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Document updated on October 2024

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Profile

For the last 20 years, I have been involved in **teachers' professional development**, in **teaching** undergraduate and postgraduate students, and in doing **research** and **consultancy** in projects related to **STEM Education**, **Curriculum Development**, **Data Science**, **Learning Environments**, **Distance Education** and **Educational Technology**.

Experience

CURRICULUM DEVELOPMENT

In 2023, in collaboration with Fábio Ribeiro, Filipe Castro and Cláudia Pinto, I developed the publication CTE Academies: Rethinking Vocational Education in Specialized Technological Centers with multidisciplinary teams and funding from Portugal 2030 Regional Programs, available free of charge to schools across the country.
<https://zenodo.org/records/10424203>

Since 2022, I have worked with the pedagogical coordinations of several private educational institutions on **STEM curriculum development** and **visual analytics** of formative, summative and self-regulation assessment.

Since 2018, I am **consultant** for the Directorate-General of Education for the **Curriculum Flexibility and Autonomy** initiative, following the education reform with the involvement of the OECD and the new Decree-Law n.55/2018 and n. 54/2018 delegating in the 811 school clusters up to 25 % of curriculum flexibilization. I have designed and supported the implementation of the digital strategy for the initiative, reporting to the Director-General of Education and the Coordinator of the National Team. I also contribute as data scientist in the **TEIP Program**, a set of 142 school clusters with students from low socioeconomic backgrounds and migrant profiles, assisting the technical teams in the monitorization process using PowerBI.

I also act as **consultant** for the municipality of Mangualde in the project Academi@ STEM Mangualde (**Mangualde STEM Academy**), supporting the design and implementation of curriculum autonomy and flexibility in the subjects of Science, Technology and Mathematics in years 2 to 9 and in vocational courses, helping the educational teams in the design of authentic learning activities departing from the local context, using an open schooling framework. In 2023, this project obtained the recognition STEM School Label Expert, as one of only 7 schools in Europe, granted by European Schoolnet. <https://academiastemmangualde.pt/>

LEARNING ENVIRONMENTS

In 2022-2023, in collaboration with Fábio Ribeiro, I developed the preliminary study of spaces, furniture, materials and technology for the scientific, technical and sociocultural training components of vocational courses within the scope of the **PRR Specialized Technological Centers (CTE)** funding (500 M €). More than 30 CTE of a total of 365 had their funding approved using our proposed learning studios model.
<https://zenodo.org/record/7519893#.ZDA0luzMKDU>

In 2020, in collaboration with the UAARE program, I developed the concept of a Digital Sport-Education Study Room in High Performance Centers, for the **Sports Foundation**.

Between 2007 and 2011, I **participated in the design of the new model for school science laboratories developed for the Portuguese secondary schools' modernisation plan led by Parque Escolar E.P.E.** This model was implemented in more than 150 schools across the country (as of 2019). I collaborated with the lead consultant (Vitor Duarte Teodoro) in working with architects, engineers, science teachers, the industry and other technical teams to develop the new model, reviewed the literature, visited and reported on exemplary educational facilities in Europe and the USA, designed 3D models of prototype spaces, furniture and IT, participated in the review of the first implemented prototypes, organized and provided teacher training, commented building plans, shared the development work in national and international conferences, among others. More information can be found on <http://laboratorioscolares.net>.

In 2016, I acted as **consultant for The World Bank**, for the initiative **"Republic of Belarus Education Modernization Project"**, reviewing the procurement specifications to equip 120 schools' science and computer classrooms in the country (furniture, IT equipment, scientific equipment) and 3D modelling a proposal for a concept of science laboratories.

DUAL CAREERS AND DISTANCE EDUCATION

Since 2016, I am a consultant for the **Portuguese Institute for Youth and Sports** (IPDJ) on the project UAARE (Unidades de Apoio ao Alto Rendimento na Escola, Units of Support of High Performance in Schools), a national programme to support the **dual career of athletes** in a network of 25 schools across the country. I report directly to the Director-General or the National coordinator and develop the distance education and digital strategy aspects of the projects on a daily basis, supporting head teachers and school coordinators, designing the model, planning and supporting its development, designing the IT infrastructure and the learning spaces, training the teachers in new methodologies and supporting reflective practice, monitoring and reporting on progress, among others. In 2023, as **co-author** with Victor Pardal and Filipe Castro, I contributed to the book "Sports Talents - From identification to full development" with the article "The conciliation of the dual career of student-athletes in primary and secondary education in the district of Leiria: the perspective of the UAARE program, organized by the Leiria Football Association (AFL) and the Higher School of Education and Social Sciences (ESECS) of the Polytechnic of Leiria for the Portuguese Football Federation/Portugal Football School collection. <https://uaare.dge.min-educ.pt/>

In March 2020, I contributed to the **strategic document** "Roteiro - 8 princípios orientadores para a implementação do Ensino a Distância nas escolas (Guide - 8 guiding principles for implementing distance education in schools", published by the **Ministry of Education**, to support all schools in Portugal to deal with the suspension of onsite school activities due to the COVID-19 pandemic. I have also produced the document "Algumas hipóteses de trabalho iniciais para um plano de continuidade de atividades letivas não presenciais (Some initial working hypotheses for a continuity plan for online classroom activities)", by request of the Directorate-General of Education.

