools as professional learning communities: What can schools do to support professional development of their teachers? *Profess. Dev. Educ.* **2021**, *47*, 684–698. [[CrossRef](#)]
47. Carpenter, D. Collaborative Inquiry and the Shared Workspace of Professional Learning Communities. *Int. J. Educ. Manag.* **2017**, *31*, 1069–1091. [[CrossRef](#)]
48. Gee, D.; Whaley, J. Learning together: Practice-centred professional development to enhance mathematics instruction. *Math. Teach. Educ. Dev.* **2016**, *18*, 87–99.
49. Vescio, V.; Ross, D.; Adams, A. A review of research on the impact of professional learning communities on teaching practice and student learning. *Teach. Teach. Educ.* **2008**, *24*, 80–91. [[CrossRef](#)]
50. Mintzes, J.J.; Marcum, B.; Messerschmidt-Yates, C.; Mark, A. Enhancing self-efficacy in elementary science teaching with professional learning communities. *J. Sci. Teach. Educ.* **2013**, *24*, 1201–1218. [[CrossRef](#)]
51. Zonoubi, R.; Rasekh, A.E.; Tavakoli, M. EFL teacher self-efficacy development in professional learning communities. *System* **2017**, *66*, 1–12. [[CrossRef](#)]
52. Zheng, X.; Yin, H.; Liu, Y. Are professional learning communities beneficial for teachers? A multilevel analysis of teacher self-efficacy and commitment in China. *Sch. Eff. Sch. Improv.* **2021**, *47*, 695–713. [[CrossRef](#)]
53. Sæbø, G.I.; Midtsundstad, J.H. How can critical reflection be promoted in professional learning communities? Findings from an innovation research project in four schools. *Improv. Sch.* **2022**, *25*, 174–186. [[CrossRef](#)]

**Disclaimer/Publisher’s Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.