Initial teacher education after the Bologna process. Possibilities and challenges for a renewed scholarship of teaching and learning

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Initial teacher education after the Bologna process. Possibilities and challenges for a renewed scholarship of teaching and learning

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ABSTRACT

We present the perspectives of Portuguese pre-service teachers about a formative strategy developed to promote learning about language and literacy education. The strategy was underpinned by theories about the pedagogical content knowledge (PCK), rehearsed (or simulated) agency, the epistemology of reflective practise and assessment for learning. It was implemented during a whole semester, after which pre-service teachers answered to a questionnaire focusing on their perceptions about their learning and the learning experience. The results of the quantitative and qualitative analysis of the collected data reveal positive and critical perceptions about the construction of PCK and agentic identities, evidencing the role of curricular analysis, rehearsed practice, reflection and assessment in the learning process. The final discussion, which highlights the possibilities and challenges of the strategy, aims to contribute to the construction of the Scholarship of Teaching and Learning of pre-service teachers after the Bologna Process.

Introduction

Becoming a teacher in Portugal, like in several European countries, is currently framed by the Bologna Process, which has brought along the adoption of a sequential model (Flores 2016, 2018; Flores, Vieira, and Ferreira 2014; Flores et al. 2016), determining that professional qualification for teaching requires a three-year degree followed by a master programme in teaching (Decree Law 43/2007). The most recent legal framework (Decree Law No. 79/2014) has further defined that the master complements the first degree by deepening the academic training focusing on content knowledge, general educational knowledge, specific didactics, and the cultural, social and ethical dimensions. However, one of the most fundamental Bologna resolutions was that the initiation to professional practice happens exclusively during the practicum periods in the final

semester or school year of the master degree, during which teacher students develop pedagogic research. At our faculty, a specific formative strategy was designed in order to enact this specific requirement, based on the assumption that researching pedagogy creates powerful opportunities for student teachers to develop their epistemology of reflective practice during practicum periods (Loughran 2009; Vieira, Flores, and Almeida 2020).

This new configuration has been seen as a drawback in relation to the 'Integrated Model of Teacher Education' (Flores 2011, 2018; Flores, Vieira, and Ferreira 2014). Although the new configuration of pre-service teacher education includes positive features such as a high qualification for all entrants into teaching (at master level) as well as the valuing of specific didactics and of professional practice, it has accentuated the curriculum fragmentation and separation between subject knowledge and educational knowledge (Flores 2018; Vieira et al. 2019; Vieira, Flores, and Almeida 2020), thus not being fully able to overcome the theory practice divide that has long characterised teacher education (Carr and Kemmis 1996; Grossman, Hammerness, and MaDonald 2009; Korthagen, Loughran, and Russell 2006; Flores 2018; Vieira et al. 2019).

The research that is reported in this paper is situated in this context, although focusing on a yet another problematic dimension of the general model of teacher education after the Bologna Process, which is the inexistence of a specific formative strategy during the formative period preceding the practicum. This paper presents a strategy that was developed to overcome this formative gap within the initial teacher education model in our institution.

Working as a degree and master teacher on language and literacy education as well as a practicum supervisor with students preparing to become pre-school and elementary school teachers, who in Portugal work with children from 0 to 5 and from 6 to 10 year-old, respectively, the first author has been transversally involved in the different stages of pre-service teachers' education since the beginning of the enactment of the Bologna Process. This position initially stirred her to develop an integrated formative strategy aiming to help students to construct a comprehensive theoretical approach to language and literacy education during two semesters in the third year of the degree; to support them in using such principles to design practice in the course she teaches in the first year of the master programme; and, finally, to supervise the enactment of students' reflective field experiences during their practicum periods.

The teacher educator's initial efforts to enact this plan revealed daunting results, though. Despite ascertaining to have constructed relevant knowledge when finishing the first degree, first-year master students invariably revealed an erosion of knowledge when asked to apply it to envision practice, which again came up when beginning practicum, evidencing that the Bologna Process was having the undesired effect of enhancing the theory and practice gap even before the practicum began. This stirred the teacher educator to critically rethink her pedagogical approach, from which she designed and closely studied a renewed formative strategy that was implemented in the course she teaches during the first year of the master degree. The strategy was intentionally designed to scaffold pre-service teachers' use of known theory and to become a sheltered space for the construction of more robust professional learning and a stronger agentic identity before practicum. Rehearsed practice, the epistemology of

reflective practice and the assessment for learning were cornerstones in the definition of such renewed learning space.

On the whole, the strategy is aligned with the institutional transformations introduced by the Bologna Process, to the enactment of which the research here reported aims to contribute through the production of knowledge that is theoretically sustained and research-based. The first author's efforts to transform and research her own practice have been framed by the key tenets of the *Scholarship of Teaching and Learning* (Hutchings, Huber, and Ciccone 2011), which is defined as 'a broad set of practices that engage teachers in looking closely and critically at student learning in order to improve their own courses and programmes, and to share insights with other educators who can evaluate and build on their efforts' (Hutchings, Huber, and Ciccone 2011 xix). This paper answers to this latter call by detailing the formative strategy, the research procedure and students' perspectives about their learning and learning process. The discussion of the findings ultimately aims to contribute to the construction of the renewed scholarship of teaching and learning of pre-service teachers in the post-Bologna context.

The formative strategy

The formative strategy was implemented during the fifteen weeks that are allocated for the teaching of a master's course. It was developed in three major iterations, each focusing on a distinct educational 'level', namely the last year of pre-school education, the first and the third year of elementary education, which were intentionally chosen due to the singularities of the expected teachers' work.

The formative procedure was designed with close reference to four essential assumptions about initial teachers' professional learning, namely Pedagogical Content Knowledge (PCK), rehearsed practice, epistemology of reflective practice and assessment for learning, which became deeply interrelated in the learning process. It included complementary individual and collaborative students' learning tasks, activating learning processes of doing and thinking, as well as different forms of teacher's work.

Pedagogical content knowledge

One of the key assumptions sustaining the strategy was Shulman's (1987) influential conceptualisation of the Pedagogical Content Knowledge (PCK). Shulman called attention to the crucial role played by the specialised knowledge base for teaching, arguing that knowing theory is far from being enough to become a teacher and identifying other relevant knowledge, among which the Pedagogical Content Knowledge (PCK) gained unprecedented prominence. Grossman (1990) further reorganised Shulman's initial formulation of the specialised knowledge base for teaching into four major components, including General Pedagogical Knowledge, Specialised Content Knowledge, Contextual Knowledge and Pedagogical Content Knowledge, defining the latter as including the Knowledge of the Aims of teaching, of the Curricular framework, of Specific teaching strategies and of Knowledge about students.

The design of the formative strategy was based on Grossman's formulation (excluding the knowledge about students), assuming the PCK of language and literacy teaching to be a specific target of the pre-service teachers' learning. Each iteration of the strategy began

with the close inspection of relevant curricula in each of the three educative levels. This was a new learning task for the pre-service teachers, which also scaffolded them to remember specific contents (from the first degree) to be able to make sense of the curricula. For instance, the discussion allowed students to focus on oral communication, language awareness and emergent literacy as contents for pre-school education (Silva et al. 2016); in the second, on initial learning of reading and writing for the first year of elementary education (Snow 2017); and, finally, on text comprehension and writing and grammar learning for the third year of elementary education (Buescu 2015; Pereira and González Riaño 2018). By doing this, the first author intended to contribute to obviate the fragile PCK invariably shown by her previous master students.

Rehearsed practice

The knowledge that student teachers thus constructed was the 'weft' with which they collaboratively 'warped' a set of essential practices of the profession (Grossman, Hammerness, and MaDonald 2009). Indeed, another fundamental assumption sustaining the design of the formative strategy was Grossman, Hammerness, and MaDonald (2009) argument for the enactment of 'approximations to practice' (or a pedagogy of enactment) in teacher education. Accordingly, the formative strategy offered pre-service teachers opportunities to rehearse (Gelfuso 2017; Ticknor 2015) the design of a set of core professional practices essential for their future teaching of language and literacy in pre- and elementary school.

After students were well aware of what was officially expected from their work, they began to collaboratively imagine their practice. A children's narrative, selected by them, was used to iteratively construct a practical portfolio targeting each of the educational levels. The text remained constant throughout the iterations so that student teachers' attention could be directed to the necessary pedagogical transformations. In effect, each practical rehearsal involved dialogic forms of reading yet showed pedagogical singularities in their aims, contents and strategies according to what was established in the curricula. Teacher students were asked to identify these in their designed tasks. For instance, in the construction of the pedagogy of communication in pre-school, pre-service teachers imagined the dialogic interaction they would construct with children about narrative reading as well as children's playful, multimodal action, including language awareness games, and the emergent use of written language (Wells 2001; Sènèchal 2017; Pompert 2012; Pramling and Ødegaard 2011; van Oers 2012; Whitehurst et al. 1988). After having analysed the curricula for the first year of elementary education, they thought about how they could use the dialogic reading of the narrative to situate the explicit teaching of written word identification processes and the writing of the first words, sentences and texts in the first year of schooling (McBride 2016; McGuinness 2004; Pereira and González Riaño 2018; Pompert 2012; Rose 2017). Finally, the analysis of the curricula for the third year lead them to think about how to use the reading of the narrative to teach about narrative reading comprehension, text writing and grammar (Rose 2017; Pereira and González Riaño 2018).

