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Integrated initial and continuing training as a way of developing the professional agency of teachers and student teachers

Abstract

In this paper, we discuss training aimed at supporting the professional agency of teachers and student teachers. Drawing on socio-cultural and post-structural theories, we conceptualize professional agency as achieved by participation in professional practices. We employ our conceptualization in an analysis of a Finnish pilot training that combined initial and continuous training for preschool and primary school teachers. We argue that the practices of reflection and collective enquiry inherent in the model offer a fruitful starting point for further efforts to understand how to support the development of the professional agency of teachers and student teachers simultaneously.

Keywords: Professional agency; professional development; teacher education; preschool; primary school

1. Introduction

Changing societal and cultural circumstances are creating several challenges in the work of teachers (Urban, 2008). In particular, the global phenomenon of intensification, which is mainly due to the dictates placed on education by the economy, is creating unprecedented demands on teachers (Ballet & Kelchtermans, 2009; Bullough, Hall-Kenyon, MacKay, & Marshall, 2014; Paananen, 2017). In meeting the increasing challenges, professional agency (PA)¹ has become central to the work – and, consequently, education – of teachers. PA is seen as essential for teachers' professional development, and it is crucial for navigating the tensions between intensifying institutional demands, professional identity, work-related competencies, autonomy, reflexivity, and motivation (Eteläpelto, Vähäsantanen, & Hökkä, 2015; Vähäsantanen et al., 2017).

In developing teachers' PA, it is important to provide well-designed initial (Edwards, 2015; Lipponen & Kumpulainen, 2011) and further training (Author et al., 2019; Fukkink & Lont, 2007; Jensen, Jensen, & Rasmussen, 2015). In addition, teachers

¹ PA henceforth refers to professional agency.

appreciate opportunities for continuous learning (Author et al., 2018; Cherrington & Thornton, 2013; Jensen & Rasmussen, 2016). However, academic teacher training has been criticized for being too theoretical and, thus, ineffective (Girvan, Conneely, & Tangle, 2016; Pineda, Ucar, Moreno, & Belvis, 2011). The ineffectiveness of training can cause challenges, especially when teachers are starting their careers (Author et al., 2015). Furthermore, establishing connections between initial and continuing training has been noted as a significant goal. Previous studies have indicated that the shared training of teachers and student teachers produces successful learning experiences and multiple perspectives on educational practices (Kimmelman & Lang, 2019; Vandyck, Graaff, Pilot, & Beishuizen, 2012). Based on these concerns, developing training models at the intersection of initial and further training – as well as at the intersection of teaching practice and teacher training – is a worthwhile endeavour. While such models have been developed in the past, no consensus yet exists as to how to simultaneously support the development of PA of both pre-service and in-service teachers (Kimmelman & Lang, 2019; Vandyck, Graaff, Pilot, & Beishuizen, 2012).

In this study, we argue that the reflective practices inherent in a Finnish pilot training model (PTM)² that integrates initial and further training into a single course supports the PA of preschool and primary school teachers and student teachers. We proceed as follows. We understand social reality to be constructed in social practices in response to problems relevant to the matter at hand (Berger & Luckmann, 1966; Deleuze, 2014; Doty, 1997). Based on this, in Section 2, we conceptualize PA as being achieved in *participation in social practices*, where participation is understood as identifying and solving professionally relevant *problems* (Doty, 1994; Emirbayer & Mische, 1998; Howarth, 2000; Laclau & Mouffe, 2000). Conceptualizing PA as achieved in practices in response to problems is the first step of our argument. In Section 3, we build on this by describing the PTM and our data collection as part of the PTM. Data collection as part of the PTM forms the second step of our argument by establishing the data for this study as representative of the teachers' and student teachers' participation in the kind of practices that characterize our conceptualization of PA. Our third step, divided between Sections 4 and 5, is to ascertain to what extent the participants achieved professional agency in these practices. In Section 4, we interpret the analytic concept of the frame (Goffman, 1974) as a tool capable of revealing the

² PTM hereafter refers to the pilot training model.

problems the participants were trying to solve. In Section 5, we present the results of our analysis, showing to what extent the participants framed their reflections with *professionally relevant* problems. The first three steps of our argument are reflected in the concrete research questions that guided our inquiry:

1. What kind of professional agency do the participants achieve in the reflective practices of the PTM?
 - a. Which problems frame the participants' reflections on the project?
 - b. Which problems frame the participants' reflections on their teaching activities?

Our fourth and final step, in Section 6, is to draw together the conclusions and discuss the implications. We establish that as a model of collaborative practices, the PTM is conducive to the development of all the participants' PA, and thus it aids in developing the initial and further training of preschool and primary school teachers.

2. Professional agency

During the past two decades, PA has emerged as a concept to refer to agency specifically in the context of the workplace (Goller & Paloniemi, 2017, pp. 1–3). In the present study, we are primarily interested in the process through which teachers acquire and develop their PA, as well as the opportunities available for supporting that process. This motivates us to ask a theoretical question that has so far received scant attention in the extensive literature developed around the concept of PA – namely, what is the difference between agency and non-agentive action? Although it could reasonably be claimed that much of the considerable effort put into conceptualizing agency has gone into identifying agency – i.e., answering the question of what agency is – this theoretical challenge has rarely been posited explicitly by contrasting agency with action in general. This is rather surprising, because many of the dimensions attributed to PA, such as motivation and the capacity for innovative development of the workplace (e.g., Eteläpelto et al., 2013), characterize actions that are qualitatively superior to the alternatives, such as a lack of motivation. Since we find the difference between action and agentive action to be of paramount importance for the aim of our inquiry, we articulate our understanding of PA in terms of this distinction.

