Educação em Perspectiva / *Education in Perspective*
DOI: 10.22294/eduper/ppge/ufv.v11i.9060

DOSSIER

Teacher education based on pedagogical research: a study of the practicum in teaching masters

Formação de professores baseada na investigação pedagógica: um estudo sobre o estágio nos mestrados em ensino

Formación de profesores basada en la investigación pedagógica: un estudio sobre el prácticum en los masters en enseñanza

Flávia Vieira[2]
José Luís Jesus Coelho da Silva[3]
Maria Teresa Machado Vilaça[4]

Abstract: The article presents a study about the practicum model of the Masters in Teaching of the University of Minho (Portugal), created with the Bologna reform. The model assigns a central role to the development of a pedagogical research project at school, which is presented in a final report defended publicly. The study involved a qualitative analysis of 40 practicum reports and a survey questionnaire to university supervisors (n=34), cooperating school teachers (n=112) and former trainees (n=133). Results are presented regarding the nature and impact of the projects and the professional competences evidenced by the reports. The participants' perceptions and the reports are globally aligned with the assumptions and action lines of the model. Nevertheless, some limitations are identified pointing to the need for improvement in training processes.

Keywords: Initial teacher education. Practicum. Pedagogical research.

Resumo: *O artigo apresenta um estudo sobre o modelo de estágio dos Mestrados em Ensino da Universidade do Minho (Portugal), criados com a reforma de Bolonha. O modelo confere um lugar central ao desenvolvimento de um projeto de investigação pedagógica na escola, apresentado num relatório final defendido em provas públicas. O estudo envolveu a análise qualitativa de 40 relatórios de estágio e um inquérito por questionário respondido por supervisores da universidade (n=34), orientadores cooperantes das escolas (n=112) e ex-estagiários (n=133). São apresentados resultados relativos à natureza e impacto dos projetos e às competências profissionais evidenciadas nos relatórios. Conclui-se que as perceções dos participantes e os relatórios estão globalmente alinhados com pressupostos e linhas de ação do modelo, embora se identifiquem algumas limitações que apontam a necessidade de melhorias nos processos de formação.*

Palavras-chave: *Formação inicial de professores. Estágio. Investigação pedagógica.*

Resumen: *El artículo presenta un estudio sobre el modelo de prácticum en los Másteres en Enseñanza de la Universidad de Minho (Portugal), creados tras la reforma de Bolonia. El modelo asigna un papel central al desarrollo de un proyecto de investigación pedagógica en la escuela, presentado en un informe final en una defensa pública. El estudio incluyó un análisis cualitativo de 40 informes de prácticas y una encuesta respondida por supervisores universitarios (n=34), mentores escolares (n=112) y antiguos alumnos en prácticas (n=133). Los resultados se centran en la naturaleza e impacto de los proyectos y las competencias profesionales evidenciadas en los informes. Se concluye que las percepciones de los participantes y los informes están en general alineados con los supuestos y las líneas de acción del modelo, aunque se identifican algunas limitaciones que apuntan a la necesidad de mejoras en los procesos de formación.*

Palabras clave: *Formación inicial de profesores. Prácticum. Investigación pedagógica.*

[1] **Submitted:** 06 Oct. 2019 - **Accepted:** 08 Dec. 2019 - **Published:** 21 July 2020
[2] University of Minho, Portugal (UMinho) – Email: flaviav@ie.uminho.pt
[3] University of Minho, Portugal (UMinho) – Email: zeluis@ie.uminho.pt
[4] University of Minho, Portugal (UMinho) – Email: tvilaca@ie.uminho.pt

Introduction

In a review of the articles published in the Journal of Teacher Education over a 40-year period, Livingston and Flores (2017) stress recurrent issues that still require study and discussion. Among others, they mention the role of research in professional development and how the quality of teacher education is conceived and developed in institutions. The present paper is framed within these themes, presenting an evaluation of the post-Bologna practicum model of the Masters in Teaching at the University of Minho (UMinho), carried out 10 years after it was implemented (2008/09 to 2017/18)[i].

The Bologna Process was introduced in higher education in Portugal through Decree-Law No. 74/2006, and in initial teacher education through Decree-Law No. 43/2007. Before that, initial teacher education was carried out in 4 to 5-year Teaching Degrees which included a final practicum year. With the Bologna reform, it is divided into two stages: a 3-year course on a specific scientific area (e.g., English, Mathematics, etc.) and a 3 to 4-semester masters programme that integrates subject-specific training, general educational training, training in specific didactics, and professional practice/practicum.

In the case of UMinho, these masters involved the design of a new practicum model which favours pedagogical research as a reflective teacher education strategy, aiming at promoting humanistic and democratic educational practices. Student teachers design, develop and assess classroom-based projects under the supervision of a faculty supervisor and a cooperating teacher at school, and produce a final report defended in a public examination.

We start with a brief discussion of the role of research in the practicum and the way in which it was integrated into our model. Then we present the study and results regarding both the projects and the practicum reports, based on data gathered through a survey questionnaire and the content analysis of a corpus of reports. Despite referring to a specific institution, the results can find resonance in similar training scenarios and promote reflection on the link between research and teaching in teacher education within practicum settings.