By creating the opportunities for 'pre-service teachers to practice thinking about instructional decisions before entering the classroom' (Ticknor 2015, 384), taking up 'more agentic roles in their professional learning and decision-making' (385), the aim

was to enhance the construction of pre-service teachers' PCK, thus cultivating professional knowledge, while offering them opportunities to use such knowledge to develop a sense of how to act purposefully and strategically, thus cultivating professional identity (Gelfuso 2017). As Grossman, Hammerness, and MaDonald (2009, 278) put it, 'Having opportunities to rehearse such responses ahead of time, in environments that are less complex than classrooms, can help novices hone their practice and prepare them for when they will need to respond in the moment'. Rehearsed practice has a clear potential to bridge theory and practice while circumventing the previously observed tendency among these master students of instinctively reverting to traditional (familiar) pedagogical strategies when challenged to design practice (Gelfuso 2017).

Epistemology of reflective practice

The design of the formative strategy was further underpinned by the concept of the epistemology of reflective practice, which captures the intellectual dimension complementing the teachers' practice in the construction of their professional learning (Schön 1983; Kinsella 2009; Korthagen, Loughran, and Russell 2006; Russell 2014). Practice can trigger different thinking processes as, for instance, doubt, anticipation, examination, planning, analysis, which makes it personally meaningful, resulting in teachers' learning (Dewey 1933; Schön 1983). The epistemology of reflective practice further clarifies how academic knowledge, which enables some forms of teachers' reflection about action, is but instrumental in, rather than equivalent to, the construction of teachers' practical learning (Russell and Martin 2017; Schön 1983).

Accordingly, the formative strategy was designed to become a space for pre-service teachers to develop their epistemology of reflective practice by having them to think about the learning that they constructed upon rehearsed practice. The students wrote individual weekly reflections by following a set of defined guidelines, such as *What did I learn about … ?*, prompting them to identify their learning about the specific contents in the curricular framework and the strategies for teaching (their PCK) that they constructed. They were also asked to apply previously known theoretical notions in the naming of such learning. By asking pre-students to do this thinking, promoting learning by naming and theorising, the aim was to overcome the 'technicist' stance revealed in the past, when former students had assumed the task practical design as *the only learning that mattered*.

Assessment for learning

The formative strategy was furthermore designed with close reference to the concept of assessment for learning (AfL) (Earl 2013), which intends to diagnose learners' needs in order to improve their learning as well as their motivation and commitment (ARG 2002; Black and Wiliam 1998; Earl 2006). By being centred on how students learn, it involves the promotion of their understanding of learning goals and assessment criteria (Assessment Reform Group 2002). Accordingly, in AfL learners are far from being mere consumers of lessons and tests, assuming a more active and responsible role in the learning and assessment processes (Flores and Veiga Simão 2007; Pereira and Flores 2012). Self-regulation and teachers' continuous feedback are some of AfL's key components (Black and Wiliam 1998; Wiliam 2010; Sambell 2011; Deneen et al. 2019). Alternative assessment

methods (e.g. portfolios, project-based work and collaborative work) and self- and peer-assessment are used to address the less successful aspects of the traditional assessment, especially in the context of higher education (Struyven, Dochy, and Janssens 2005; Flores et al. 2015). The AfL perspective (McDowell et al. 2011) is in line with research that evidences the crucial role of feedback in assessment and learning (Black and Wiliam 1998; Carless et al. 2011; Hattie and Timperley 2007; Harris, Brown, and Harnett 2014) as well as the role of learning-oriented assessment (Tang and Chow 2007; Carless 2009, 2015) in the construction of professional knowledge and self-regulated learning with implications for teaching practices (van den Bergh, Ros, and Beijaard 2015).

In the formative strategy, the teacher educator closely scaffolded the construction of the portfolio through constant feedback in class, challenging and questioning the groups' ideas and coaching them in designing practice (Grossman, Hammerness, and MaDonald 2009). After each seminar, the teacher educator shared (by email) a summary of the most important practical ideas that she discussed with the different groups. She also provided feedback after the groups finished the construction of each iteration of the portfolio through the university's e-learning system. Through this practical feedback, the teacher intended to improve the quality of the PCK and rehearsed practice by helping 'novices distinguish features of a complex practice that may be difficult to fully appreciate until one tries to enact the practice' (Grossman, Hammerness, and MaDonald 2009, 285). The teacher educator also gave her feedback to the weekly individual reflections through the same e-learning platform in order to enhance the construction of students' epistemology of reflective practice.

Students' self-assessment was performed through the construction of initial and final individual reflections. In the first seminar, student teachers were challenged to role play their answers to an imagined job interview in which they were asked about their PCK of language and literacy teaching in the last year of pre-school, in the first and in the third year of elementary school education. During the last seminar, the students revisited their initial answers in order to critically assess them (by validating, correcting, completing and illustrating their initial answers) and name the learning that they had constructed. This metacognitive reflective stance is assumed to be important to promote deep and continuing forms of learning from practice as it allows the monitoring of the reconstructions taking place in teachers' practical theories (Russell 2014; Russell and Martin 2017). The teacher educator aimed to make learners aware of their learning in order to enhance their final-integrated vision of language and literacy teaching. Besides, this introspection would hopefully scaffold student teachers to make meanings about themselves as reflective learners and, consequently further enhance their engagement in the learning process (McKay and Dunn 2020).

On the whole, the enacted formative strategy set clear aims for learners, namely the development of professional knowledge, agentic dispositions and metacognition, and created a sheltered learning space, structured upon rehearsed practice, reflection and assessment for learning. Figure 1 systematises the strategy.

The study

The implementation of the formative strategy was studied in order to answer to the following major research question: *How effective was the formative strategy in bridging the*
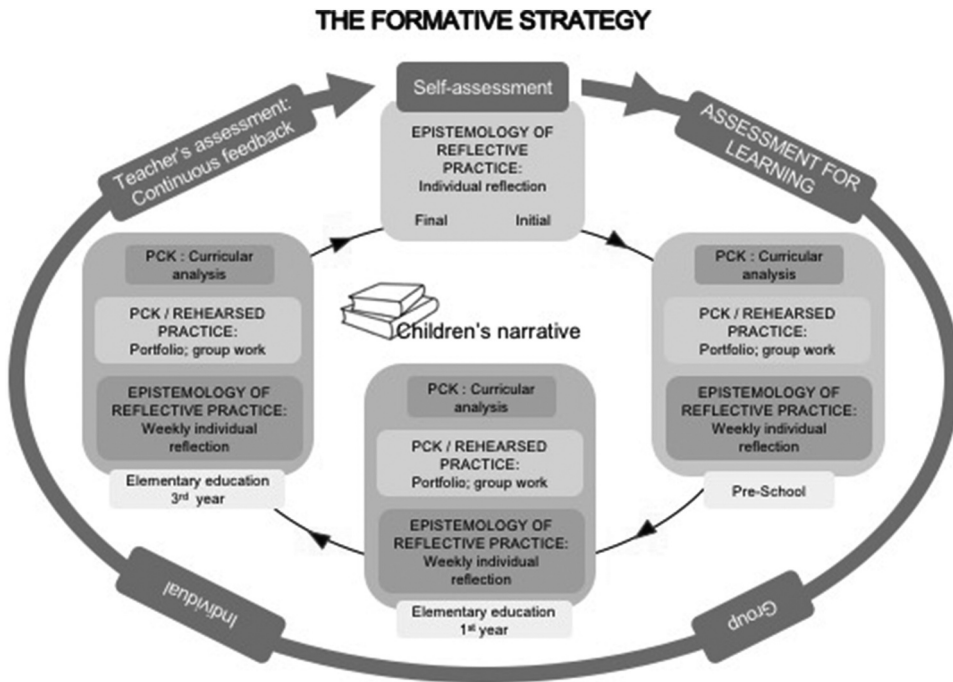
Figure 1. The design of the formative strategy.

gap between theory and practice and in promoting the pre-service professional learning? The first author begun an evaluative case study (Stake 1995) in order to answer to this extensive research question. Despite the self-study character of the research, the case study went well beyond a personal and subjective study (Loughran et al. 2004; Marcondes and Flores 2014) because it was situated within a historic, institutional and political context, to the improvement of which it aimed to contribute by enhancing the students' learning. In addition, it was theoretically sustained and involved the enactment of several sub-studies, collecting data through diverse techniques, such as group portfolios, initial, weekly and final individual reflections, teachers' journal and individual questionnaires. While the former two were the basis for pre-service teachers' final assessment, the latter were specifically developed for research purposes. Last but not least, data analysis and interpretation, which was done with close reference to the theory, was performed together with the three researchers co-authoring this article, two of whom further externally monitored the implementation of the strategy.