In the last quarter of 2019, I designed and supported the implementation of a **synchronous communication solution** for the courses offered by **Portugal Football School** (PFS), Federação Portuguesa de Futebol (Portuguese Football Federation, FPF).
<https://portugalfootballschoo1.fpf.pt/courses?coursePageIndex=0>

Between 2014 and 2017, I acted as **consultant for the Directorate-General of Education** for the initiatives: (a) Ensino a Distância (Distance Education), a K5-12 public online school for **traveller children** and other children that cannot attend brick and mortar schools; (b) Ensino Secundário Recorrente a Distância (Distance Adult Secondary Education), a public online secondary school for **adult education**. I helped develop both projects in all its dimensions such as technical, organizational, pedagogical, training the teachers and accompanying the projects in their initial years.

In 2009 I acted as a **consultant** for the Plano Tecnológico da Educação (Education Technology Plan), in a team of experts led by University of Lisbon, proposing a model for **communication, collaboration and LMS integration in the national web portal** for teachers, students and schools.

Between 2005 and 2007, I managed the **e-learning platform** of a higher education institution with over 4000 students (FCT NOVA), providing support, teacher training and developing its use from an early stage. I also

participated in the initial steps to develop an **institutional-wide digital repository** for technical and academic production.

OPEN EDUCATIONAL RESOURCES

In 2024 I am supporting the development the first free digital textbook of **Mathematics B**, approved by the Directorate-General of Education, having as lead author Jaime Carvalho e Silva. <https://niualeph.pubpub.org/>

In 2022, I co-coordinated the publication *Academia STEM Mangualde - STEM interdisciplinary learning activities - Volume III*. <https://www.academiastemmangualde.pt/pt/publicacoes>

In 2021, I co-coordinated the publication *Academia STEM Mangualde - Innovative model for promoting school success at a local level - Volume I - and the STEM interdisciplinary learning activities - Volume II*. <https://www.academiastemmangualde.pt/pt/publicacoes>

In 2012, I **designed** the alternative model, **coordinated** and participated in the technical conception of the **self-published and open access Mathematics textbook for year 12**, NiuAleph 12. <https://zenodo.org/communities/niualeph/>

In 2009 I was part of a **consultant** team for the Plano Tecnológico da Educação (Education Technology Plan), coordinated by University of Évora, proposing a **digital educational resources implementation strategy** for Portugal.

TEACHERS' PROFESSIONAL DEVELOPMENT

Since 2007, I **designed and taught several certified teacher training courses** on distance education, educational technology, curriculum development in science education, active learning and science learning spaces, for both private and public schools and for the Portuguese Directorate-General for Education. In my courses, I emphasise teachers' autonomy, collaboration, artistry, time-savvy practices and application in everyday practice. Some representative examples include: (a) (Re)thinking teaching and learning in dual career paths through the acquisition of digital skills (2019-2020, circa 100 teachers from 19 schools); (a) Organisation and management of school science laboratories (2016-2018, 4 editions, circa 80 teachers from 40 schools); (b) "Use of learning platforms for managing synchronous and asynchronous learning, communication and collaboration" (2014-2017, 6 editions, circa 120 teachers); (c) "Using the new school science laboratories", with the collaboration of DGI DC and Parque Escolar, (2010, circa 120 teachers from 66 schools).

I am accredited by the CCPFC (the national body that certifies teacher training in Portugal) in the areas and domains B106 (Science Education), B116 (Theory and Curriculum Development), C15 (Educational Technology - Applications) and C16 (Educational Technology - Audiovisual media).

I am Microsoft Certified Educator since January 2020.

TEACHING

Since 2004, I **have taught different subjects at several education levels, from primary to postgraduate**, including: (a) Children aged 13 to 18 (Natural Sciences in years 8 and 9 and Biology in year 11 in a public school in Portugal, Secondary School José Afonso, Seixal); (b) Future teachers (Educational Technology in the MEd in Physics and Chemistry and Biology and Geology Teaching offered by School of Sciences and Technology, New University of Lisbon); (c) Postgraduates in Education (Internet and Education in the MSc in Educational Sciences offered by Portuguese Catholic University); (d) Engineers and Science postgraduates (Scientific and Technical Writing in the masters and doctoral programmes offered by I3N on Nanotechnology and Materials Sciences in the School of Sciences and Technology, New University of Lisbon); (e) Documentary research, in the doctoral programme in Education; (f) Distance Education, in the Degree in Educational Sciences of the Lusófona University of Humanities and Technologies, Lisbon. I have Qualified Teacher Status in England and Wales since 2008.