Pedagogical research in the practicum

Reflection, research and educational change

Promoting reflective teacher education in the practicum context implies enhancing a praxeological epistemology based on reflection upon professional experience, as Schön advocated more than three decades ago in his seminal work "Educating the Reflective Practitioner" (SCHÖN, 1987). Nowadays, the concept and the operationalization of reflection are subject to multiple understandings, which is why Korthagen (2016, p. 326) states that teacher educators appear to struggle with "the pedagogy of reflection". Indeed, reflection can serve different purposes, and its transformative potential will depend mainly on its alignment with a humanistic and democratic view of education, which presupposes questioning dominant practices and the factors that determine them (TOM, 1985; SMYTH, 1989;

ZEICHNER, 1993). Thus, the question is: **what reflection for what education?** As Kemmis (1999, p. 105) states, reflection is not neutral; it conveys and serves concrete interests of diverse sorts – human, social, cultural, and political. From a critical perspective, reflection should denounce the tension between what education **is** and what **it should be**, supporting the exploration of **possibilities** that serve the students' interests and needs. It is here that pedagogical research can play a crucial role.

Pedagogical research favours the notion of teaching as an "epistemic engine", i.e., as an activity capable of producing practical knowledge **(**LOUGHRAN, 2009, p. 200). By becoming researchers, student teachers learn to build knowledge on teaching and learning, on the contexts in which they work, and on themselves as educators, thus developing a personal vision of education which, according to Fullan (1995), constitutes one of the main dimensions of professionalism. Pedagogical research processes imply expressing, confronting and reconfiguring reference frameworks, conceptions and professional aspirations, which promotes the epistemological autonomy of student teachers and their capacity to deliberate in complex educational situations, thus avoiding an over-technical view of the profession. On the other hand, research can foster educational change towards more dialogic and student/learning-centred pedagogies, approximating what Ellis, Souto-Manning and Turvey (2019, p. 7) describe as a process of **humanisation** of learning, teaching and professional development as relational and people-centred practices. According to these authors, innovation must oppose economicist and neoliberal dehumanisation forces that affect the work of teachers and do not serve the students and their communities.

A report on the role of research in teacher education in different contexts (BERA-RSA, 2014) concludes that there is strong evidence that teachers, and also teacher educators, must keep informed about research undertaken in their field, but also develop research skills and engage in inquiry processes that allow them to understand and transform their practices so as to improve the quality of students' learning. One of the studies which informed that report (BURN; MUTTON, 2014) analysed programmes where introduction to teaching follows a research-based clinical approach whereby student teachers analyse existing knowledge, but also produce knowledge through the design, development and assessment of intervention plans in teaching contexts. This type of experience seems to have positive effects on the combination of theoretical and practical knowledge, the development of student teachers' conceptions and didactic tools, and their preparation to face the challenges of the profession.

The Post-Bologna Practicum Model at the University of Minho

In Portugal, the introduction of pedagogical research in the practicum of initial teacher education programmes is still recent. According to some national studies, an applicationist view of the practicum prevailed before Masters in Teaching were first created in 2007, along with a general tendency towards the academisation of professional training (CANÁRIO, 2001; ESTRELA; ESTEVES; RODRIGUES, 2002; FORMOSINHO, 2009). Teacher education relied on a technical rationality that does not value the moral and political nature of

the educational experience, and the practicum occupied a sort of **non-place** in the curricula, where trainees and supervisors developed dispersed actions in the absence of a unifying project (VIEIRA, 2013). The creation of the new masters represented an opportunity for change, and the national legislation favoured the introduction of research in the practicum for three main reasons: teacher education was to be carried out at postgraduate level, student teachers were now required to produce a final practicum report defended in a public examination, and educational research became a mandatory component of the curricula, each institution being free to decide how to incorporate it. Over the years, and also as a result of external programme assessment and accreditation by the Agency for Assessment and Accreditation of Higher Education (A3ES)[ii], institutions progressively incorporated a research dimension into the practicum, albeit in different ways and not always involving research into practice (e.g., through survey studies in schools or theoretical research on a didactic topic).

In the case of UMinho, a reflective practicum model was designed, entailing a humanistic and democratic vision of education, as well as the promotion of a praxeological epistemology in the construction of professional knowledge through the development of pedagogical research projects. Action research was recommended because of its potential in understanding and transforming practice in teacher education contexts (VAUGHAN; BURNAFORD, 2016). The model was based on a local supervision project developed since 1995 by a group of language supervisors, in which action research had been explored as a reflective teacher education strategy at the service of a pedagogy for autonomy in schools (VIEIRA *et al.*, 2008; VIEIRA; MOREIRA, 2008).