In this paper, we only present and discuss the results of the administration of the questionnaire since, though insufficient, they provided important data for a preliminary answer to the main research question. The questionnaire was specifically designed to address the following research sub-questions:

 (i) How did pre-service teachers perceive their learning about language and literacy education in pre- and elementary school?
 (ii) How did pre-service teachers perceive their learning process?

Table 1. The structure of the questionnaire.

Areas of Inquiry	Main topics	Items	nr
(1) Perceptions about learning	Agreement - professional knowledge construction: PCK & Future action	● PCK 1. curricular framework: pre-school 2. curricular framework: elementary school 3. aims: pre-school 4. aims: elementary school 5. teaching strategies: pre-school 6. teaching strategies: elementary school 7. integrated vision of language and literacy teaching in both educational levels ● Future action 8. Envisining future action: in the practicum, pre-school 9. Envisining future action: in the practicum, elementary school 10. Envisining future professional action	10
	Difficulty – comprehension of specific contents: Pre-school and elementary school	● Pre-school 11. oral communication 12. language awareness 13. emergent literacy ● Elementary school 14. initial learning of how to read and write 15. text comprehension and writing 16. grammar	6
	Difficulty – design of specific strategies: Pre-school and elementary school	● Pre-school 17. oral communication 18. language awareness 19. emergent literacy ● Elementary school 20. initial learning of how to read and write 21. text comprehension and writing 22. grammar	6
(1) Perceptions about the formative process	Importance – dimensions of the formative strategy: pre-service teachers' tasks & teacher educator's tasks	● Dimensions of pre-service teachers' work 1. portfolio construction 2. reflection 3. focus on pre-school and elementary education 4. tasks for three different levels 5. using the same narrative 6. analysis of curricula: pre-school, 1st year, 3rd year 7. remembering theory in the classroom 8. remembering theory autonomously 9. collaboration in portfolio construction 10. writing weekly reflections 11. final critical revisiting of initial reflection ● Dimensions of teacher's work 12. teacher's emails after class 13. teachers' feedback to portfolio in the classroom 14. teachers' feedback to portfolio after first drafts 15. teacher's feedback to individual seminar reflections	15
	Continue	Open answer	
	Improve	Open answer	
(1) Perceptions about assessment	Challenges	Open answer	
	Potentials	Open answer	

We expected to gather relevant data to inductively answer to these questions from the three sets of closed and open items comprising the questionnaire, namely: 1. *Perspectives about learning*; 2. *Perspectives about the formative process; 3. Perspectives about assessment*. The use of closed and open-ended questions was intended deepen our grasp of participants' points of view. Table 1 presents the structure of the questionnaire.

The first area of inquiry – *Perspectives about learning* – was covered by a total number of three sets of items, aimed to gather data that allowed us to answer to the first sub-question. Ten items in the first set asked students about their *agreement* with statements about the construction of different dimensions of their PCK of language and literacy teaching for each of the educational levels:

  (i) curricular framework: pre-school and elementary school (questions 1 and 2); aims: pre-school and elementary school (questions 3 and 4); teaching strategies: pre-school and elementary school (questions 5 and 6);
 (ii) an integrated understanding of language and literacy teaching in both educational levels (question 7); and
(iii) the envisioning of their future action in the practicum in pre-school, in elementary school and beyond (questions 8 to 10).

The second group of items, comprising 6 questions, asked students to identify their degree of *difficulty* in the comprehension of *specific contents* related to:

  (i) language and literacy education in the pre-school: oral communication, language awareness, emergent literacy (questions 11 to 13); and
 (ii) language and literacy education in the elementary school: initial learning of how to read and write; text comprehension and writing; grammar (questions 13 to 16).

The third set, comprising 6 items, asked respondents to identify their degree of *difficulty* in the design of specific teaching strategies for the same contents (questions 17 to 22). This last set of 6 questions specifically targeted pre-service students' rehearsal of practice, from which we expected to infer their perceptions about their learning of teaching strategies (PCK).

The second area of inquiry – *Perspectives about the formative process* – was covered by a set of questions asking students to identify the importance that they attributed to fifteen dimensions characterising learning process, distributed among *PCK, rehearsed practice, epistemology of reflective practice* and *assessment for learning* (questions 1 to 15) as follows:

  (i) *PCK* construction was targeted by questions focusing on the analysis of curricula; remembering theoretical concepts in the classroom; remembering them autonomously (questions 6 to 8).
 (ii) *Rehearsed practice* was covered by questions about portfolio construction (question 1); focus on pre-school and elementary education; focusing on three different levels; using the same narrative; collaboration in portfolio construction (questions 3 to 5).
(iii) *Reflection* was covered by a general question about reflection (question 2); writing weekly reflections; final critical revisiting of initial reflection (questions 10 and 11).
(iv) *Assessment for learning* was targeted by questions about teacher's emails after class; teachers' feedback to portfolio in the classroom; teachers' feedback to portfolio after first drafts; teacher's feedback to individual seminar reflections (questions 12 to 15).

Two further sets of questions asked students whether this strategy should or not continue in the future and whether or not it should be improved, each offering space for students' open answers, with which we aimed to gather data that allowed us to answer to the second specific research sub-question.

The third inquiry area – *Perspectives about assessment* – was covered by two open questions, one about the main challenges in assessment and the other about its potentials. With this set of questions, we aimed to gather further data that might allow us to strengthen our findings to both research sub-questions.

The design of these questions was done according to the fundamental principles of clarity, coherence and neutrality, taking into consideration the assumption that questionnaires are situated in the aims that they serve, rather than perfect or unique solutions (Converse and Presser 1986; Fowler Jr. 1995; Ghiglione and Matalon 1993). The adequacy of the instructions, questions, options and the extension of the questionnaire was monitored before its final application. A group of Educational Sciences experts evaluated the items, ensuring the alignment with the research goals, and the final version of the questionnaire was improved taking into account their comments and suggestions.

The questionnaire was administered by the second author, who accompanied the implementation of the formative strategy as part of her PhD research. The pre-service students answered the questionnaire during the final hour of the last seminar, in June 2018. They were informed about the research aims and were reminded of the research process, which they knew from the first seminar, when they had signed an informed consent of their participation in the study. They were further informed about the confidentiality of the data.

The data collected through the closed-ended questions was subjected to statistical analysis. Taking into account that the questions involved Likert scales varying from 1 to 5, the analytical technics comprised data tabulation and graphic organisation through CatPCA (Categorical Principal Component Analysis). The option for CatPCA lied in the researchers' interest in reducing categorical variables, represented by each question, in order to identify non-correlated components (dimensions) in the questionnaire, while maximising the amount of variance accounted for the items (by the principal components). The aim was to make the analysis of the answers to open-questions as informative as possible with reference to the major theoretical tenets that were being assessed. The data synthesis presents the Cronbach' alpha coefficient, which quantifies, in a scale from zero to one, the reliability and internal consistency of the data obtained, assuming that the desirable value to be above 0.725. The statistical analysis was performed in IBM SPSS Statistics for Windows, Version 26.0. (IBM Corp., Armonk, N.Y., USA).

Open-ended questions were subject to inductive content analysis, which was guided by the key theoretical categories of *PCK* and related specialised concepts, rehearsed practice, epistemology of reflective practice and assessment for learning, since we wanted to know pre-service teachers' perspectives about these in the context of the formative experience. Emergent categories were identified as well. The categorisation was triangulated among all the researchers involved in the study.

Findings

All of the 25 pre-service master students in the class responded to the questionnaire. Twenty-three were female and 2 were male student teachers. As for their age, 52% of respondents were 21 years old (n = 13), 32% were 22 years old (n = 8); 8% were 23 years old (n = 2). Only 1 respondent was over thirty (34 years old, 4%) and another was 43 years old (4%). Appendix 1 presents the complete set of quantitative and qualitative data collected through the questionnaire, which we use in the sections below.

Table 2 summarises the reliability values for each of the two dimensions that were identified through CatPCA for each set of questions. It shows that the data gathered was highly reliable and internally consistent.

The qualitative and quantitative data analysis provided sound evidence to answer to both sub-questions underpinning the questionnaire.