At a general level, the concept of agency aims to establish an account of human action (Schlosser, 2015). However, as noted by Goller and Paloniemi (2017), in the context of the workplace the concept is used in the more specific sense of action that is, among other things, proactive, innovative, creative, and involving professional initiative-taking and choice-making (2017, p. 1). Drawing together several earlier theoretical constructions, the possession of agency is thought to involve the characteristics of 1) the capacity to act, 2) intentionality or a sense of purpose, 3) the exertion of a causal power in the (social) environment, and 4) the sense of being the initiator of one's actions (Goller & Harteis, 2017; Melasalmi & Husu, 2019; Pantic, 2017; Schlosser, 2015). These four essential features introduce an inherent tension in agency, particularly in social environments like workplaces. Having intentions implies seeing the world as a meaningful place. Furthermore, in order to exert an influence in a social context, at least some other people have to appreciate the purposes behind one's actions. Agency is thus tied to the intersubjective world of significations, which introduces a fundamental tension with the requirement that the agent should also have a sense of being the initiator of her actions. This tension points the way to a deeper understanding of the difference between a general capacity to act and agency.

Whereas the capacity to act is a general human property, PA is something that is achieved in working contexts (cf. Biesta & Tedder, 2007). This leads us to affirm Emirbayer and Mische's (1998) definition of agency:

Agency is the temporally constructed engagement by actors of different structural environments – the temporal relational contexts of action – which, through the interplay of habit, imagination, and judgment, both reproduces and transforms those structures in interactive response to the problems posed by changing historical situations. (p. 970; see also Biesta & Tedder, 2007.)

In our reading, the key to this definition is noting the distinction between the *actor* as a pre-agentive individual and the *contexts of action* where the actor achieves agency in response to problems posed by changing historical situations. This reading is supported by noting that elsewhere, Emirbayer and Mische (1998) have argued that structural environments are 'temporal as well as relational fields – multiple, overlapping ways of ordering time toward which *social actors* can assume different simultaneous *agentive* orientations' (p. 963, italics by the present authors). In the context of the present study,

it allows us to establish a distinction between a capacity to act as a given human potential and PA *as achieved by participation in professional practices*. To elaborate on this distinction, we need to consider in more detail what is meant by practices and participation.

By practices, we mean constellations of actions that have a purpose and meaning. In other words, practices always contain a signifying element (Doty, 1997, p. 377). Crucially, this is not to say that practices manifest a pre-defined meaning. Instead, practices are *articulatory* in the sense that the acts constituting the practice modify what the practice signifies (Laclau & Mouffe, 2001, pp. 105, 113). We draw these features from post-structuralist literature (Doty, 1997; Howarth, 2000; Laclau & Mouffe, 2001). Furthermore, interpreting the work of Deleuze (2014, pp. 184, 213), we contend that practices derive their signifying property from being problematic – i.e., the meaning of a practice becomes articulated by actions enacting solutions to problems. Furthermore, any given practice can signify many things, and the meaning of a given practice can never be completely determined, but remains open (Doty, 1997, p. 377; Howarth, 2000, p. 109; Laclau & Mouffe, 2001, pp. 106–107, 110–111). While practices would not exist without the acts of the actors participating in them, it is only by participating in the practice – and thus being part of the intersubjective articulation of meaning – that these actors become agents.

Following Emirbayer and Mische (1998), we understand participation to be the selective invoking of habits, the imagining of alternative futures, and the making of judgements between the two. It is crucial to our conception that these three dimensions arise in “interactive response to the problems posed by historical situations” (Emirbayer & Mische, 1998, p. 970). Thus, the actors’ participation in practices – i.e. their agency – consists of meeting emerging problems by providing habitual solutions, imagining new solutions (or new problems), and judging what to do next (Emirbayer & Mische, 1998). The ‘professional’ in PA is what sets up boundaries for what can be considered relevant problems and solutions. For example, the PA of a teacher is, in its most general sense, defined by the problem of educating children.³ While even actions that do not work

³ It should be noted that we do not view problems as simple quizzes where a correct (or incorrect) answer is easily found. Rather, problems are never closed by any particular solution (Deleuze, 2014). Thus, the

towards ‘solving’ the problem of education might be agentic, they would not be examples of *professional agency*, since they would be based on a different set of problems and would be part of a different practice. Thus, developing PA is also a question of learning to pose and solve *educational* problems. Nevertheless, we should note that many institutional practices, structures, and resources not directly related to educating children place constraints on teachers’ PA (Eteläpelto et al., 2013; Lasky, 2005). For example, the time available for designing learning activities places limits on what is possible.

We have aimed to provide a coherent theoretical account that extends the earlier theoretical discussions to explicitly meet the problem of distinguishing PA from action more generally. Our discussion here should be seen as a continuation of the subject-centred socio-cultural conceptualization of PA that has become prominent in recent years (Eteläpelto et al., 2013). In particular, understanding PA as participation in problem-solving practices is closely tied to two findings from earlier studies. First, following Eteläpelto et al. (2013, p. 61), we affirm the general structure of an intertwining of individual and socio-cultural dimensions in the constitution of PA. We also draw explicit attention to their assertion that individuals only achieve PA as *professional subjects* – as participants in professional practice. Second, in the existing literature, PA has been seen either as a capacity of the individual or as something the individual does (Goller, 2017; Goller & Harteis, 2017). We concur with the claim by Goller and Harteis (2017, p. 88) that agency-as-capacity and agency-as-acts are not contradictory theoretical constructs; they represent a crucial analytical distinction for understanding the complex phenomenon of agency. However, our terminology differs from that of Goller and Harteis (2017): for us, the capacity to act is a general human feature, while ‘agency’ only happens when that capacity is exercised as part of a professional practice. For Goller and Harteis (2017), these terms have reversed meanings. The reason for this terminological difference is perhaps due to Goller and Harteis (2017) being interested in a general phenomenon applied to work (*agency at work*), whereas we are interested in a phenomenon specific to the working context (*professional agency*).

problem of ‘educating children’ can have various senses and proposed solutions with no one solution ever able to solve the problem in its entirety (cf. Biesta, 2010).