RESEARCH

My **PhD thesis** discusses the development of the concept of **Science Learning Studio** as an alternative to the School Science Laboratory, in aspects such as space, technology, curriculum, pedagogy, assessment or teachers' professional development. My work also inquiries about teachers views on the implementation of part of this concept in Parque Escolar's modernization plan, develops the concept of **Digital Research Notebook** as a meta-tool to make more transparent, collaborative and ethical the research process, and puts forward the concept of **Pedagogical Graphic Novel** as a process of documentation, reflective practice and analysis of practice resorting to a reconceptualization of **Activity Theory** (the thesis is available at <http://hdl.handle.net/10362/36286>).

I **have published** some papers departing from my thesis such as (a) Fernandes, J. & Teodoro, V. D. (2017, invited paper). O desenvolvimento dos espaços para a Educação em Ciências: do Laboratório Escolar ao Estúdio de Aprendizagem de Ciências. *Interações*, 13(44), 84-122.

<http://revistas.rcaap.pt/interaccoes/article/view/12225/9335>; (b) Fernandes, J. & Barbeiro, L. (2017, peer-reviewed invited case study). Coordinating diverse research practices using Digital Research Notebooks - a case study in Science Education. *SAGE Research Methods*. <http://dx.doi.org/10.4135/9781473993983>

I have participated in **research projects funded by Portuguese and European agencies**, on topics such as educational technology and design of school science laboratories: (a) Socrates Comenius project ITforUS - Information Technology for Understanding Science, 2005-2006; (b) Tempus Project DICSIM - Develop ICT Capable Schools in Moldova, 2007-2010; (c) FCT, the Portuguese national Science foundation, project Attitudes, Expectations and Practices in the Portuguese Secondary schools' science laboratories. I was involved in much of the activities carried out in these projects such as organizing events and seminars, designing the implementation strategy, designing the grant application, the research design, data collection and analysis, communication and paper writing, project management and reporting.

CONFERENCES AND WORKSHOPS

I have **presented communications and posters and workshops** in national and international conferences and events. Some examples include: (a) Ribeiro, F. F., & Fernandes, J. (2023). Mangualde STEM Academy - An innovative place-based curriculum development project from pre-school to year 10. In Educating the Educators International Conference on Approaches to Scaling-Up Professional Development in Stem Education, Leiden, Netherlands, 11 and 12 May 2023; (b) Pardal, V., & Fernandes, J. (2022). UAARE - Reconciling school and sports success. In Dual Career for Junior Athletes, final ERASMUS+ Project meeting, Warsaw, Poland, 1 December 2022; (c) Plenary session (Mangualde STEM Academy, with 3 teachers), AlgarMat 2022 - Regional Meeting of Mathematics Teachers, organized by the National Association of Mathematics Teachers, 9-10 September 2022, in São Bartolomeu de Messines; (d) Plenary session (Mangualde STEM Academy), Innovation in the teaching of Mathematics and Science, organized by the Escola Superior de Educação de Santarém, 11-12 March 2022; (e) Pardal, V., & Fernandes, J. (2021). Modelo da Carreira Dupla em Portugal - UAARE: Abordagem Ecológica e Holística (HEA). In Seminário Internacional sobre Carrera Dual Deportiva, Brasília, 3 September 2021 (f) Pardal, V., Fernandes, J. & Castro, F. (2020). UAARE - Units of Support to High Performance in Schools. In 4th meeting of EU experts on dual career for young athletes, Lisbon, 9 September 2020 (g) Pardal, V., Fernandes, J. & Castro, F. (2019). UAARE - Units of Support to High Performance in Schools - Supporting dual careers. In European Commission Expert Group "Skills and Human Resources Development in Sport" (XG HR), Lisboa, 15 May 2019; (h) Fernandes, J. & Barbeiro, L. (2015). Designing Pedagogical Graphic Novels as Tools for Educational Research, Practice and Professional Development? In EERA ECER 2015 Conference, 7 - 11 September 2015. Budapest, Hungria: Corvinus University of Budapest (communication); (i) Fernandes, J. & Barbeiro, L. (2015). Onenote: a digital tool for qualitative research. In ESERA 2015 Conference, 31 August - 4 September 2015. Helsinki, Finland: University of Helsinki (workshop); (j) Fernandes, J. & Teodoro, V. D. (2014). Attitudes, expectations and practices in the Portuguese secondary schools' science learning studios. Flipped Learning for large groups: SCALE-UP Conference. Reino Unido: Nottingham Trent University, September 12, 2014 (poster);

PROFESSIONAL SOCIETIES AND NETWORKS

In 2019 I acted as **reviewer** for the journals **Sisyphus** and **Revista Lusófona de Educação**, edited by the Institute of Education, University of Lisbon and the Universidade Lusófona de Humanidades e Tecnologias, Lisbon.