(1) *How did pre-service teachers perceive their learning about language and literacy education in pre- and elementary school?*

The quantitative analysis revealed that students perceived the strategy as enhancing the construction of their learning, though also unveiling the existence of critical learning areas.

Enhanced learning

This is evidenced by the agreement rates obtained through questions 1 to 10, summarised in the Graph of Figure 2(a). The respondents valued very positively the PCK that they constructed (questions 1 to 7), and particularly its curricular component (questions 1 and 2). In addition, they considered learning to be relevant for constructing their agentic identity for the future practice (questions 8 to 10):

CatPCA (Figure 2(b)) shows that all items in the set of questions are strongly related to dimension 1, *professional knowledge construction*, identifying two clusters in the answers. While cluster 1 focuses on the learning related to curriculum and aims, cluster 2 encompasses strategies, the integrated vision of teaching in both educational levels and envisioning practice, which we have interpreted as showing that respondents clearly differentiated more 'conceptual' learning from 'practical' dimensions of learning related to the rehearsal of practice.

Critical learning areas

The statistical analysis of questions 11 to 16 revealed that respondents considered that understanding the contents for language and literacy education related to elementary education was slightly more difficult than those related to pre-school education (Figure 3(a)):

CatPCA (Figure 3(b)) has further shown that all items in the set of questions are strongly related to dimension 1, *comprehension of specific curricular contents*, identifying two clusters in the answers. While cluster 1 focuses on the learning related to pre-school and first year of elementary education, cluster 2 encompasses the contents related to teaching text comprehension, writing and grammar in elementary education.

Table 2. Model summary statistics for each section in CatPCA.

			Variance Accounted For	
Section	N of Items	Cronbach's Alpha	Total (Eigenvalue)	% of Variance
2.1_PERCEP_PROFESS_LEARN	10	0.948	6.811	68.112
Dimension 1		0.881	4.831	48.310
Dimension 2		0.550	1.980	19.801
2.3 _PERCEP_COMPREH_CONTENTS	6	0.981	5.487	91.442
Dimension 1		0.892	3.891	64.486
Dimension 2		0.448	1.596	26.597
2.4_PERCEP_DESIGN_STRAT	6	1.000	6.000	100.00
Dimension 1		0.910	4.142	69.030
Dimension 2		0.554	1.858	30.970
3.1 _PERCEP_FORMAT_PROCESS	15	0.952	8.939	59.593
Dimension 1		0.915	6.831	45.540
Dimension 2		0.563	2.108	14.053

The statistical analysis of questions 17 to 22, asking respondents to identify the degree of difficulty in the design of specific teaching strategies for the same contents, shows that the design of teaching strategies for elementary education was more difficult than for preschool (Figure 4(a)):

CatPCA (Figure 4(b)) has further revealed that all items in the set of questions are strongly related to dimension 1, *design of specific strategies*, though again identifying two clusters in the answers (cf. Figure 3(b)), cluster 1 encompassing on the design of strategies for pre-school and first year of elementary education and cluster 2 being associated with the strategies for text reading and writing and grammar teaching.

The data presented in Figures 3 & 4 and Graphs 3 & 4 were particularly informative. Firstly, they show that pre-service teachers perceived the existence of a close connection between pre-school and first year in elementary education, which has conceptual justification in the fact that pre-school is designed as a preparatory stage for the formal learning of reading and writing during the first year of schooling. Secondly, they specified that students' rehearsal of practice in general, and of text reading and writing and grammar in elementary education in particular, was considered the most difficult learning. Thirdly, taken together, the analysis shown in Figures 3 (a,b) and 4(a,b) are in clear consonance with the general findings shown in Figure 2(a,b): while suggesting that students considered to have constructed professional learning, they also suggest that constructing conceptual learning was not as difficult as learning about teaching strategies.

The qualitative content analysis of data arising from the open-ended questions corroborated and complemented these general findings, as we now present.

PCK, agentic identity and metacognition enhanced

The qualitative content analysis provided a clear-cut understanding of respondents' appraisal of the development of the agentic roles associated with rehearsal of practice. For example, in their answers to the item asking whether or not the strategy should continue, the majority of justifications were either related to the value of the strategy for rehearsing practice or for the construction of PCK, some answers actually combining both categories:
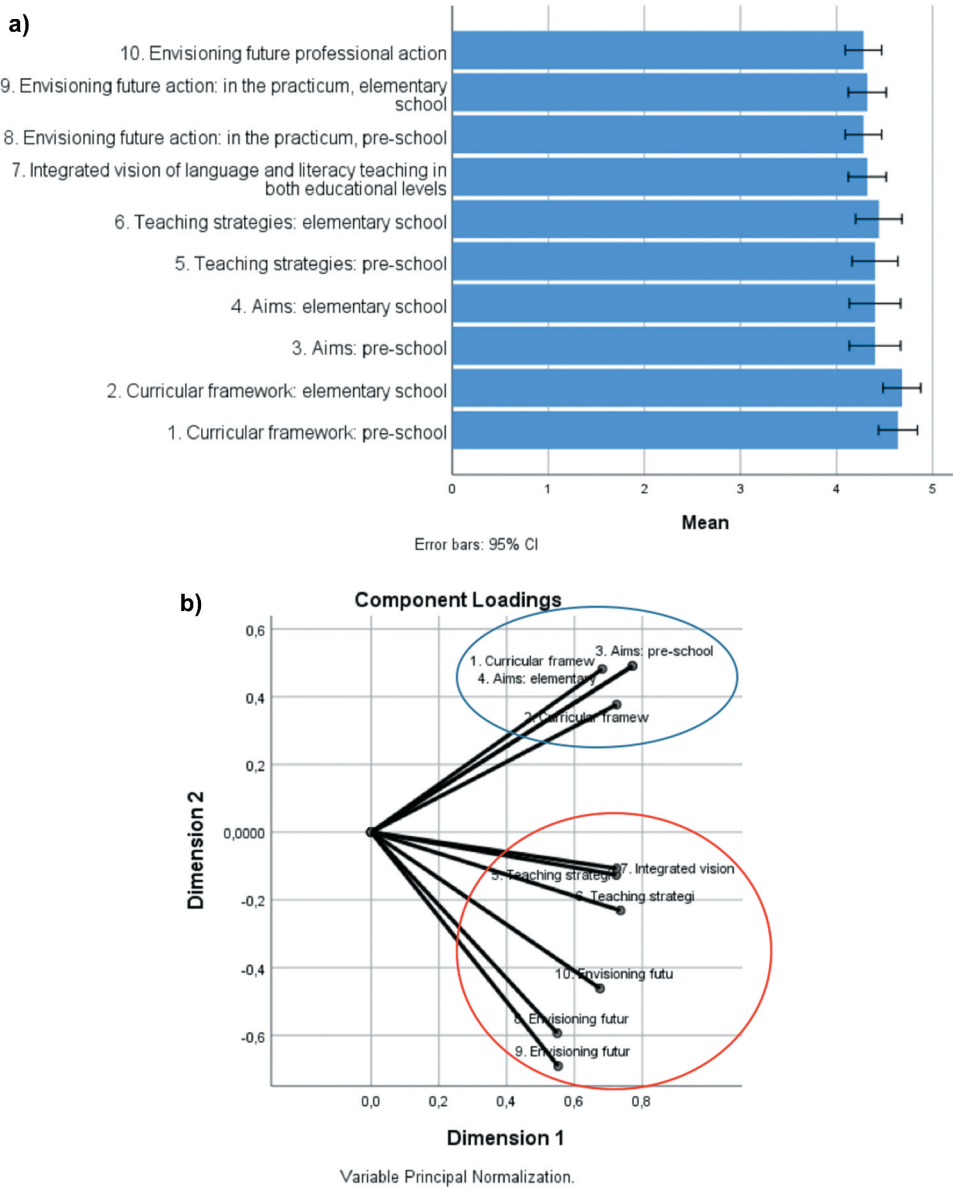
a)

b)

Variable Principal Normalization.

