

Towards a pedagogical culture of teaching research methodologies in education: challenges, answers and ambitions

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Abstract. 1. Introduction: According to OECD (2017) reports, there has been a shift across most countries to de-centralise decision-making in education, giving more responsibility and mandating to local authorities. Given greater information, less quality control, a more informed public, and a greater diversity of policy makers, the role of research for evidence-informed policy in education becomes newly important. In Portugal, research in education is mainly carried out by academics in higher education institutions (HEI) where research methodologies in education (RME) courses are included in the study plans in a variety of Master and Doctoral programs. It is non-controversial that a solid preparation on RME provides important knowledge and skills to undertake better research and thus significantly contribute to the educational community. Quality teaching in RME requires developing a clear understanding of the complex relationships between the explicit syllabus guidelines of the courses, the previous competences of students, and the pedagogical options (e.g. Groessler, 2017). It is a great challenge to teach RME as the target population of students usually come with different prior knowledge and have diverse interests and expectations. The literature on teaching-learning RME reflects a number of controversies regarding students' methodological understandings of research (Nind et al., 2019) and pedagogical challenges experienced by teachers (Ross & Call-Cummings, 2020). From this scenario it is possible to organise three main topics regarding knowledge dispositions and methodological competencies: anxiety and 'fear' of methodologies (mainly quantitative) by students (Lovekamp, et al., 2017; Turner, et al., 2018; Saeed e Al Qunayeer, 2021); complexity of epistemological understanding and its applicability in life (Llamas e Boza, 2011; Ivankova e Plano Clark, 2018); and lack of specific training in methodologies and variety of ideological conceptions about research by teachers (Alkiş Küçükaydin e Gökbulut, 2020; Gurung e Stoa, 2020; Talbott e Lee, 2020). With this kind of landscape the type of pedagogic-research environment created is composed by mismatches of teaching-learning RME that add complexity to a methodological scenario challenging for itself. The same literature reveals scant empirical, epistemological and methodological reflection of teaching RME (Wagner et al., 2019), indicative of the need to identify and understand a pedagogical culture in that domain (Lewthwaite & Nind, 2016). From pitfalls to trends, the literature review reveals some insights for this shift to happen. The creating pedagogical research communities among teachers and students (Wagner et al., 2019) emerge as the main topic with four characteristics: engaging students with ongoing research projects and real data (Engbers, 2016; Müller, et al., 2020); recognition of current research perspectives (Herman, 2010; Gray, et al., 2015; Fonseca and Segatto, 2021); promotion of scientific autonomy, acquisition of scientific writing skills and their dissemination (Fabregas, et al., 2008; Müller, et al., 2020; Motjolo-pane, 2021); and active experience, partnerships and disciplinary work crossed with information gathering and processing resources (Lundahl, 2008; Onwuegbuzie, et al., 2009; Ananth and Maistry, 2020). This complex scenario of scientific engagement



consolidates the need for a research-based approach and debate about what makes quality RME courses. The ReMASE research project emerges from this evidence.

2. ReMASE research project: The Research Methods in Advanced Studies in Education (ReMASE) Project pursues the idea that teachers in higher education will benefit from the use of a framework as a tool to design and implement RME courses in Education. The aim of the project is to identify and provide research-based principles and guidelines for the design of RME courses in Education that will be put together as a framework. The key research question of the Project is: What principles and guidelines are appropriate to constitute a framework for the design of RME courses in advanced studies in Education in Portugal?

3. Methodological approach: The ReMASE project is organised in 3 phases. Phase I is concerned with mapping the field (theoretical and empirical). Phase II is the time for data collection and analysis (survey-questionnaire followed by focus-group interviews). Phase III takes the results of the theoretical mapping and the empirical results to produce a framework—constituted by principles and corresponding guidelines—for the design of RME courses. This panel focuses on the results obtained from Phase I (January to July' 2022). This panel aims to reveal the results from the field mapping (theoretical and empirical) of the ReMASE project in three parts: the challenges that led to this project; the results already gathered; and the ambitions for the near future.

4. The challenges: To identify and characterise what the literature informs about the state of the art of teaching RME. For that purpose the research questions that the review addresses are concerned with: What pedagogic culture of teaching RME can be identified in the literature? This panel also aims to identify and characterise RME curricular units in Portuguese master and doctoral educational programs. For that purpose the main research question is: What constitutes the RME courses in the context of master's and doctoral learning?