The practicum takes place during the last two semesters of the programmes, together with other subjects or seminars at the university. It is carried out under the guidance of faculty supervisors and cooperating school teachers in whose classes student teachers teach a minimum of 24 hours, although teaching time varies across programmes. With supervisory support, each student teacher designs, develops and evaluates a pedagogical intervention project that is documented in a portfolio and a final report. The project follows a set of guidelines listed in the practicum internal regulation:

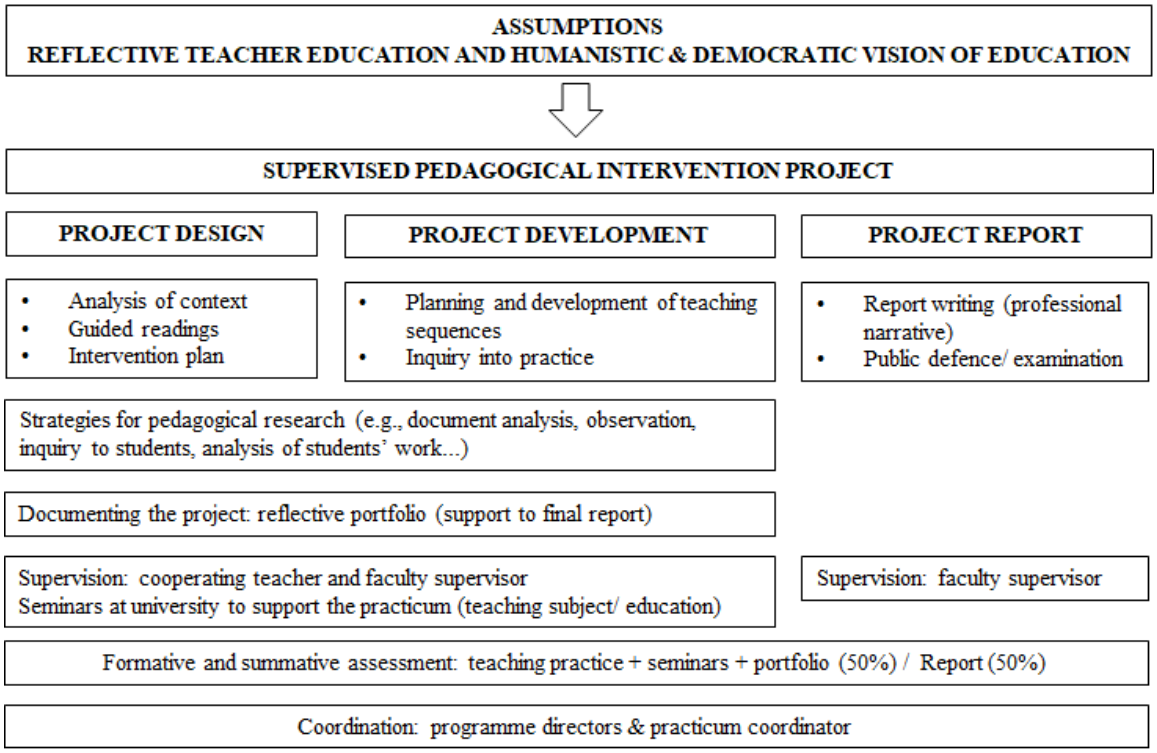
> *Adequacy to the contexts of practice* – Knowledge and problematisation of teaching contexts in order to design and develop action plans that are relevant in the face of situational variables.
>
> *Orientation towards practice* – Definition of topics, objectives and action strategies that result from the observation and analysis of teaching and learning practices within the teaching area, and contribute to understanding and improving those practices.
>
> *Ethical and conceptual grounding* – Grounding in up-to-date and relevant ethical and conceptual assumptions oriented towards the development of inclusive practices that are centred on learning and support educational success.
>
> *Research at the service of pedagogy* – Use of pedagogical research strategies that support the understanding and improvement of teaching and learning practices.
>
> *Formative potential* – Articulation between the project's objectives and the student teacher's professional development goals, within a view of professional practice that favours the development of reflection, self-direction, collaboration and creativity/innovation skills (Regulation of the Masters in Teaching at the University

of Minho).

The final report, which is developed under the guidance of the faculty supervisor, consists of a descriptive and interpretative professional narrative that is 20.000 to 25.000-word long. It includes the project's contextual and theoretical framework, the action plan, its development and its evaluation. It is presented publicly before an examining board and its weight on the final grade of the practicum is 50%.

Figure 1 sums up the overall organisation of the model, stressing the central role of the project and indicating the support, evaluation and coordination mechanisms it integrates.

Figure 1. Overall organization of the practicum



Source: Prepared by the authors.

In order to investigate this model, internal studies have been carried out through questionnaires, interviews, and report analysis. The results have shown a positive impact on promoting reflective teaching and learner-centred educational practices, but they have also indicated the existence of tensions and ambiguities concerning the role and the nature of research in professional training (FLORES, 2018; FLORES *et al.*, 2016; VIEIRA *et al.*, 2019). The present study follows the same line of inquiry within a larger time scope.

The study: objectives and methodology

The study was designed with the following objectives: (1) to analyse the perceptions of the practicum participants regarding the model; (2) to understand the educational value of

the practicum projects developed and reported by the student teachers; (3) to understand the potentialities and shortcomings of the model regarding the development of reflective teachers and the renewal of school practices. A mixed methodology was adopted, combining (online) survey questionnaires and the analysis of practicum reports. The study was initially submitted to the UMinho Ethics Committee, and it was approved for "meeting the requirements demanded for good practices in human research, in compliance with the national and international rules which regulate research in social and human sciences" (Ethics Committee Report, 24th of January 2019).