Earlier studies have identified several aspects of PA that in our formulation could be interpreted as *capacities* relevant for teachers' PA, for example, competence and professional knowledge (Eteläpelto et al., 2013; Pantic, 2017; Vähäsantanen, Hökkä, Paloniemi, Herranen & Eteläpelto, 2017; Vähäsantanen, Saarinen, & Eteläpelto, 2009), the ability to make choices and decisions (Goller & Paloniemi, 2017; Eteläpelto et al., 2013), the ability to negotiate and work with others (Edwards, 2015), and motivational and cognitive resources and flexibility (Heikonen et al., 2017). By contrast, aspects of PA identified in earlier studies could be interpreted as *achieved* through participation in professional practices. These include, for example, a sense of purpose and autonomy (Pantic, 2017), professional identity⁴ (Edwards, 2015; Eteläpelto et al., 2013), and the ability to influence the working community (Eteläpelto et al., 2013).

In this study, we focus on establishing whether the teachers achieve a sense of purpose characteristic of PA when they participate in the reflective practices of the PTM — whether their capacity for reflection translates into PA (Archer, 2000; Eteläpelto et al., 2013). Earlier research has shown that opportunities for reflection are meaningful in supporting an agentic orientation towards work (Messmann & Mulder, 2017). This suggests that reflective practices might be conducive to the development of teachers' PA and, further, that such practices might be capable of simultaneously supporting the PA of teachers and student teachers.

3. Teacher training in Finland and the Pilot Training Model

3.1 Finnish teacher training

Having established our framework for PA, we can move on to the PTM. First, a short description of the general context of teacher education in Finland is in order. In Finland, teacher accreditation is a university degree. Preschool teachers qualify by completing a bachelor's degree (180 credits), although it is possible to continue to a master's degree (300 credits). By contrast, to qualify as a primary school teacher, it is necessary to complete a master's degree. Both types of teacher education are designed to help teachers develop skills for implementing the national core curricula as well as acquiring

⁴ Insofar as identity is understood as being constantly constructed by *identifying with* certain practices and discourses and not others.

a general understanding of education. Although teacher education in Finland is generally high quality (Fonsén & Vlasov, 2017), it has been criticized for being too theoretical and failing to provide newly qualified teachers with adequate pedagogical competence (Author et al., 2018). Additionally, the support for students' professional agency is limited (Soini, Pietarinen, Toom, & Pyhältö, 2015).

Although initial training is necessary for the development of PA, teachers need to develop their expertise throughout their careers (Ballet & Kelchtermans, 2009; Brown & Englehardt, 2016; Mackay, 2017). Compared to several other countries, Finland does not have well-designed and effective further training systems (Author et al., 2019; Leskisenoja, Körkkö, & Kotilainen, 2019; Pineda et al., 2011). The lack of organization has resulted in challenges regarding the provision of such training (Author et al., 2019; Blanchard, LePrevost, Tolin, & Guitierrez, 2016). For example, the courses do not have continuity and they lack the necessary financial and temporal resources. Furthermore, there are major regional differences in opportunities to participate in further training. (Darling-Hammond, 2017.)

To meet the challenges of teachers' professional development, the Finnish Ministry of Education and Culture founded the Forum for Teacher Education in 2016. The Forum funds development projects where teachers, educators, administrators, and other experts can create and share their ideas on research-based teacher education (Finnish Ministry of Education and Culture, 2019). The PTM investigated in this article is part of one such development project: "INNOPLAY: Craft, design, and technology learning (STEAM) in early childhood education (2018–2021)".

3.2 Aims and Practices of the PTM

The primary aim of the INNOPLAY project is to extend the professional expertise of preschool and primary school teachers in integrating craft, design, and technology learning. It is realized by creating PTMs that operate in "boundary spaces" (Edwards, 2010) between the universities and the practitioners, between preschools and primary schools, and between initial and continuing training. Boundary spaces are "the spaces where the resources from different practices are brought together to expand the interpretations of multifaceted tasks" (Edwards, 2011, p. 34). In such boundary spaces,

it is possible, through reflection, to create new knowledge in fruitful collaborations across traditional institutional boundaries (Edwards, 2010; Author et al., 2016). Crossing institutional boundaries allows the connection between theory and practice in initial training to be strengthened and creates a possible structure for further training. The PTM under scrutiny is an integrated initial/further training course titled “Craft and technology education in preschool and primary school” carried out during the spring of 2019.

The course consisted of four days of classroom study at the university and project implementation in the participants’ workplaces (see Table 1). The methods of training were seminars, workshops, lectures, and reflective tasks. The authors of this paper were responsible for the seminars, while two university teachers held the workshops and guided the design of the school projects. The school projects were co-designed and implemented with children by the teachers and student teachers participating in the PTM.

Table 1: Course practices and data collection timetable.