5. The results: Regarding the state of the art of teaching RME through the literature review it is possible to organise pitfalls and trends characteristics (about practices, interactions, commitments and knowledge) in the teaching of RME. Regarding the pitfalls of the pedagogic-research environment the current identified scenario consists of a practice of isolation and loneliness; disagreements and misunderstandings as interaction; commitments of discouragement and disaffection; a type of knowledge that is disconnected and fragmented. Despite this fragile scenario, the literature makes it possible to reveal other possibilities of teaching RME. In this respect trends can be organised: a practice formulated by collaborative ways; an interaction organised through active pedagogies where instructor can act as learner and learners as experts; the commitments are centred on the elaboration of a scientific culture promoted by teachers where students' autonomy is increased; competencies are promoted through hands-on course designs. Concerning the RME curricular units, 259 units were identified as valid and active, in 109 Masters programs in teaching, 83 Masters in education, 2 doctoral programmes in teaching and 19 in education. Preliminary results show a list of specific categories for each of the general themes that constitute the RME curricular units regarding objectives, learning outcomes, program contents, working methods, teaching



methods, learning activities and assessment (see table 1) . The specific categories for each general theme are organised through specific competences, transversal competences, authorial/ original work and applicability and transferability (see table 2) .

6. The ambition: the work carried out on Phase I allows the elaboration of two principles and guidelines that are appropriate to constitute a framework for the design of RME courses in advanced studies in Education in Portugal. The first one underlies the creation of hands-on pedagogic approaches involving students with real data. The second is the assumption that specific approaches should be promoted through an active and collaborative environment between students and teachers. Our results show the necessity of creating an investigative culture as a pedagogic culture of teaching RME. One question that emerges is what kind of changes are needed to pursue that principle?

Keywords: research methodologies in education; teaching research methods; centred-student learning paradigm; pedagogical culture of research methods;

Necessary resources: Video projector; internet access.

Organization of the Panel Discussion

The literature on teaching-learning research methodologies in education reflects a number of controversies regarding students' methodological understanding of research (Nind et al., 2019) and pedagogical challenges experienced by teachers (Ross & Call-Cummings, 2020). This scenario consolidates the need for investment in the search for adequate knowledge to constitute a framework to organise the teaching of research methodologies in education.

2- This panel aims to reveal the results from the field mapping (theoretical and empirical) of the ReMASE project in three parts: the challenges that led to this project; the results already gathered; and the ambitions for the near future.

3- Dynamics / Strategy:

a. Presentation (Group Activity).

i. The members will be presented to the audience in person – João Filipe Matos, Elsa Estrela, Carla Galego, João Piedade, André Freitas - 5 min

b. Theoretical Exposition of the theme (content) -

i. Theoretical background - João Filipe Matos - 10 min

ii. Methodological approaches - João Piedade e Carla Galego - 10 min

iii. Theoretical and empirical work - Elsa Estrela - 10min

iv. Questions from the Audience - 5 min

4- Application of the proposal in reality / practical examples;

. André Freitas, João Piedade and Carla Galego - 10min

a. Questions and comments from the Audience - 15 min

5- Expected results.

. João Filipe Matos and Elsa Estrela - 10min

a. Questions and comments from the Audience - 15 mn



Table n.º 1

RME curricular units: general themes	
Objectives	General scientific introduction; Specific scientific introduction; Critical-scientific thinking; Scientific autonomy; Scientific operationality; Scientific writing; Scientific presentation;
Learning outcomes	Understand scientific fundamentals; Understand scientific operationalities; Apply knowledge; Analyse knowledge; Write and present science;
Program content	Extended scientific knowledge; Circumscribed scientific knowledge; Modes and models; Design, development and application; Writing and presenting;
Working methods	Seminar; Theoretical; Theoretical and practical teaching; Practical and laboratory teaching; Tutorial Orientation;
Teaching methods	Individual work instruction; Group work instruction; Practical exercises exposition debate; Student as teacher of a lesson; Virtual tools; class discussion; Group work instruction; Case study; Exposition; Critical analysis of diversified texts; Class discussion;
Learning activities	Individual assignments; Group assignments; Assigned text reading; Debates; Digital tools; Assigned case study; Project development; Reflection;
Evaluation	Individual project development; Individual project presentation; Class participation; Case study analysis; Consultation test; Reading and analysis of an academic paper; Individual test; Class frequency; Group project development; Group project presentation; Field work; Individual orientation;

Table n.º 2

RME curricular units: specific categories			
Specific competences	Transversal competences	Authorial/ original work	Applicability and transferability