Figure 2. (a) Respondents' perceptions about professional knowledge construction. (b) Two dimensions identified by CatPCA.

| Reasons to continue	Examples
Rehearsed practice	'This formative process allows the development of many competences that are necessary for future practice'. [nr5]
	'I have learned how to do a project based on literature that integrates the contents that we have to work in language education'. [nr13]
PCK & Rehearsed practice	'It allowed a better knowledge of the curricular framework for pre-school and elementary education. It allowed a better understanding of the contents that are taught in these levels and how to approach them in the future'. [nr3]

a)

b)

Variable Principal Normalization.
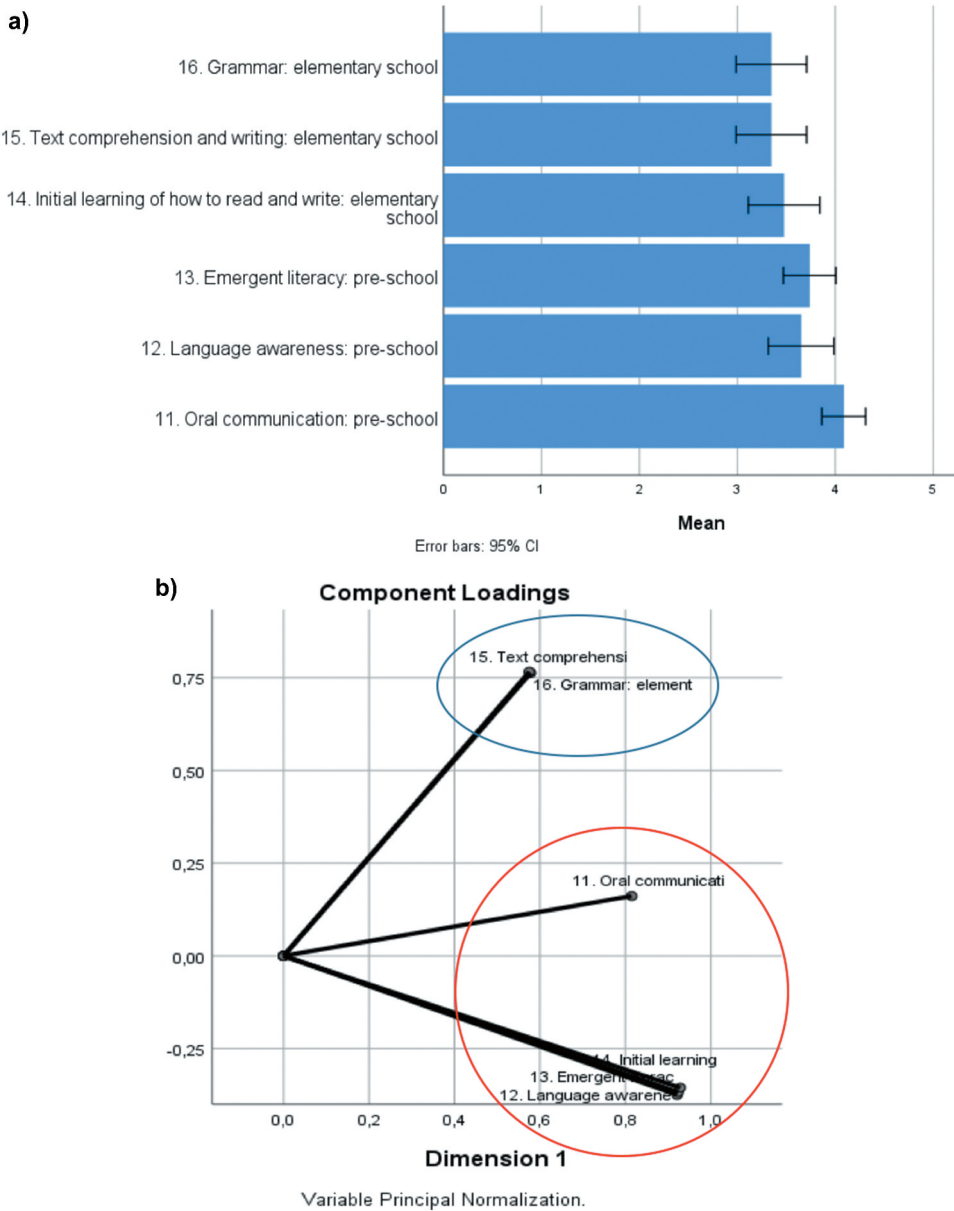
Figure 3. (a) Respondents' perceptions about comprehension of specific curricular contents. (b) Two dimensions identified by CatPCA.

In addition, there were several answers in which respondents specifically referred to the difficulties of designing strategies for the expected curricular contents, though not specifying educational levels, in which case the quantitative findings helped to understand what respondents meant in their open answers:

Yet, the close inspection of the responses allowed the identification of a further category of learning. Indeed, several respondents justified their opinion that the strategy
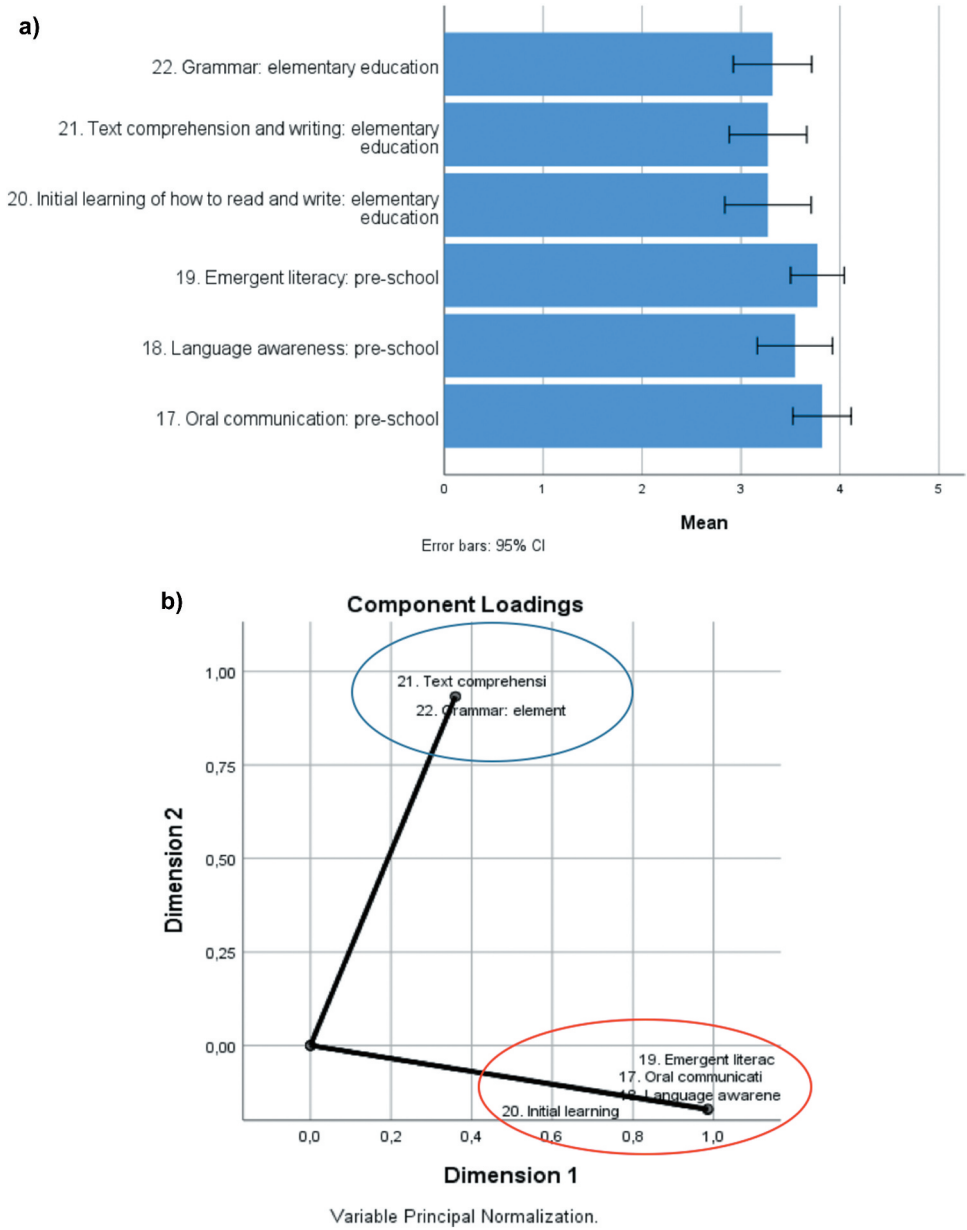
a)

Error bars: 95% CI

b)

Variable Principal Normalization.

Figure 4. (a) Respondents' perceptions about the design of specific strategies. (b) Two dimensions identified by CatPCA.

should continue because it enhanced their construction of an introspective or metacognitive learning:

Taken together the quantitative and qualitative analysis reveal that while conceptual learning seems to have been easier for respondents, as suggested by the closed-ended questions, rehearsed practice was clearly more valued by them in the open-ended questions.

2. How did the students perceive the learning process?

Data analysis revealed that students developed a very positive perception of the formative strategy, though also revealing some especially demanding dimensions and unexpected misconceptions.

General appraisal of the learning process

The analysis of the answers to the second set of questions in the questionnaire revealed respondents' good to very good appreciation about all the dimensions in the process. They valued the tasks of curricular analysis and remembering relevant concepts; the different dimensions of group work involved in portfolio construction, which were instances of rehearsing practice; reflection tasks, either weekly or the final reflection; and teacher's feedback (Figure 5(a)).