Research Tools and Procedures

The survey questionnaire was administered in the beginning of 2019 through an email to participants, where the study was presented and a link to access the questionnaires was provided. Two similar questionnaires were developed: one for the supervisors and cooperating teachers, and another one for former student teachers. They include an Informed Consent Statement and some questions to collect professional background information, followed by a set of questions about the practicum model, mostly with Likert scales. The survey comprised the Masters in Teaching that were offered at the time the study was designed, in a total of 17 programmes, some of which were equivalent and had been previously readjusted with changes in designation. These programmes concern different teaching areas (Languages, Mathematics, Sciences, Philosophy, etc.) and school levels (preschool, 1st, 2nd and 3rd cycles of basic education, and secondary education). Descriptive statistical analysis was carried out for frequency, mean, standard deviation and mode values. In this paper, we present the results concerning two questions: one about the nature and impact of the projects, and another one about the competences evidenced in reports. Those questions presented sets of items with a six-point Likert scale: **No Opinion**, **Not Evident**, **Little Evident**, **Moderately Evident**, **Evident**, **Very Evident**. To calculate the mean, standard deviation and mode values, the ordinal scale was converted into a numeric scale from 1 (**Not Evident**) to 5 (**Very Evident**). The scale point **No Opinion** was coded as 0.

The analysis of practicum reports was initiated in previous studies and expanded in the present study[iii], focusing on a corpus of 40 reports available at UMinho's repository, concluded in different years (2011 to 2018). The reports describe projects developed in masters for the various teaching levels, in the areas of Early Childhood Education, Portuguese, Spanish, English, Biology/Geology, Environmental Studies, Mathematics, Artistic Expressions, and Philosophy. They were selected bearing in mind the diversity of the teaching areas, the thematic diversity of the projects, and the diversity of faculty and school supervisors. A grid for content analysis was built with predefined items concerning five dimensions of the practicum projects: view of education (conceptions of pedagogy, the teacher and the learner); mobilisation of knowledge (type and role); link between research and teaching (objectives; approach to inquiry; data collection methods); educational value (gains; limitations; recommendations). The analysis required the extensive reading of the reports and the annotation of the presence of the items from the grid: √ - evident/clear

presence; ? - not very evident/unclear presence. A global summary of results (per programme and in all programmes) was made. In the present text, we present global results concerning the view of education expressed by the student teachers, the mobilisation of knowledge (type and role) and the link between research and teaching.

Characterisation of Respondents

All university supervisors in the 10 years comprised by the study (n=78) were surveyed, since they constitute a pretty stable group of staff. As for the cooperating teachers and the student teachers, because they vary over time and have less experience with the model, the interval considered was the 5-year period prior to the study (2013/14-2017/18) so as to increase the reliability of their answers. All the cooperating teachers from those years were surveyed (n=427), as well as all the former student teachers who had submitted their final practicum report during that period (n=548).

The questionnaires were answered by 34 supervisors (43.6% of the group), 112 cooperating teachers (26.2%), and 133 former student teachers (24.3%), in a total of 279 respondents distributed across all the programmes considered. According to the data gathered in the questionnaires, most supervisors (82.4%) and cooperating teachers (68.8%) had more than 20 years of teaching experience; experience in supervision within the post-Bologna model was larger among supervisors because of their institutional roles, while varying greatly in the case of cooperating teachers (between 1 and “more than 5 years”); many of them (40%) also had supervision experience in the pre-Bologna Teaching Degrees, as was the case with most supervisors (70.6%); the latter had supervised more practicum projects (91.2% “more than 5”), while the number of projects supervised by cooperating teachers was variable (between 1 and “more than 5”); training and research in the field of pedagogical supervision was pointed out by most supervisors (70.6%) and by almost half the cooperating teachers (44.6%). The former student teachers who answered the questionnaire concluded their practicum in different years (2013 to 2018); approximately half of them had teaching experience before the practicum (58.6%) and taught while in the practicum (47.7%); the majority (81.2%) also had teaching experience after the practicum.

Results

We now present the results of the study regarding the nature and impact of the projects and the competences evidenced in the reports, triangulating data from questionnaires with data from report analysis. The results allow us to determine the existence of convergence or divergence between the perceptions of the three groups of participants, and between those perceptions and evidence from reports, while also enabling us to understand the extent to which perceptions and reports are aligned with the model assumptions and lines of action. However, it is important to mention that the samples are random and there is not a correspondence between the participants and the reports analysed, which means that

comparisons between groups of participants, and between their perceptions and the reports, must be interpreted with caution even though they provide relevant hints to assess the model.

Nature and Impact of Project Development

Table 1 presents the respondents' perceptions regarding the nature and impact of the projects in dimensions that reflect our model assumptions. Respondents expressed their opinion about the degree of evidence of those dimensions in the projects they supervised (supervisors and cooperating teachers) or developed (former student teachers). The distribution of the supervisors' and the cooperating teachers' responses was very similar, which is why they were grouped in the Table and compared with the student teachers'.

Table 1. Perceptions of practicum projects

	Sup. & Coop. T. (n=146)			Former St. T. (n=133)		
Nature and impact of projects	M	SD	Mo	M	SD	Mo
Exploration of topics that interest student teachers	4,2	0,9	4	4,3	1,0	5
Adequacy of the project to the students	4,3	0,8	5	4,6	0,7	5
Articulation between the project and curricular guidelines	4,2	1,0	5	4,5	0,9	5
Adoption of approaches centred on students and their learning	4,3	0,9	5	4,7	0,6	5
Students' receptivity to the proposed activities	4,4	0,9	5	4,6	0,6	5
Improvement of students' learning	3,9	1,1	4	4,2	1,0	4
Development of decision-making competences	4,1	0,9	4	4,4	0,8	5
Development of teaching competences	4,3	0,9	5	4,3	0,9	5
Development of pedagogical reflection competences	4,1	0,8	4	4,4	0,9	5
Development of pedagogical research competences	3,9	1,0	4	4,4	0,8	5
Development of professional identity	4,0	1,0	4	4,3	1,0	5

Caption: M: Mean; SD: Standard Deviation; Mo: Mode.
Source: Field work.