Timetable	Activities	Participants	Dimension of PA
Day one January 2019	Lecture: Digital technology and learning. Workshops: The technology of everyday life, Lego Wedo, and Bee-Bot as tools for teaching programming.	-55 participants from all the universities (teachers, student teachers, educators, and researchers).	Competence
Day two February 2019	Lecture: Participation and agency in education. Workshop: Let's investigate, surprise, be joyful, and do. Ecosocially responsible technology education. Reflection: Development plan for spring 2019. Instructions for student teachers' portfolios.	-4 Preschool teachers -6 Primary school teachers -6 Student teachers -2 Craft teachers -2 Researchers/ECE teachers	Competence, reflection
Day three March 2019	Lecture: The digital skills of preschool and primary school teachers: understanding and constructing the technological world together. Workshop: The significance of planning, the basics of electricity, and the electronic circuit. Reflection: Planning the workshops implemented in preschool and primary schools.	-4 Preschool teachers -6 Primary school teachers -6 Teacher students -2 Craft teachers -2 Researchers/ECE teachers	Competence, reflection
April 2019	Two projects in school A: Children working in groups to design and prepare future homes as craftwork. The homes were installed with LED lights and the electronic circuit was explored. One project in school B: Children working in groups to design and build boats. Water and air as well as sinking and floating materials were explored.	-214 children -4 Preschool teachers -6 ECE nurses -2 Assistants -6 Primary school teachers -6 Teacher students -2 Craft teachers -2 Researchers/ECE teachers	Working with others, competence
Day four May 2019	Reflection: Evaluating and assessing the projects and the whole of spring 2019. Planning the autumn of 2019. Data collection: Focus group discussions, electric questionnaire and the deadline for student teachers' portfolios.	-4 Preschool teachers -6 Primary school teachers -6 Teacher students -2 Craft teachers -2 Researchers/ECE teachers	Reflection

3.3 Participants of the PTM

Two preschool and primary school units were involved in the pilot. From these units, four pre-school teachers, six primary school teachers, and six student teachers (one primary school student teacher and five pre-school student teachers) participated in the PTM. In the rest of this paper, the term 'participants' is used to refer to the pre-school, primary school, and student teachers collectively, while 'teachers' refers to both the pre-school and primary school teachers. The average working experience of the teachers was 15 years and the student teachers were at various stages of their studies, ranging from their

second to their fifth year. The participating preschool and primary school units were recruited via Tampere University's Early Childhood Education Network. An email was sent to five local units where pre- and primary teachers work in the same building. The five units were chosen to represent socio-economically diverse areas. Both units who responded to the email were welcomed to the project. For student teachers, the course was included in their optional studies. Throughout the course, the participants worked in three groups, which consisted of one or two preschool teachers, two primary school teachers, and two student teachers. All the teachers from the first unit worked as a group, while two groups were formed from the second unit.

4. Method

4.1 Data collection in the PTM

The data collection procedures were designed based on the theoretical distinction between the capacity for action and PA introduced earlier. The data were collected from the preschool teachers, primary school teachers, and student teachers who participated in the PTM. The data consist of an individual electronic questionnaire (n=16), focus group discussions (n=3), and the student teachers' portfolios (n=6), all of which were part of the course practices. The focus groups matched the working groups that implemented the workshops together in pre- and primary schools, with each group consisting of 5–6 participants. The data were collected during the last seminar day in May 2019. The electronic questionnaire, portfolios, and focus group discussions were meant to guide the participants to translate their capacity for reflection alone (Archer, 2000; Eteläpelto et al., 2013) or with others (Edwards, 2015) into professionally relevant problematizations.

Two themes underly the questionnaire as well as the instructions for focus group discussions and student portfolios. The participants were required to reflect on (1) the project as a whole and (2) their pedagogical activities. The themes of the *questionnaire* were the contents, methods, and practices of the further training as well as the development of conceptions and thinking concerning the participants' competence in technology and art education. The *focus group* discussions concentrated on the workshops. The participants were asked to reflect on how they achieved their goals, describe the planning and implementation of activities, and assess the arrangements of the learning environment and documentation. The participants produced documentation

for the focus group discussions by writing on a separate form. The instructions for the student teachers' *portfolios* were to describe the entire training project from their point of view and to reflect on it using the theoretical approaches of technology and craft education. Student teachers constructed their portfolios throughout the course and submitted them for evaluation at the end of the course in May 2019.

4.2 Analysis

Frame analysis (Goffman, 1974) was used as an analytical tool. Frame analysis is a well-established method of analysis in early childhood education contexts (Paananen, Repo, Eerola, & Alasuutari, 2018; Puroila, 2002). As formulated by Goffman, the concept of framing aims to capture the way individuals' experience is organized. Frames are interpretive perspectives that are shared by communities. Framing is about 'choosing' what to focus on, although 'choosing' should not be understood to be an entirely conscious process. Individuals are not usually aware that they are 'choosing' to use a particular frame, and several frames are often present in any one passage of text or speech (Goffman, 1974). It is noteworthy that one particular manifestation of framing is the way some problems or ways of interpreting problems are considered significant while others are not (Entman, 1993). In light of our conceptualization of PA, we use frames precisely in this sense.

Understanding frames as socially shared views of which particular problems are relevant and which are not connects the analytic concept of framing to our conceptualization of PA. As noted earlier, we understand PA as something that is achieved by participating in professional practices. This participation is a problem-solving activity in the sense that it happens in relation to the problems that give the practice its meaning. Thus, a teacher's PA would involve dealing with problems of education. Consequently, the analytical question guiding our analysis of the reflections made by the teachers and student teachers was the following: What is the problem that the speaker aims to solve? No coding scheme *per se* was suitable for identifying the problems in the data. Instead, the analysis proceeded in hermeneutic cycles of reading, interpreting, and categorizing (Puroila, 2002, p. 37). We deployed this procedure in two ways to answer research questions 1a and 1b, respectively. We first applied the question to the data in their entirety, revealing which problems were considered relevant by the participants. Applying the question to the data

in their entirety allowed us to answer research question 1a: Which problems frame the participants' reflections on the project? We then focused on data segments where the teachers reflected specifically on their teaching. This allowed us to answer research question 1b: Which problems frame the participants' reflections on their teaching activities? Answering these two sub-questions in turn allowed us to answer our primary research question: What kind of professional agency do the participants achieve in the reflective practices of the PTM?