CatPCA analysis (Figure 5(b)) shows that all items in this set are strongly related to dimension 1, *dimensions of the formative process*, again identifying two clusters in the answers. While cluster 2 has to do with teacher's tasks, cluster 1 focuses on respondents' individual tasks for learning, which shows that students clearly differentiated theirs and the teacher's roles in their learning. There is the exception of item # 5, which we comment below.

Again, the qualitative analysis of the answers to the open questions provided confirmation of this general conclusion. All respondents considered that the strategy should continue, repeatedly arguing that it articulated theory with practice in rehearsing practice:

When asked about the potential of Assessment, the respondents emphasised its role in promoting reflective learning, valuing the articulation between theory and practice in rehearsing practice and the final reflective task. Besides they also praised the teacher's dynamic and flexible feedback:

Challenging dimensions of the learning process

The inspection of the responses to the open-ended questions was also very helpful in the identification of some critical aspects of its implementation. When asked about what should be improved in the strategy, students mentioned the amount and the distribution of time allocated to the construction of the portfolio. Though also referring to the quantity and intensity of such tasks, respondents mostly referred to an excessive number of individual reflections. Two students referred that the use of the same text was boring for children, which showed that they did not obviously understand the point of using the same text throughout:

Among the challenges perceived, one of the most frequently mentioned was particularly surprising, evidencing pre-students' limited understanding of the concept of reflective practice. In fact, many students perceived the weekly reflections to be unnecessary whenever there was not a theoretical synthesis by the teacher educator, unveiling their thinking that designing practice in group work was not a realm for reflection:
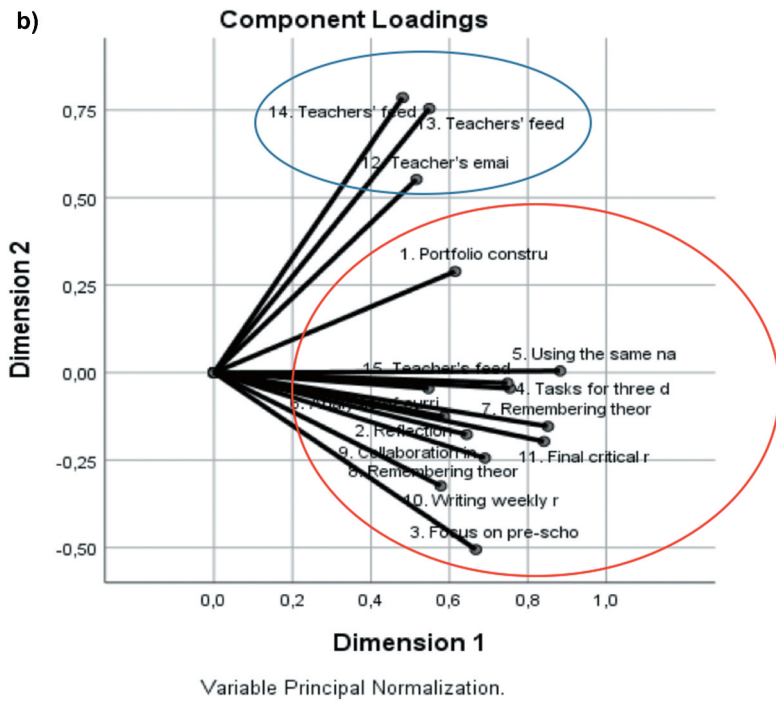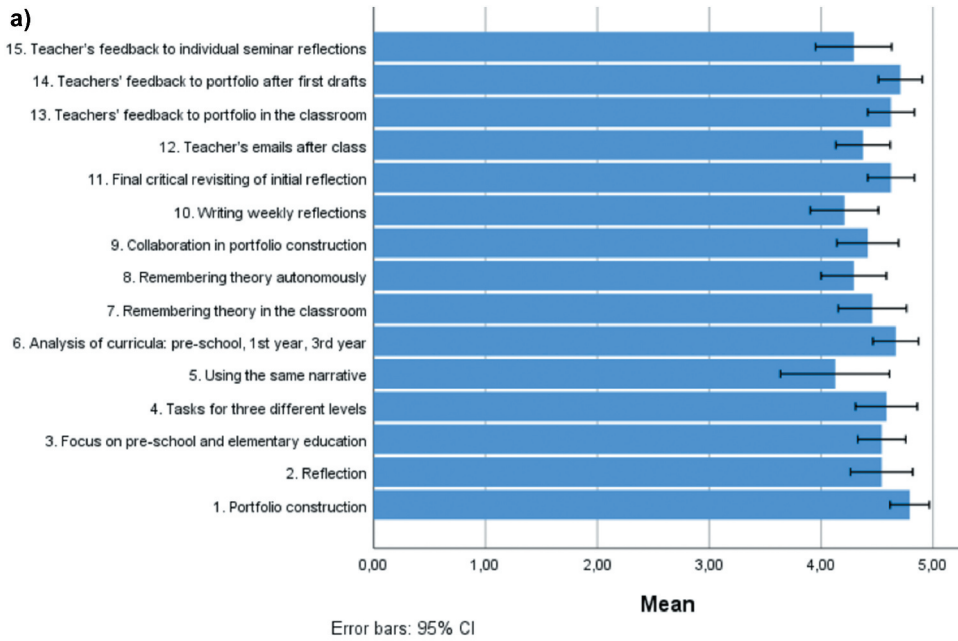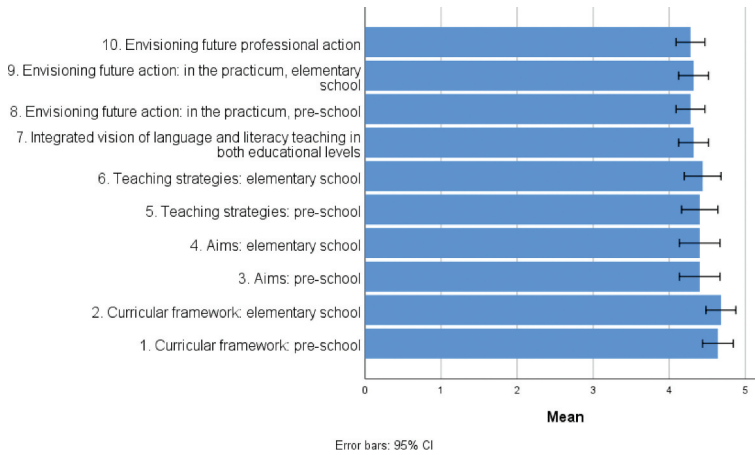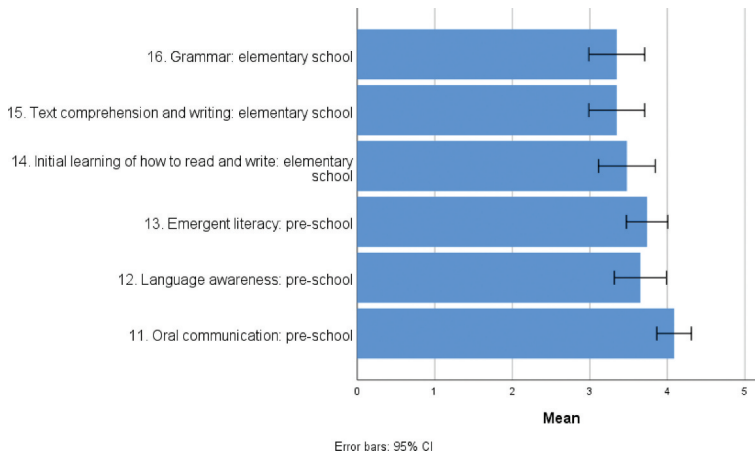
Figure 5. (a) Dimensions of the formative strategy. (b) Two dimensions identified by CatPCA.