1. Scientific rational Epistemological (critical activity)	2. Scientific rational Methodological (investigative activity)	3. Scientific rational Ontological (ethical activity)	4. Scientific rational Thinking procedures
5. Research design Methodologies (paradigmatic definition)	6. Research design Methods (modalities of investigation)	7. Research design Techniques (forms of research)	8. Research design Procedures of content
9. Scientific writing Structure of content and institutional form	10. Scientific writing Content structure and authorial form	11. Scientific writing Dissertation, thesis, papers, oral communication, poster	12. Scientific writing Procedures of form

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Biographical note

João Filipe Matos - Ph.D. Visiting Full Professor at Lusófona University and Emeritus Full Professor at Lisboa University where he coordinated the FCT Technology Enhanced Learning and Societal Challenges PhD Programme, E-Learning Lab and the Competence Center for Technologies and Innovation. He has taught at the Universities of Lisbon, Madeira, Azores, Cape Verde and Macao. Researcher responsible for several projects in the field of education and digital technologies, mathematics education and research methodologies.

Elsa Estrela - Ph.D. Assistant Professor at Lusófona University, Executive Director of the Interdisciplinary Research Centre for Education and Development (CeIED), Co Coordinator of the Competencies Center for Innovation in Education and Citizenship (CCIEC). She is the co-coordinator of the School Counselling and Monitoring Project within the scope of the Curriculum Flexibility and Autonomy Project, of the Classroom of the Future Research Project, of the Innovation



for Education Project – CIMLT and the OECD Project Fostering and Assessing Creativity and Critical Thinking in Education Project: Higher Education Strand. Member of the Project's research team A success story? Portugal and PISA (2000-2015), and Co-PI of a research project on research methodologies, both funded by the FCT.

Carla Galego - Ph.D. Assistant Professor at Lusófona University and Integrated Researcher at CeIED – Interdisciplinary Research Centre for Education and Development. Sociologist with a master's and Ph.D. in Education. She is the director of the degree in Educational Sciences-Social Education and the Master in Educational Sciences, and co-director of the Master in Comparative and International Education. She is also co-coordinator of the Oficina CeIED | Reflexão e Produção Académica, whose objective is to support Ph.D. students in Education during the development of their research projects. Sociology of Education, Comparative Education, and Research Methodologies are the curricular units that she teaches. She has participated in several international projects, such as "TO INN - From tradition to innovation in teacher training institutions", Erasmus + project reference number: 573685-EPP-1-2016-1-ES-EPPKA2-CBHE-JP. She is also part of the project team "A success story? Portugal and PISA (2000-2015)", funded by FCT - PTDC / CED-EDG / 30084/2017. Currently she is a member of the Thematic Peer Group with the title "Digitally competent teachers" of the European Association and Universities.

João Piedade - Ph.D. Assistant Professor at the Institute of Education of Lisbon University, member of the School Council and researcher at the R&D Unit, Education and Training Research and Development Unit (UIDEF). Member of Competence Center in Technology and Innovation of Institute of Education of Lisbon University. Ph.D. in Education - Information and Communication Technologies in Education (2017), and a Master in Technologies and Methodologies in Elearning (2010), and graduation in Computer Science Engineering (2006). Experience as a teacher started in 2004 in elementary and secondary schools teaching subjects in computer science disciplinary area. Since 2010, he's been involved, as a professor, in the initial teacher training programs of the Institute of Education. In the last years, taught curricular units of Master in Teaching Informatics such as Didactics of Informatic and Initiation to professional practice. Research interests include Technology-enhanced Learning, Online Learning, Informatic Initial Teacher Training, Computer Science Education, Tangible Objects Programming, Computational Thinking, Artificial Intelligence in Education, and Learning Scenarios Design. Author or co-author of peer-reviewed papers published in journals and national and international conferences.

André Freitas - Ph.D. Researcher at Interdisciplinary Research Centre for Education and Development (CeIED) of Lusófona University. He has experience in several national and international research and intervention projects in education/ arts education. His PhD on 'narratives of artistic expressiveness of the body as an experience of meaning in school' was funded by FCT (2016-2021). Currently he's a research fellow in the project Research Methods in Advanced Studies in Education. He has experience as a consultant in pedagogical supervision and evaluation in education; as an educator in basic education and higher education; and as a teacher trainer. The areas of academic and scientific interest are Artistic languages and expressions in education, Educational experiences and Research methodologies in education.