Most participants express positive perceptions regarding the nature of the projects, acknowledging that they focused on topics students teachers were interested in, were adjusted to the students, were linked with curricular guidelines, and involved the exploration of student/learning-centred approaches. However, the perceptions of students' receptivity to the activities are globally more positive than the perceptions of improvements observed in learning, especially in the case of the cooperating teachers (Table 2). These results can be explained by the fact that the projects are developed in a limited period of time, which is one of the constraints mentioned in the reports that were analysed.

Table 2. Improvement of student learning: comparison of perceptions

Perceptions of improvement in student learning	No opinion		Not evident		Little evident		Moderately evident		Evident		Very evident	
	f	%	f	%	f	%	f	%	f	%	f	%
Supervisors (n=34)	2	5,9	0	0	2	5,9	5	14,7	14	41,2	11	32,4
Coop. Teachers (n=112)	2	1,8	0	0	5	4,5	23	20,5	51	45,5	31	27,7
Former St. Teachers (n=133)	2	1,5	1	0,8	4	3,0	15	11,3	56	42,1	55	41,4

Source: Field work.

As for the impact of the projects on the student teachers' professional development, more specifically on their decision-making, teaching, refection and research skills, the perceptions of the respondents are also globally positive, despite divergences concerning the research skills, where the supervisors' and cooperating teachers' appreciations are less positive, especially the former's (Table 3).

Table 3. Development of pedagogical research competences: comparison of perceptions

Perceptions of the development of pedagogical research competences	No opinion		Not evident		Little evident		Moderately evident		Evident		Very evident	
	f	%	f	%	f	%	f	%	f	%	f	%
Supervisors (n=34)	0	0	0	0	0	0	13	38,2	18	52,9	3	8,8
Coop. Teachers (n=112)	3	2,7	1	0,9	2	1,8	24	21,4	45	40,2	37	33,0
Former St. Teachers (n=133)	1	0,8	1	0,8	2	1,5	6	4,5	53	39,8	70	52,6

Source: Field work.

Report analysis has shown that the research dimension of the projects is present in the objectives set and in reflection processes based on data collection and analysis, albeit with varying degrees of explicitness (Table 4).

Table 4. Research-teaching nexus in reports (n=40)

Aspects of the relation between teaching and research	√	**?**	**A**
Intention to describe/understand teaching/learning processes	22	7	11
Intention to change/improve teaching/learning processes	28	1	11
Intention to evaluate the effectiveness/impact of a particular approach	31	6	3
Data collection throughout the intervention	33	2	5
Interpretation of data with reference to objectives	32	5	3
Change/ improvement of practices based on data collected	21	3	16

Caption: √ - Evident/clear presence; ? - Not very evident/ unclear presence; A – Absent.
Source: Field work.

Variations concerning the nature of the relationship between research and teaching were observed (Table 5). Despite the recommendation to use action research, only 22 reports document cycles of planning-action-reflection which allow us to understand connections between data collection, decision-making and pedagogical action. Those connections are less evident in the other reports, where data collection during the intervention may or may not occur, and where a final evaluation and the use of pre-/post-tests are favoured.

Table 5. Overall research approach in reports (n=40)

Research approaches	f
Action research (cycles de planning-acting-reflecting)	22
(Diagnosis) → Intervention with data collection→ Final evaluation of impact	11
Pre-test → Intervention without data collection → Post-test+Final evaluation of impact	7

Source: Field work.

When comparing the results among programmes, we found some clues indicating that research approaches may be due to the supervisors' epistemological preferences and the research traditions within different disciplinary fields, although further research is required to confirm this hypothesis.

Professional Competences Evidenced by Reports

Table 6 presents the supervisors' and former students teachers' perceptions of the professional competences (knowledge, capacities and attitudes) evidenced by the reports that were supervised (supervisors) or produced (former student teachers). Cooperating teachers did not answer this question because they are not responsible for overseeing the reports.

Table 6. Perceptions of competences evidenced by reports

Competences evidenced by reports	Supervisors (n=34)			Former St. T. (n=133)		
	M	SD	Mo	M	SD	Mo
Knowledge of the practicum context (school cluster, school, class, students...)	4,5	0,6	5	4,3	0,9	5
Knowledge of education (general) and specific didactics	3,9	0,7	4	4,2	0,9	4
Knowledge of content in teaching field	4,2	0,7	4	4,2	1,0	5
Knowledge about pedagogical research	3,4	0,8	4	4,2	1,0	5
Construction of a personal vision of education	3,4	0,8	3	4,2	1,0	5
Adoption of current didactic perspectives	4,0	0,8	4	4,3	1,1	5
Attitude of openness to change	4,0	0,8	4	4,3	1,2	5
Attitude of commitment towards the profession	4,0	0,8	4	4,2	1,3	5
Ability to justify choices	3,8	0,7	4	4,3	1,0	5
Ability to describe practice	4,1	0,7	4	4,4	1,0	5
Ability to articulate practices with theoretical input	3,6	0,6	4	4,2	1,1	5
Ability to investigate practice	3,6	0,7	3	4,2	1,0	4
Ability to identify potentialities of the project	3,7	0,7	4	4,3	0,9	5
Ability to identify limitations of the project	3,7	0,8	3	4,3	0,9	5
Ability to present proposals for future action	3,5	0,7	3	4,3	0,9	5

Caption: M: Mean; SD: Standard Deviation; Mo: Mode.
Source: Field work.