Error bars: 95% CI

Challenges	Examples
PCK/ strategies and contents	'The major challenge was the construction of activities for the different iterations of the portfolio'. [nr16] 'To construct the activities for the group work'. [nr14] 'For me the major challenge was (…) the construction of activities. Besides it was difficult to understand some contents'. [nr19]

Error bars: 95% CI

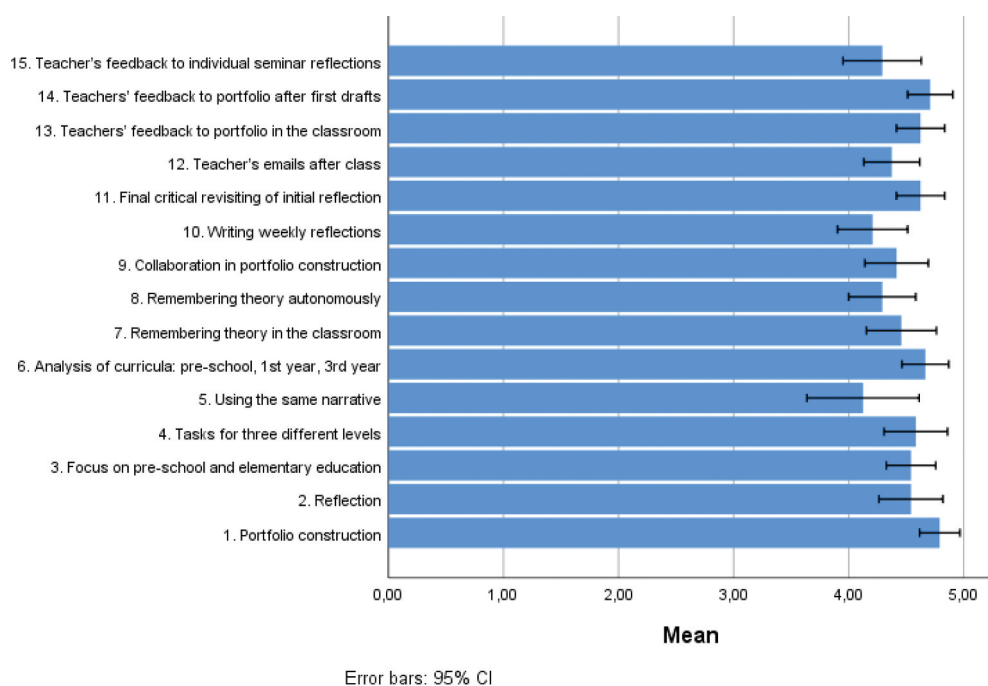| Reasons to continue	Examples
PCK/Epistemology of reflective practice	'This formative process allows us to understand what we really learned, confronting it to what we knew at the beginning'. [nr1] 'It allows us to reflect about what we learn, making contents more present'. [nr4] 'It helps us to review and reflect about the contents that have been worked, which is a way of studying and consolidating learning'. [nr13]

Error bars: 95% CI

Reasons to continue	Examples
Rehearsed practice	'This is a way of making learning more dynamic and active, in which theory and practice meet and revisit constantly'. [nr12] 'It has shown a different view of teaching from the traditional one'. [nr13] 'It develops the capacity to plan, infer and anticipate'. [nr17] 'The portfolio construction was very demanding but very significant in our formation'. [nr21] 'Other major reasons are the theory-application dynamics and the opportunity to think the practice in the education levels in which we are going to teach'. [nr25]

Discussion

Overall, the findings allow the construction of a preliminary encouraging answer to the main research question, which is especially relevant as it captures the perspectives of the learners themselves. However, the nature of the study asks for prudence in interpreting such results, though also acknowledging the possibility for some tentative elaborations. We now discuss each of these in turn.
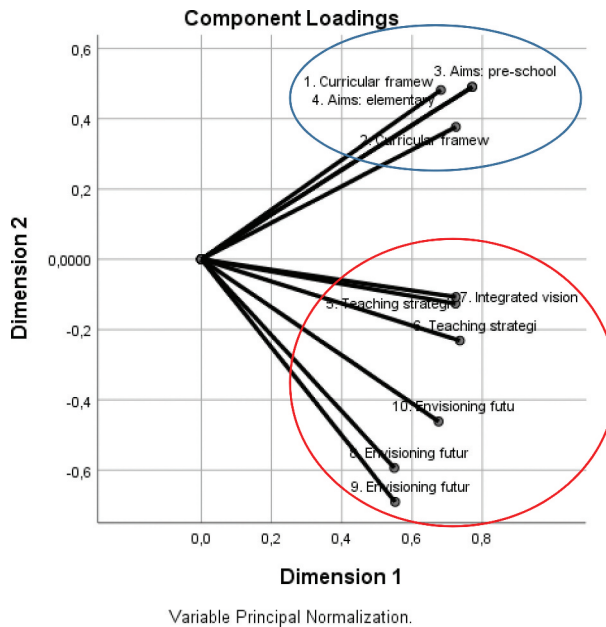
Pre-service teachers developed *positive to very positive perceptions about their learning*, considering that the strategy enhanced the construction of their PCK, metacognition, and, especially, of their agentic identities. The findings further suggest that learners enhanced their understanding of the interrelated nature of the work that is expected from them in the educational sectors concerned. There were also specific areas of difficult learning, most of which related to teaching in elementary education, evidencing that designing learning strategies is different from and more difficult than knowing contents. This is in tune with Shulman's (1987) definition of PCK itself, in that knowing how to teach demands more than the mere knowledge of specific contents. The analysis further

Error bars: 95% CI

Potentials of assessment	Examples
Rehearsed practice	'Regarding assessment, the most important was group work'. [nr16]
	'I think it valued the use of theory to construct professional practice instead of its reproduction, which pleased me a lot'. [nr20]
Epistemology of reflective practice	'The potentials of assessment concern the power of reflection about practice and the consequent learning that we gain from that'. [nr1]
	'The final reflection allows the assessment of all learning'. [nr4]
	'Allows many opportunities for reflection, which are very important for learning'. [nr8]
	'It helps us to reflect about what we learn, which is much more useful than an exam'. [nr22]
	'The final reflection allows us to confront our initial knowledge'. [nr25]
Assessment for learning	'More flexible and dynamic'. [nr6]
	'I think this formative process should continue because it promotes regular feedback about the work that is being developed'. [nr18]

revealed that pre-service teachers developed *very positive perceptions about the formative strategy*, most notably about curricular analysis and forms of theoretical syntheses situated in such analysis, rehearsed practice, reflective practice and assessment for learning, thus corroborating the theoretical foundations underpinning its design, discussed at the beginning of the paper. However, their perceptions also revealed some critical dimensions, in particular their limited understanding of the epistemology of reflective practice. Altogether, these findings align with the perceptions that the teacher educator registered in her journal during this experience, which considerably differ from the perceptions she had developed in her former teaching experiences.
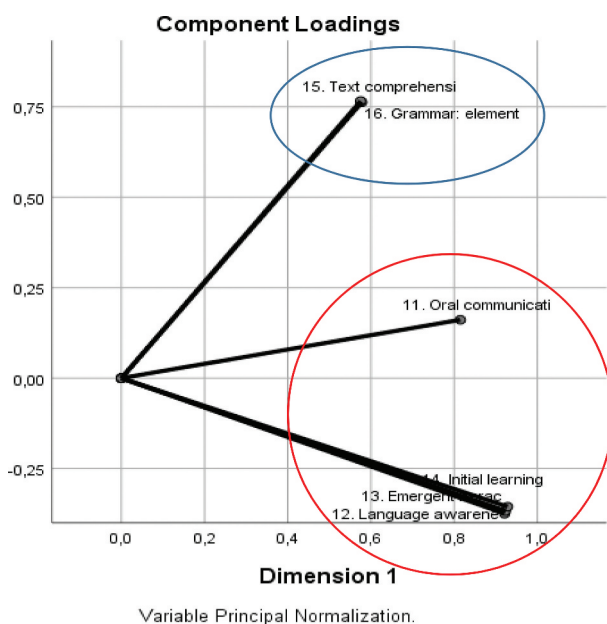
Findings suggest that the formative strategy experienced by these pre-service teachers seems to have been effective in promoting their learning about the teaching of language and literacy. Therefore, the strategy appears to be effective in bridging the gap between

Variable Principal Normalization.

Areas of Improvement	Examples
Rehearsed practice: time & quantity of tasks	'Managing time to do the expected work was a challenge'. [nr2] 'The main challenges were to keep weekly reflections and the group work deliveries on time'. [nr10] 'Reflections should not be weekly due to the overload in our schedule'. [nr15] 'The portfolio needs more time for its construction'. [nr17] 'This project should have been developed within a year and not during one semester'. [nr19]
Rehearsed practice: using the same text	'Using the same text becomes boring also for children'. [nr21] 'To value other texts – narrative saturation'. [nr22]
Epistemology of Reflective Practice	'Reflections would be more advantageous if they were done after the construction of each portfolio iteration'. [nr15]