4.3 Trustworthiness and research ethics

Trustworthiness and data credibility were considered during the study: many kinds of data were used to enhance the validity of the findings through triangulation (Flick, 2014). Furthermore, exact and open descriptions of the data collection and analysis are provided. The analytical process was implemented at first through individual interpretations and then via discussion and reflection amongst the researchers. As a part of this process, the researchers sought to create categories that would cover as much of the available data as possible. Consequently, no divergent thematizations were left out of the results (see Section 5). To confirm the trustworthiness of the findings, authentic quotations from the questionnaires, discussions, and portfolios have been used (Ryan & Bernard, 2000).

The research followed the guidelines for responsible and good research ethics given by the Finnish Advisory Board on Research Integrity (2012). Written, signed research permission was obtained from the municipality, pre-primary and primary schools, teachers, and student teachers. Participation in the study was voluntary, instructions on how to opt out of the study were given, and the informants' anonymity was protected. All participants were informed of the purpose and implementation of the research in a manner understandable to a layperson. All quotations have been anonymized and the names of the preschool and primary schools have been withheld.

5. Results

The results (see Table 2) are presented in the order of the two research questions. In general, the results show that the participants achieve PA, although not in unambiguous terms. The results of research question 1a (Section 5.1) show that the participants in

general achieved strong PA. By contrast, in response to research question 1b (Section 5.2), their PA remained more ambiguous.

Table 2: Results.

Research question	Frame	The perceived problem	Supportive/ adverse methods	Agency
Research question 1a Which problems frame the participants' reflections on the project?	Seeking new knowledge	How can I make the most of this opportunity for professional development?	Problem-based questioning, connection between theory and practice	Strong PA
	Being part of a community	What can I do for others? What can we do together?	Community, discussions, feedback	Strong PA
	Following procedures	What is the correct way of proceeding?	Time resources, Curriculum	Limited PA
Research question 1b Which problems frame the participants' reflections on their teaching activities?	Instructing	How should I instruct the child so that she achieves the goal set for the activity?	N/A	Limited PA
	Listening	How do I enable the child to express herself?	N/A	Limited PA

5.1 Which problems frame the participants' reflections on the project?

In Sections 5.1.1, 5.1.2, and 5.1.3, we introduce the results of research question 1a: Which problems frame the participants' reflection of the project? Three distinct frames were identified in the data: (1) the problem of constructing new knowledge, (2) the problem of developing the community, and (3) the problem of following procedures. The three frames are introduced in detail in the following three sections.

5.1.1 The problem of investigative learning

The first problem identified within the data is the problem of investigative learning. This problem was mentioned in the questionnaires, portfolios, and focus group reports by all

the participants. Here the problem being solved is one of learning or finding out new things. In the following two excerpts, the problem of learning new things is reflected on in the way the participants evaluate the development of their understanding during the pilot course.

My understanding about craft education has expanded. Technology education and the basic knowledge of technology have become more familiar, and the idea of working with them more and more in everyday life has become easier. I am excited. (Questionnaire, teacher, working experience four years)

Here the participants describe how the two primary foci of the training – technology and craft education – have become more familiar. Something that used to be difficult and unfamiliar has become more manageable – the problem of learning new pedagogical skills has been solved. It is worth noting also that here the pre-school teacher mentions excitement and motivation, which are core dimensions of PA (Eteläpelto et al., 2017).

The problem of learning new things is also reflected in the appreciation of a ‘questioning teaching method’ in the university seminars.

Collaborative learning situations at the university have brought additional expertise. Examples include the questioning teaching method and design from the observations for different senses. There was a new and inspiring idea for designing a craft project. (Questionnaire, teacher, working experience ten years)

All participants addressed the relationship between practice and theory in their answers to the questionnaires:

Reflectivity is enhanced by the closer practical situations in the discussion. The topics can be theoretical, but if they are presented with different hypotheses about the connection with everyday education and teaching, it will promote my own reflective thinking. (Student teacher, questionnaire, 2rd grade)

As part of the design of the course, the university teachers did not give self-evident answers; instead, they asked questions and encouraged participants to think and answer

the questions. As can be recognized from the previous example, this kind of ‘problem-based’ method was described as a useful teaching method.

Third, framing the pilot training with the problem of learning new things is reflected on by teachers in the relationship with the time spent in the university seminars. The following quote from the questionnaire is revealing in this respect:

The craft workshops have been good and useful. In the hectic everyday, it is impossible to try to do this kind of work without time. (Questionnaire, teacher, working experience eight years)

The teachers see the time spent at the university as an opportunity to learn new things. The face-to-face days organized during the PTM were described as valuable precisely because they make it possible to concentrate on an interesting new theme. The teacher is engaged in the effort of learning new things and sees time as an ally in this respect.

In framing their reflection as a problem of learning new things, the teachers and student teachers achieve strong PA. The problem of learning new things is closely tied to the very core of teachers’ work – educating the children. In several of the above quotes, the teachers explicitly reference their everyday teaching practice as a place for implementing the new ideas they have learned. Thus, in the case of this frame, the teachers’ capacity for reflection translates into a clearly *professional* agency, as their sense of purpose is directed to developing as educators. Additionally, the individual development and the sense of purpose this frame supports are significant features of PA (Eteläpelto et al., 2013; Vähäsantanen et al., 2017; Vähäsantanen, Saarinen, & Eteläpelto, 2009).

5.1.2 *The problem of community*

The second problem teachers and student teachers used to frame their reflection is the problem of community. The majority – 10 of the 16 participants – mentioned the importance of the community for their learning. The teachers in particular connected their professional development to the working community. Several manifestations of the same underlying problem could be identified. Here the problem was posed in two ways: What

can I do for others, and, what can we do together? In the following excerpt, both the previous frame and this one can be seen:

In my own community, everyone has been ready for discussion and development. Sharing common experiences and practices has also increased the use of new methods in our school. (Questionnaire, teacher, working experience 18 years)

The more general problem seems to be the one identified in the previous frame, i.e., the problem of learning new things. However, there is an undertone that learning should happen together. The first sentence suggests that facts might have been otherwise – i.e., some might not have been ready for development. Several earlier studies have shown that a conservative societal culture might prevent continuing professional development and development work (Author et al., 2018; Author et al., 2019; Happonen, Määttä, & Uusiautti, 2012). Had that been the case, the problem would have had to be solved, suggesting that it is not only the problem of learning new things, but learning new things *together* that frames this reflection.