Overall, results reflect positive perceptions, especially in the case of former student teachers, reinforcing previous results on the impact of project development. However, it is important to stress the divergence of both groups regarding knowledge about pedagogical research and the development of a personal vision of education, which represent crucial competences of the teacher researcher.

Table 7 presents the distribution of responses in the first case, where a higher variation can be observed in the supervisors' perceptions.

Table 7. Knowledge about pedagogical research: comparison of perceptions

Perceptions of knowledge about pedagogical research	No opinion		Not evident		Little evident		Moderately evident		Evident		Very evident	
	f	%	f	%	f	%	f	%	f	%	f	%
Supervisors (n=34)	0	0	0	0	5	14,7	12	35,3	15	44,1	2	5,9
Former St. Teachers (n=133)	3	2,3	0	0	4	3,0	13	9,8	56	42,1	57	42,9

Source: Field work.

Indeed, report analysis revealed a generalised absence of **declarative or propositional** research knowledge (knowledge **about** pedagogical research), in contrast to a

strong presence of **procedural or practical** research knowledge, particularly evident in data collection/ analysis processes. Table 8 sums up the data collection strategies used across reports in two stages of the projects: design and implementation.

Table 8. Data collection strategies in the projects (n=40)

Data collection strategies	Design			Implement.			Total
	√	?	T	√	?	T	
Non-structured observation	26	7	**33**	25	1	**26**	**59**
Questionnaires	18	1	**19**	22	1	**23**	**42**
Teacher reflective records (portfolio)	12	3	**15**	22	2	**24**	**39**
Document analysis	28	2	**30**	2	-	**2**	**32**
Analysis of learning tasks	2	2	**4**	17	2	**19**	**23**
Learner self-regulation tools	1	-	**1**	20	-	**20**	**21**
Analysis of classroom interaction	10	1	**11**	10	-	**10**	**21**
Dialogue with learners	-	-	**0**	16	4	**20**	**20**
Structured observation (grid, guidelines...)	9	3	**12**	3	2	**5**	**17**
Assessment of knowledge	5	-	**5**	11	-	**11**	**16**
Learner reflective records (e.g. journal)	-	-	**0**	7	1	**8**	**8**

Caption: √ - Evident/clear presence; ? - Not very evident/ unclear presence; T- Total.
Source: Field work.

As for divergences in perceptions regarding the development of a personal vision of education, Table 9 also shows a less favourable appreciation on the part of supervisors.

Table 9. Development of a personal vision of education: comparison of perceptions

Perceptions of the development of a personal vision of education	No opinion		Not evident		Little evident		Moderately evident		Evident		Very evident	
	f	%	f	%	f	%	f	%	f	%	f	%
Supervisors (n=34)	0	0	1	2,9	2	5,9	16	47,1	13	38,2	2	5,9
Former St. Teachers (n=133)	3	2,3	0	0	3	2,3	15	11,3	50	37,6	62	46,6

Source: Field work.

However, report analysis has revealed that reports convey conceptions of pedagogy, teachers and learners that are globally aligned with a transformative perspective of education. Those conceptions can be inferred from the pedagogical assumptions advocated, the strategies explored, and reflections on practice. Table 10 shows that they are more or less evidently present in most reports. In some cases, student teachers do not make their conceptions explicit, even though the practices they describe suggest similar views. Variations in the degree of explicitness of the student teachers' ideological stance towards education may be due to the search for a more neutral discourse where the "I" of the teacher

researcher is less noticeable, which has to do with different conceptions of research and academic writing.

Table 10. Conceptions of pedagogy, the teacher and the learner in reports (n=40)

Student teachers' pedagogical conceptions		√	?	A
Conception of pedagogy	Democratic, inclusive, focused on learning	24	8	8
Conception of the teacher	Reflective, agent of change	26	8	6
Conception of the learner	Reflective, builder of knowledge	24	11	5

Caption: √ - Evident/clear presence; ? - Not very evident/ unclear presence; A – Absent.
Source: Field work.

In conformity with the perceptions of both supervisors and student teachers regarding competence development (see Table 6 above), reports reveal the mobilisation of contextual, educational (including didactic) and content knowledge with various roles in project design, development and evaluation, as can be observed in Table 11.