theory and practice that triggered its enactment, emerging as a sheltered space for professional learning in the master degree before the practicum period.
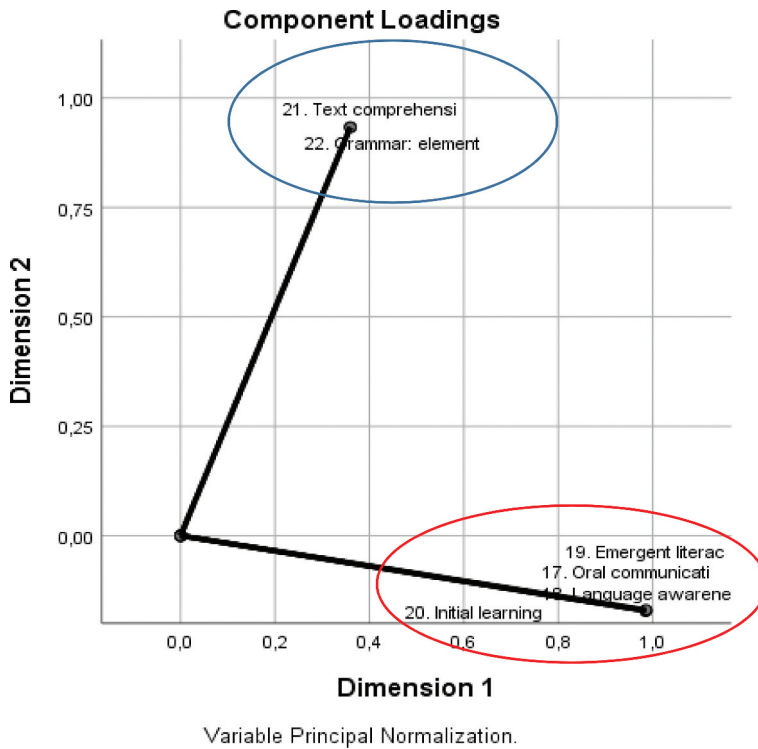
Nevertheless, these promising findings are now in need of further research. As they refer to the data collected through the questionnaire, the findings presented here, focusing on student teachers' perceptions, need now to be triangulated with the analysis of further data produced by them, such as the collaborative portfolios and individual reflections. Furthermore, follow-up studies of these students' practicums will be necessary so that we can infer about the lasting effects of this formative strategy in enhancing the professional learning that is constructed during the practicum, especially as far as the

Component Loadings

Variable Principal Normalization.

| Challenges of assessment	Examples
Epistemology of reflective practice	'The main challenge has to do with introspection that was required at the end of each seminar'. [nr5]
	'The main challenge was to do the weekly reflection when there was not theoretical synthesis'. [nr6]
	'To do the reflections when there was only group work'. [nr4]
	'To do the reflections in the seminar in which there was no theory by the teacher'. [nr8]
	'In some cases, the weekly reflections were a challenge and unnecessary'. [nr21]

development of their agentic identities and epistemology of reflective practice. In addition, our preliminary findings are far from being generalisable (Stake 1995). Further replications of the case study, in other contexts and by other actors and researchers, are now necessary in order to achieve valid conclusions regarding its efficacy. Further research will be key to definitely conclude if the formative strategy can be considered an instantiation of a cycle 'of experimentation in settings that move closer and closer to actual classrooms [providing] the foundation for more mature forms of practice' (Grossman, Hammerness, and MaDonald 2009, 282). Such results will be essential to make a final evaluation of the formative strategy and answer to the leading research question.

Yet, by being a case study, our findings can be used to develop some tentative conceptualisations regarding the formative strategy itself (Stake 1995). In effect, the major significance of the findings is to be found in its contribution to the conception of a model for initial teacher education in the context of the Bologna Process in particular, and in teacher education in general. Above all, they suggest the possibility of thinking beyond the specific case of language and literacy education involved in this instance, looking instead into the designed formative strategy as the embryo of a model for pre-

service teacher education taking place before practicum in the context of the Bologna Process.

The strategy (Figure 1) brings together key theoretical notions underpinning initial teachers' learning, such as PCK construction, rehearsed practice, epistemology of reflective practice and assessment for learning, articulating them into an internally coherent, realist formative strategy (Grossman, Hammerness, and MaDonald 2009). The findings allow us to assume that the strategy offers insights for exploring it as a model for *a transformative teacher education pedagogy* in the Post-Bologna context. In particular, it may contribute to overcome a rather technical and sometimes simplistic view of teaching, offering student teachers the opportunity to develop 'insights and experiences of the dynamic, problematic, complex and sophisticated nature of practice' (Loughran and Menter 2019, 222) before they themselves experience it, thus contributing to reshape the teacher educators' 'traditional roles and to expand professional competences in order to become partners of pedagogical inquiry and renewal' (Flores et al. 2016, 112). The strategy endorses such a transformative nature in how to be a teacher educator, being clearly situated in the perspective of teaching as a sophisticated practice (Loughran, Keast, and Cooper 2016), conceiving of pre-service teachers as professionals who need to be empowered in their learning how to bridge the gap between theory and practice as well as in the idea of the teacher educator as a 'learning process expert, whose main

Component Loadings

Variable Principal Normalization.
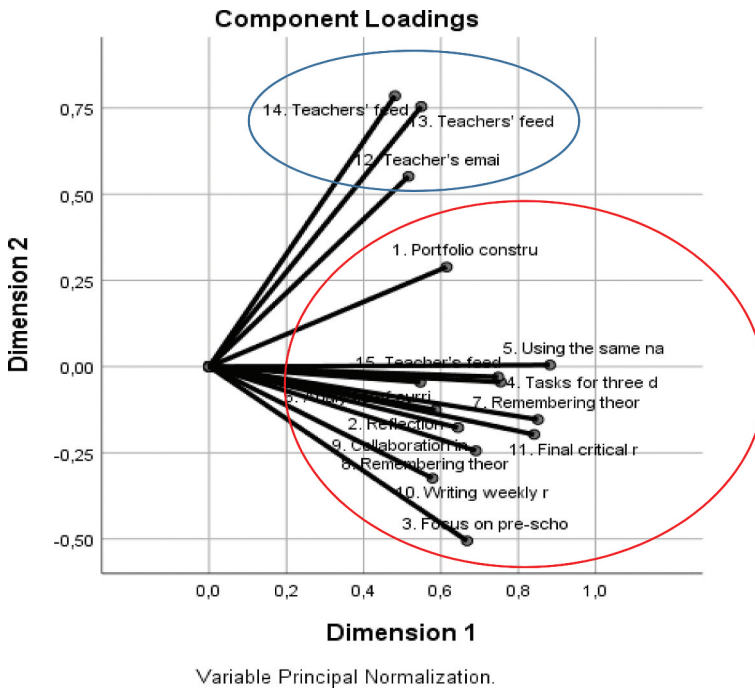
responsibility is to foster active, self-regulated and collaborative learning in the students' (Vermunt et al. 2017, 143). As Loughran, Keast, and Cooper (2016, 416) argue, teacher education is not 'about training, it should be an educative process that develops thoughtful, informed and highly able professionals'. Such an approach entails the integration of the theory, the practice and the person within a realistic approach to initial teacher education (Korthagen 2009). But the case study presented here also unveils some challenges that teacher educators may face in enacting such a transformative pedagogy. The opportunity to develop this strategy was facilitated by the first author's transversal work, from the first degree until the practicum periods. While this is not the usual case among teacher educators, it suggests that any such model implies a good articulation of the current formative plans among teacher educators under the Bologna Process. In the development of the strategy, the Bologna process was assumed as an opportunity to rethink the core features of the previous model of teacher education (Vieira, Flores, and Almeida 2020) demanding a renewal in the teacher educator's own work, from theoretical inquiry, careful (re)planning, (re)structuring and articulation of the learning and assessment tasks, to constant feedback and close monitoring of the learning process. Last but not least, the enactment of the strategy also required strong dispositions from learners: wanting to learn, being active and reflective, knowing how to learn from imagined practice and having other facilitating circumstances, such as time to do the tasks (McKay and Dunn 2020).

While these theoretical elaborations regarding the model seem appealing to us, their validation is again dependent on its empirical replication and further research.

Conclusion

We presented the partial results of the case study of a formative strategy developed to enhance pre-service teachers learning (about language and literacy teaching in the early years) in the period preceding the practicum in a master degree that was created after the Bologna Process. The main idea relates to the fact that the Bologna Process offers possibilities to enhance pre-service teachers' learning in the pre-practicum period provided the design of a comprehensive and integrated formative model sustained in solid and stable learning principles, such as PCK construction, rehearsed practice, epistemology of reflective practice and assessment for learning, although also posing challenges for teacher educators. This model emerges as an auspicious contribution to minimise the theory-practice divide in teacher education and to maximise their professional learning before their practicum periods.

The envisioning of this challenging possibility is our contribution to the construction of a Scholarship of Teaching and Learning in the Post-Bologna context. The ultimate aim of our paper is therefore *not* to legitimate the Bologna Process, nor to advocate a particular solution for overcoming the theory-practice gap in initial teacher education. We aimed instead to present student teachers' personal understandings and experiences of a specific formative possibility opened up within this new political scenario, which, in our view, holds the potential to be enacted in alternative pre-practicum formative contexts, situated in other socio-political contexts, due to the independent significance of the theoretical tenets underpinning it.

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