As was the case with the first frame, the problem of community was also manifested in how the participants valued the shared meetings at the university, as shown in this reflection:

What was missing in the workshops was the time for discussions with the children. [...] After the workshops, it would also have been interesting to have a deeper discussion and reflection with the teachers in the group. It would have been interesting to hear more about their thoughts on the success of the workshop and their observations on the children's comments after the workshops. (Portfolio, student teacher, 4th grade)

The problem that is trying to be solved here is one of sharing knowledge from various perspectives. This is in line with earlier findings that interaction and discussions with other students support student teachers' sense of PA (Author, 2018; Lipponen & Kumpulainen, 2011; Pyhäntö et al., 2015). Here, the student teacher sees the problem not only as finding out how the teachers perceived the workshop, but also how the children perceived it. Thus, the problem that is being solved is hearing everyone's story – inviting

everyone to the discussion. Unfortunately, this time the problem remains unsolved since there was no chance to hear those voices due to the seminar structure. By contrast, in the following excerpts, a successfully solved problem of organizing cooperation frames the reflection. It is notable that this perspective was mentioned by both student teachers and teachers.

The thread of the activity rose from the topical issues of child groups, and we students came up with a practical implementation together with working life. As a whole, it was very rewarding to design and implement such a project together, even though it contained its own challenges. (Portfolio, student teacher, 3rd grade)

The participation, ideas, and imagination of the children directed their craft work, including structuring, building, and painting. (Focus group report)

In these reflections, everyone has a role to play: the children's ideas direct the design of the craft workshops, the teachers provide topical issues from the groups, and the student teachers come up with a practical implementation *together* with working life. Furthermore, we can identify the principles of the boundary work and relational expertise in these reflections: there is an opportunity to find a new approach to workshops with the expertise of all the actors (Edwards 2010; 2011). The problem of doing things together has been solved.

Finally, in one instance, the problem was seen as the inclusion of teachers' co-workers. Understandably, this aspect was not brought up by the student teachers.

In the work community, non-participants will probably have received ideas, but I would like more time to go through them together. (Questionnaire, teacher, working experience four years)

Here, the pre-school teacher frames the problem as making sure everyone has understood the ideas. However, it is again the element of time that becomes an obstacle: there is no time to go over the ideas together so that the teacher could help her colleagues. As a side note, in the future, the possibilities of online networking might be explored to solve this problem (Author et al., 2019; Malinen, 2015; Powell & Bodur, 2019).

Similarly to the first frame, in framing their reflection as a problem of shared activity, the teachers and student teachers achieve strong PA. Although the connection to the primary purpose of teaching – educating the children – is not quite as strong as in the previous frame, this is more than compensated for by the orientation towards making sure everyone is included in the shared practice. Earlier studies have established such development of communities as a core feature of PA (Edwards, 2005; Eteläpelto et al., 2013; Pyhältö & Keskinen, 2012; Vähäsantanen et al., 2017; Vähäsantanen et al., 2009) Furthermore, Hujala and Fonsén (2011) have highlighted that the responsibility for development work should be shared among all members of the community. This gives added weight to the problem of community appearing also in the form of how to include the co-workers who have not participated in the seminars.

5.1.3 The problem of following procedures

The third problem identified in the data is the problem of following procedures. All participants mentioned this in their questionnaires, as did the student teachers in their portfolios. Two manifestations of this problem could be identified in the data: for the teachers with respect to time, and for the student teachers with respect to the curriculum. Both are best understood with reference to similar but different problems met earlier. First, the problem of following procedures is manifested in the following excerpt in the form of the curriculum:

It would have been interesting to study the topics and goals of technology education in curricula with other students and preschool and primary school teachers. The goals are realized in the everyday life of school and pre-school education. (Portfolio, student teacher, 4th grade)

The curriculum represents an exterior authority where the goals can be found and then realized in everyday life. Crucially, the curriculum can give a ‘correct’ answer to the problem of how the children should be educated. This is in stark contrast to the problem of investigative learning, where learning is seen as an ongoing project involving hypotheses and questions.

Second, in the teachers' reflections, the problem of following procedures can be seen with respect to time:

Training has taken a lot of time, which is not a substitute for the teacher. That is why afternoon training has been heavy. (Questionnaire, teacher, working experience eight years)

Here, time appears as an obstacle to solving the problem of maintaining the usual everyday procedures. Afternoon training feels heavy, because it adds to the weight of everyday teaching. Setting up the problem in this way creates a contrast with the previous frames. The seminars at the university, which in the previous two frames appeared as an opportunity for learning and shared activity, are constructed as something that prevents engaging with the 'real' issue at hand – teaching.

In the case of the third frame, the teachers' PA takes on a more ambiguous character than in the previous two frames. The first impression is that the participants are involved with the problem of teaching children in that they call for a careful study of the curricula and more time for the actual teaching. The first impression suggests strong PA with a sense of purpose focusing on the core problems of education. However, the participants expect others to solve the problems. Whereas in the previous frames the sense of purpose was connected to the participants themselves acting to solve the problems, in this frame, the participants are victims of others' actions. This expectation is most evident in the above quote from the student teacher where she states that "it would have been interesting to study the topics and goals of technology education in curricula with other students and preschool and primary school teachers". The student teacher expects someone else to provide the chance to study the curricula together; she expects someone else to solve the problem. She thus lacks autonomy, a crucial dimension of PA (Eteläpelto, Vähäsantanen, & Hökkä, 2015; Pantic, 2017; Vähäsantanen et al., 2017). Although this ambiguity manifests itself differently in the case of teachers and student teachers, it is equally present in both groups.