Table 11. Types and roles of knowledge in reports (n=40)

Roles of knowledge in projects	Contextual Knowledge			Educational Knowledge			Content Knowledge		
	√	**?**	**T**	√	**?**	**T**	√	**?**	**T**
Characterising the context	36	2	**38**	16	1	**17**	3	2	**5**
Identifying a problem/interest	24	-	**24**	25	1	**26**	25	1	**26**
Justifying the relevance of the topic of inquiry	32	-	**32**	36	1	**37**	25	1	**26**
Justifying pedagogical strategies (approach)	29	3	**32**	25	3	**28**	23	2	**25**
Justifying strategies to analyse/evaluate action	13	-	**13**	16	3	**19**	5	10	**15**
Analysing/ evaluating the intervention	25	3	**28**	16	13	**29**	9	13	**22**
Problematising/ theorising the intervention	16	8	**24**	9	5	**14**	6	9	**15**
Identifying shortcomings of inquiry processes	7	1	**8**	4	1	**5**	1	-	**1**

Caption: √ - Evident/clear presence; ? - Not very evident/ unclear presence; T- Total.
Source: Field work.

These results suggest that project development requires and promotes the construction of multidimensional and multifunctional professional knowledge, which is important to develop a vision of education and also to link theory to practice, and research to teaching.

Conclusions

Overall, the study shows that the participants' perceptions and the student teachers' reports are globally aligned with the model assumptions and lines of action, which somehow

validates the adoption of an inquiry-based approach in this practicum context, and testifies to its impact on the development of a multidimensional professional competence required for a reflective action engaged with the improvement of educational practices. Although supervisors and cooperating teachers show some reservations as to whether student teachers actually develop research skills and a personal vision of education, almost all reports document inquiry paths based on pedagogical conceptions oriented towards humanistic and democratic values, which is in line with the model assumptions. Still, the use of action research could be reinforced, which requires a greater collective reflection among supervisors so as to a develop a more explicit planning-action-reflection dynamics that would probably favour the construction of more explicit personal visions of education.

We identified shortcomings regarding the student teachers' knowledge **about** pedagogical research (supervisors' perceptions and evidence from reports). This had already been detected in previous studies, leading to the creation of an initial seminar to support project design and address pedagogical research issues. Still, a greater support by supervisors is required for this type of knowledge to be more explicit in the reports. We also observed limitations regarding the impact of projects upon students' learning (supervisors' and cooperating teachers' perceptions), which can be explained by the limited intervention time but also raises issues regarding the use of data collection methods that tend to focus more on the students' perceptions than on their productions or interactions in class, an aspect that can be improved through supervisory support.

Given the impossibility of defining **a** pedagogy of teacher education (KORTHAGEN, 2016), and also the lack of enough evidence to compare the effectiveness of different types of programmes (ZEICHNER, 2016), it is crucial to develop studies about the nature and outcomes of teacher education practices carried out in different contexts. Even though our study follows this line of inquiry, we must stress that conceptions of quality in teacher education are not only based on research, but also on teacher educators' beliefs and stances (ZEICHNER, 2016; ZEICHNER; CONKLIN, 2008). A practicum model based on a humanistic and democratic vision of education and on an inquiry-based, praxeological epistemology will always generate some dissent and controversy given the diversity of conceptions of teaching and teacher education. That does not mean that such a model it is not desirable, and we need to realise that change towards new teacher education paradigms is slow and hard to operate. Internal discussions of the study results will be an important step towards the improvement and consolidation of the model.

References

BERA-RSA. **Research and the teaching profession:** building the capacity for a self-improving education system. Final report of the BERA-RSA inquiry into the role of research in teacher education. Londres: BERA, 2014.

BURN, Katharine; MUTTON, Trevor. Integrated ITE Programmes Based on 'Research-Informed Clinical Practice'. *In*: BERA (ed.). **The role of research in teacher education:** reviewing the evidence. Interim report of the BERA-RSA inquiry, Jan. 2014. p. 22-25.

CANÁRIO, Rui. A Prática profissional na formação de professores. *In*: CAMPOS, Bártolo Paiva (org.). **Formação Profissional de Professores no Ensino Superior**. Porto: Porto Editora, 2001. p. 31-45.

ELLIS, Viv; SOUTO-MANNING, Mariana; TURVEY, Keith. Innovation in teacher education: towards a critical re-examination, **Journal of Education for Teaching**, v. 45, n. 1, p. 2-14, 2019. https://doi.org/10.1080/02607476.2019.1550602

ESTRELA, Maria Teresa; ESTEVES, Manuela; RODRIGUES, Ângela. **Síntese da investigação sobre formação inicial de professores em Portugal (1990-2000)**. Porto: Porto Editora, 2002.

FLORES, Maria Assunção. Linking teaching and research in initial teacher education: knowledge mobilisation and research-informed practice, **Journal of Education for Teaching**, v. 44. n. 5, p. 621-636, 2018. https://doi.org/10.1080/02607476.2018.1516351

FLORES, Maria Assunção *et al.* Integrating Research into the Practicum: inquiring into inquiry-based professional development in post-Bologna initial teacher education in Portugal. *In*: FLORES, Maria Assunção; AL BARWANI, Thuwayba (ed.). **Redefining Teacher Education for the Post-2015 Era**: global challenges and best practice. New York: Nova Publisher, 2016. p. 109-124.

FORMOSINHO, João. Academização da formação de professores. *In*: FORMOSINHO, João. (coord.). **Formação de Professores**: aprendizagem profissional e acção docente. Porto: Porto Editora, 2009. p. 73-92.

FULLAN, Michael. The limits and the potential of professional development. *In*: GUSKEY, Thomas; HUBERMAN, Michael (ed.). **Professional development in education.** New paradigms and practices. New York: Teachers College Press, 1995. p. 353-267.