In 2015 I acted as an **invited presider for a paper session on Epistemology and Science Learning** in the NARST Conference 2015 in Chicago, USA.

In 2014, I was one of the **journal editors** of the Thematic Issue on STEM Education of *Revista Lusófona de Educação*, Lusófona University of Humanities and Technologies, Lisbon, Portugal, available at <http://revistas.ulufona.pt/index.php/rleducacao>

I am a **member** of ASE (Association for Science Education, UK) and NSTA (National Science Teachers Association, USA).

ACADEMIC EXAMINATIONS

Since 2021, I have been **co-supervisor** of Adelino Miguel de Oliveira Carvalho in the Doctoral Program in Sports Sciences at the University of Trás-os-Montes and Alto Douro.

In 2022 I was the **main examiner** on the jury for the doctoral viva of candidate Dalmo Dantas Gouveia from the Doctorate Program in Education at the Lusófona University of Humanities and Technologies.

In 2022 I was an **examiner** in the presentation of the research report of candidate Aida Palmira da Silva Ferreira from the Doctorate Program in Education at the Universidade Lusófona de Humanidades e Tecnologias.

In 2020 I was an **examiner** on the jury for the doctoral viva of candidate Alidia Clícia Silva Sodré from the Doctorate Program in Education at the Universidade Lusófona de Humanidades e Tecnologias.

In 2019 I was an **examiner** in the presentation of the research report of the candidate Dalmo Dantas Gouveia from the Doctorate Program in Education at the Universidade Lusófona de Humanidades e Tecnologias. In 2019

ORGANIZATION OF MEETINGS, SEMINARS AND EVENTS

I participated in the organization of the UAARE National Meetings, in May 2019, 2020, 2021 and 2022, in various locations across the country, with

the participation of UAARE school teams, municipalities, Portuguese Football Federation, sports clubs, Porto Sports Medicine Center, among others.

I participated in the organization of the Academia STEM Mangualde Multiplier events, in June 2021, 2022 and 2023, with the participation of the project team, teachers from the region, municipalities, Director-General of Education, Secretary of State for Educational Innovation, among others

Education

PhD in Education (Curriculum Theory and Development), 2017, Joint Programme between New University of Lisbon (NOVA FCT and FCSH) and ISPA, Inter-University Institute.

Enrolment in the MPhil/PhD in Science Education, 2008, King's College London.

Degree in Natural Sciences Teaching (Biology and Geology), 2000-2005, New University of Lisbon.

Skills

Personal: I pursue slow science, minimal bureaucracy, generalist specialism, quality of life at work, meaningful and ethical projects and work-life balance. I suppose I have good interpersonal and communication skills (verbal, graphical). I am dedicated to innovating the field while learning from the past.

Technical: I am skilled with computers, networks and multimedia production, showing independent use of software for Productivity (Adobe Creative Suite Master Collection, Microsoft Office, OneNote Class Notebook, Google Sketchup), Social Sciences Research (SPSS, XLStat, NVivo, Papers, EndNote, Zotero, Mendeley, Wizard, Jamovi, JASP, PowerBI, SurveyGizmo, Formtools, DataGraph), Instructional Design (Camtasia Studio, Capto), Server Management (Synology Diskstation, Cpanel), Content Management Systems (Wordpress, Drupal), Learning Management Systems (Moodle), Digital Repositories (DuraSpace, Omeka), Project and Documentation Management (Redmine, Basecamp, Zammad, Bookstack, PubPub), Collaboration tools (Microsoft Teams, Google Apps for Education, Office 365, Zoom), Open Source Software and web applications related to education and multimedia. I am also skilled in technical writing and copyediting, particularly in scientific writing (e.g. desktop publishing, structured documents, mathematical notation following international standards such as NIST).

Languages: International English Language Testing System's Academic Test (January 26, 2008) - Overall band score: 8 (Listening - 8.5; Reading - 8.5; Writing - 7.5; Speaking - 7.5). Fair use of Spanish and French. Portuguese as mother tongue.

Other: I am a 1st Kyu in Aikido Aikikai, training with Sensei Francisco Carvalho since 2011 in Almada. I am also interested in sustainable farming and spend some of my weekends in the Santarém region since 2012, growing vegetables and trees and using the internet to program the irrigation system <http://blog.mogru.pt/>.