5.2 Which problems frame the participants' reflections on their teaching activities?

In answering the second research question, the analytic question was applied only to the segments of data where the teachers reflected on their teaching practice. Two distinct frames were identified: (1) The problem of ensuring the best possible instruction, and (2) the problem of listening to the child. These frames reveal a pedagogical dilemma that was not explicated in the data. Although both frames were mentioned occasionally in the questionnaires and focus group discussion, they were most prominent in the student teachers' portfolios, with both frames appearing in all of them.

5.2.1 The problem of instruction

In a sense, the first frame is the more straightforward of the two. Teaching is here framed as a problem of reaching pre-defined goals and instructing the children. The frame appeared in all the focus group reports and the majority of the student portfolios. In the following excerpt, the participants reflect on the activity by explicating the goals set for the children:

The goals set for the children were integrative craft education and corresponding safe working procedures, creative project work, and the skills of collaboration, cooperation, and interaction. I feel that the goals set for the children were reached.
(Focus group report)

As can be seen, it was also necessary to note that the goals set for the activity were met. The problem is framed in a mechanical way: the path is already set, and the teacher's task is to make sure the child follows the path to the end.

The problem of instruction was manifested in several concrete teaching activities described by the student teachers. Children are talked to, 'I was feeling surprisingly confident as I was starting to talk to the children' (Student teacher, portfolio), instructions are given to them, 'we give the children instructions for the activity' (Student teacher, portfolio), and procedures are demonstrated to them, 'the activity began with a demonstration I gave to the whole group' (Student teacher, portfolio). A crucial

dimension of the problem is that such activities work best when they can be directed personally to each child: “There were only a few children in the group I was guiding, so I feel I could personally guide all the groups” (Student teacher, portfolio). The teacher feels the problem of instruction is solved by her ability to be present with each small group of children. The problem of teaching is thus set up as providing a script for the children to follow – the more detailed the better.

5.2.2 The problem of listening to the child

The second frame identified in the data poses the problem of teaching as one of listening. It appeared throughout the data, but it was most prominent in the student teachers’ portfolios. This way of framing the problem of teaching is based on understanding the child as having a valuable inner world that needs to be listened to and cultivated by the teacher. Everything starts with constructing the child as having ideas worth uncovering:

When thinking about the workshop themes, we decided that the teachers would ask for ideas from the children. In this way, the children got to participate in the planning and the themes were guaranteed to be interesting to them. (Student teacher, portfolio)

Not only do children have ideas, they also uniquely experience the activities designed and executed in the day care centre:

As I was observing the children working, I noticed that the activities themselves – choosing the materials, deliberating on the execution, and doing things together – were more important than the final goal. (Student teacher, portfolio)

Thus, the child is given a selfhood that can be expressed and listened to.

Seeing the child as having an inner life of his/her own sets up the problem of teaching as one of conversation or shared experimentation:

It is important that the grown-up acts as a co-experimenter with the children. This kind of a role is in my opinion also a more meaningful one than the role of a fact-producing teacher. (Student teacher, portfolio)

Such cooperation often revealed the surprising competencies the children already possessed: “After the project, I noticed how competent and capable the children are” (Teacher, questionnaire). In contrast to the previous frame, where the problem of teaching was framed as talking *to* the children, here the teacher talks *with* the children, and, instead of demonstrating things, explores them with the children. Consequently, the problem of teaching is understood as one of enabling. The children are allowed to do things: they are offered the opportunity to experiment, choose between options, and – above all else – *express themselves*.

Pedagogical paradox

It is not surprising to find that tensions emerge between the two problems. On the one hand, the problem to be solved is one of instruction – providing careful and personal guidance and support to the child. On the other hand, the problem to be solved is allowing the unique self of the child to emerge, to become part of the intersubjective world. These contrasting aims set up a conflict often referred to as the pedagogical paradox (Kant, 1991, p. 27; Rainio, 2010, p. 24). The conflict is seen clearly in the reflection of one of the student teachers:

The next step was the most exciting for me. We only gave the children the instruction “build a boat”, because we didn’t want to build any one specific kind of boat. Anxiety arose from my reflection of “What if one of the small groups doesn’t know how to make a boat? How will I know how to help them without guiding them too much?” (Student teacher, portfolio)

Although the tension between the two frames is prevalent in the data, this is the only instance where it is explicitly mentioned as an object of reflection. Consequently, the tension is not resolved anywhere in the data, nor are any possible solutions presented.

Thus, in the case of pedagogical activities, the participants' capacity for reflection does not completely translate into PA. Although the participants began to reflect on their pedagogical activities, they were unable to use their reflection in identifying and/or solving the central pedagogical problem of balancing between talking *to* and talking *with* the children – between freedom and restraint (Kant, 1991). Thus, they were unable to reflect on the complex and contradictory nature of children's agency (Rainio & Hilppö, 2017) and therefore, in relation to the problem of teaching, to translate their capacity for reflection into PA. This points to the more general conclusion that the practices of the pilot training did not offer the necessary support for the participants to achieve PA when reflecting on pedagogical practice.

6. Conclusions

Several conclusions can be drawn from the results of our analysis. The participants framed their experiences with problematizations attributable to PA by viewing the project through the lenses of learning new pedagogical skills and collaboration. Therefore, the PTM is one possible solution to the problem of supporting the professional development of both in-service and student teachers in an initial-further training collaboration. Based on this, we encourage the implementation of integrated initial and continuing training in 'boundary spaces' between university and working life (Edwards, 2011, p. 34; Author et al., 2019).