KEMMIS, Stephen. La investigación-acción y la política de la reflexión. *In*: PÉREZ GOMEZ, Ángel; BARQUÍN RUIZ, Javier; ANGULO RASCO, José Félix (ed.). **Desarrollo profesional del docente:** política, investigación y práctica. Madrid: Ediciones Akal, 1999, p. 95-118.

KORTHAGEN, Fred. Pedagogy of teacher education. *In*: LOUGHRAN, John; HAMILTON, Mary Lynn (ed.). **International Handbook of Teacher Education**. Singapura: Springer, 2016. p. 311-346.

LIVINGSTON, Kay; FLORES, Maria Assunção. Trends in teacher education: a review of papers published in the European Journal of teacher education over 40 years. **European Journal of Teacher Education**, v. 40, n. 5, p. 551-560, 2017. https://doi.org/10.1080/02619768.2017.1387970

LOUGHRAN, John. Is teaching a discipline? Implications for teaching and teacher education. **Journal Teachers and Teaching theory and practice**, v. 15, n. 2, p. 189-203, 2009. https://doi.org/10.1080/13540600902875290

SCHÖN, Donald. **Educating the reflective practitioner**. San Francisco: Jossey-Bass

Publishers, 1987.

SMYTH, John. Developing and sustaining critical reflection in teacher education. **Journal of Teacher Education**, v. 40, n. 2, p. 2-9, 1989. https://doi.org/10.1177/002248718904000202

TOM, Alan. Inquiring into inquiry-oriented teacher education. **Journal of Teacher Education**, v. 36, n. 5, p. 35-44, 1985. https://doi.org/10.1177/002248718503600507

VAUGHAN, Michelle; BURNAFORD, Gail. Action research in graduate teacher education: a review of the literature 2000-2015. **Educational Action Research**, v. 24, n. 2, p. 280-299, 2016. https://doi.org/10.1080/09650792.2015.1062408

VIEIRA, Flávia. A experiência educativa na formação inicial de professores. **Atos de Pesquisa em Educação**, Blumenau, v. 8, n. 2, p. 592-619, maio/ago. 2013. http://dx.doi.org/10.7867/1809-0354.2013v8n2p592-619

VIEIRA, Flávia *et al.* Teacher Education Towards Teacher (and Learner) Autonomy: what can be learnt from teacher development practices? *In*: LAMB, Terry; REINDERS, Hayo (ed.). **Learner and Teacher Autonomy**: concepts, realities and response. Amsterdam: John Benjamins Publishing Company, 2008. p. 217-236. https://doi.org/10.1075/aals.1.18vie

VIEIRA, Flávia *et al.* Understanding and enhancing change in post-Bologna pre-service teacher education: lessons from experience and research in Portugal. *In*: BARWANI, Thuwayba Al; FLORES, Maria Assunção; IMIG, David (ed.). **Leading Change in Teacher Education**. Lessons from countries and education leaders around the globe. Milton Park: Routledge, 2019. p. 41-57.

VIEIRA, Flávia; MOREIRA, Maria Alfredo. Reflective Teacher Education Towards Learner Autonomy: building a culture of possibility. *In*: JIMÉNEZ RAYA, Manuel; LAMB, Terry (ed.). **Pedagogy for Autonomy in Language Education**: theory, practice and teacher education. Dublin: Authentik, 2008. p. 266-282.

ZEICHNER, Kenneth. **A formação reflexiva de professores:** ideias e práticas. Lisboa: Educa, 1993.

ZEICHNER, Kenneth. **Independent teacher education programs.** Apocryphal claims, illusory evidence. Boulder, CO: National Education Policy Center, Sept. 2016. Disponível em: http://nepc.colorado.edu/publication/teacher-education. Acesso em: 01 out. 2019.

ZEICHNER, Kenneth; CONKLIN, Hilary. Teacher education programs as sites for teacher preparation. *In*: COCHRAN-SMITH, Marilyn *et al.* (ed.), **Handbook of research on teacher education**. Enduring Questions in Changing Contexts (Third Edition). New York: Routledge, 2008. p. 269-289.

Notes

[i] Beyond the authors, two other colleagues integrated the research team: Maria Assunção Flores (Institute of Education) and Maria Judite Almeida (School of Sciences).

[ii] A3ES (https://www.a3es.pt), created by Decree-Law No. 369/2007 - 5th November, is responsible for the assessment and accreditation of higher education programmes in Portugal.

[iii] Report analysis was initiated in 2012/13 by a team of teacher educators: Flávia Vieira (coord.), José Luís Coelho da Silva, Maria Judite Almeida, Teresa Vilaça, Cristina Parente, Fátima Vieira, Íris Pereira, Glória Solé, Paulo Varela, Alexandra Gomes, and António Silva. That work was later expanded by Flávia Vieira, José Luís Coelho da Silva and Maria Judite Almeida.

Acknowledgments

The research team wishes to thank the supervisors, cooperating teachers and former student teachers who collaborated in the study, and also to the colleagues who participated in report analysis for initial studies. This work is funded through national funds of FCT/MCTES-PT, by CIEd (Research Centre on Education, project UID/CED/01661/2019) and by CIEC (Research Centre on Child Studies, project UID/CED/00317/2019), Institute of Education, University of Minho.