However, the participants also framed their reflections with the problem of following correct procedures, which had more ambiguous connections to PA. In particular, in using this frame, the teachers positioned others as solvers of problems, which reveals a lack of autonomy (cf. Pantic, 2017) concerning the problems used to frame the reflection. Furthermore, the frames identified in the reflections of teaching activities revealed a central pedagogical dilemma that the participants themselves were aware of only occasionally. The participants viewed their pedagogical activity as a problem of instruction on the one hand and a problem of listening on the other. The consequent tensions were articulated in the reflections only in passing, and no possible solutions were presented. The persistence of such tensions suggests that the PTM supported reflection on pedagogical practices, but not identifying or solving pedagogical problems encountered in practice. In the subsequent development of the model, practices should

be established that specifically support the development of the participants' autonomy and ability to problematize their pedagogical understanding.

Identifying the framings employed by the participants in their reflections also pointed towards a few practices of the PTM that were perceived as particularly significant for supporting PA. A close connection between theory and practice was highlighted as crucial for understanding new ideas and for the possibility of employing them in everyday practice, which is in line with earlier calls for engagement in real classrooms during professional development (Desimone, 2011; Girvan, Conneely, & Tangle, 2016). Thus, at least to some extent, the PTM was able to counter criticisms that academic teacher training is not being adequately tied to actual practice (Author et al., 2018). A central element in supporting the established connection with practice was formed by the problematizing teaching methods used in the project, which were also appreciated by the participants. However, this aspect should be developed further, since the ambiguous third frame also revealed that the teachers perceived the project as something different from their 'real work'.

The participants also highlighted seminar discussions as beneficial in revealing various points of view on the same issues. The discussions where student teachers and in-service teachers had the opportunity to share their ideas seem to have worked to create the connection between initial and further training hoped for in the literature (Kimmelman & Lang, 2019; Leskisenoja, Körkkö, & Kotilainen, 2019; Vandyck et al., 2012). Further, these discussions enabled the professional development of student teachers, which earlier studies have found to depend on the support of peers and the learning community (Pyhältö, Pietarinen, & Soini, 2015; Soini, Pyhältö, & Pietarinen, 2015; Author, 2018).

The importance of discussion was also seen in the participants' desire for more time to be available for it, a result that supports earlier research (Author et al., 2019). The frames discussed in the results section differed in terms of how time was understood: the frames that manifested strong PA were tied to a view of time as an opportunity, while the frame that manifested a more ambiguous PA saw time as an obstacle. This is an interesting point in light of the global trend of intensification (Ballet & Kelchtermans, 2009; Bullough et al., 2014; Paananen, 2017), since it shows that the

'amount' of PA teachers achieve is connected to their perception of the constraints they face. However, it also shows the participants perceive themselves as unable to make a difference to the aspect of time, even when speaking from the frame of strong PA. This is an issue to be explored in future work, since it brings to light the material constraints set for PA by the working environment.

There are a few limitations concerning the validity of this study. Possible challenges are the limited number of informants and the implementation of the study in one town. Another limitation resulted from the data being collected during the training at the university. Social relationships between informants and researchers can affect the results of a study (Atkins & Wallace, 2012). In this case, the danger is that since the authors were teachers in the PTM, their perceptions of the participants might influence their interpretation of the data. In addition, the data were collected during a pilot course, so the participants could be more motivated and active compared to typical teachers in Finland. Finally, the data were collected primarily with the help of questionnaires. The questions were open, but it is likely that a less structured approach to documenting the teachers' reflections – such as a video journal of the project – would have led to a wider variety of frames and might have resulted in data where frames indicative of PA would feature less prominently. Ultimately, it is difficult to be sure whether this possibility points to an inherent limitation of the data or an inherent strength in the reflective practice undertaken in the PTM.

Despite – and because of – the promising findings of the present study, several questions remain unanswered. Due in part to the limitations of the present data, our focus here has been on the reflections of the teachers participating in the PTM. Further studies should aim to establish in more detail whether the model supports the achievement of PA also, for example, in the everyday pedagogical practices of preschools and schools. In this context, also the connection between teachers' developing PA and children's agency could be examined (Edwards, 2005; Lipponen & Kumpulainen, 2011). There is also the related issue of institutional constraints, such as curricula and material resources, which merits more explicit attention in the future due to the centrality of these constraints to PA (Eteläpelto et al., 2013; Lasky, 2005). Additionally, a task for further studies is to establish whether the PTM can also support the development of other aspects of PA, such as relevant competencies, professional

identity, and motivation. With the data available for this study, it has been impossible to investigate the development of PA across time, thus leaving an important task for future work. Furthermore, in light of the increasing interest in constructs such as relational agency (Edwards, 2005) and collective agency (Engeström & Rückriem, 2005), the multitudinous relations between participant subgroups and their influence on the development of PA need to be analysed.

The foregoing limitations notwithstanding, our article contributes to theory, research, and practice in teaching and teacher education. Our results support the earlier finding that reflective practice and collaborative inquiry as part of situated professional development efforts are meaningful strategies for supporting the development of teachers' PA. We believe the central theoretical distinction between the general human capacity for action and PA can function as a fruitful starting point for the further exploration of such matters. Methodologically, this paper provides central findings to researchers regarding strategies for documenting, soliciting, and analysing data related to the professional agency of teachers and student teachers. Our study also points towards a few practical implications for teacher training. Significant elements in the kind of collaborative training model examined here are shared reflective practices and a problematizing attitude on the part of the university teachers. Moreover, ample time needs to be allocated to these elements for them to be beneficial for the participants. However, in designing such training, explicit attention should be paid to highlighting any pedagogical dilemmas that might be implicitly present in the teaching practices undertaken in the project.

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