

8th International Symposium

of the

Out-of-field – Teaching Across Specialisations (OOF-TAS) Collective

13-14 September 2021

Virtual Symposium

OOF-TAS Collective <http://ooftas-collective.org/>

2021 Symposium <http://ooftas-collective.org/conference/2021>

Welcome

Welcome to the 8th symposium for the OOF-TAS Collective. Due to the COVID-19 pandemic, we are holding a virtual symposium.

The theme for the symposium is:

International perspectives on management of teaching out-of-field

Online Symposium

This theme welcomes research and commentary relating to the management of out-of-field teaching by schools, government, universities. Given the complexity of the out-of-field phenomenon, management involves governments, school administrators and leaders, teachers, researchers and even the general public. We encourage submissions that report on research, policy and practice that can contribute to our understanding of all aspects of the phenomenon. Post-graduate students and early career researchers are welcome.

An outcome of this meeting will be to begin discussions of potential transnational research opportunities.

Virtual symposium

Online access

Zoom will be used.

Recordings will be made of the presentations but not the discussions. The powerpoint presentations and/or the zoom recordings can be placed on the OOF-TAS website after the presentation, as requested.

Zoom details are as follows:

Monday September 13 th	Tuesday September 14 th
Meeting URL: https://deakin.zoom.us/j/83054264231?pwd=QkpMN2l0c05vak1EK3VkYlAzeWo1dz09&from=addon	Meeting URL: https://deakin.zoom.us/j/84345922795?pwd=MEdLYUFvVFVmaItlTEpPbnpTOGNCdz09&from=addon
Meeting ID: 830 5426 4231 Passcode: 37290625	Meeting ID: 843 4592 2795 Passcode: 72747611

Presentation and session length



Designated times:

Melbourne*	United States (Austin)	Dublin	Berlin	Israel
15:00-16:00	0:00	6:00-7:00	7:00-8:00	8:00-9:00
16:00-17:00	1:00-2:00	7:00-8:00	8:00-9:00	9:00-10:00
17:00-18:00	2:00-3:00	8:00-9:00	9:00-10:00	10:00-11:00
18:00-19:00	3:00-4:00	9:00-10:00	10:00-11:00	11:00-12:00
19:00-20:00	4:00-5:00	10:00-11:00	11:00-12:00	12:00-13:00
20:00-21:00	5:00-6:00	11:00-12:00	12:00-13:00	13:00-14:00

*Note that the program uses Melbourne times.

<https://www.timeanddate.com/worldclock/meeting.html>

Program

Monday, September 13th

16:00-16:20*	Zooming in
16:20-16:30	Welcome and introductions
16:30-17:00	Presentation 1: Smadar Donitsa-Schmidt & Rony Ramot, Israel Teaching assistants as out-of-field teachers in primary schools during COVID-19
17:00-17:30	Presentation 2: Jim Van Overschelde, United States An inequitable education system: Value-added modeling and teaching out-of-field
17:30-18:00	BREAK
18:00-18:30	Presentation 3: Emily Rochette, Australia To what extent does a subject-related degree offer security for secondary science teachers managing the use of digital technologies as they teach out-of-field?
18:30-19:00	Presentation 4: Linda Hobbs, Coral Campbell, Seamus Delaney, Chris Speldewinde & Jerry Lai, Australia A multi-faceted definition for out-of-field teaching: A necessary step to support transnational research
19:00-19:30	BREAK
19:30-20:00	Presentation 5: Jared Carpendale, Australia Collaborative content representation design to support out-of-field teachers' Pedagogical Content Knowledge in science
20:00-20:30	Presentation 6: Greg Oates, Australia Shared videos to support remote out-of-field teachers in an online Community of Practice
20:30-21:00	Presentation 7: Fiona Faulkner & Niamh O'Meara, Ireland Professional development for out-of-field post-primary teachers of mathematics: An analysis of the impact of mathematics specific pedagogy training

***Melbourne times**

Tuesday, September 14th

15:30-16:00*	Zooming in
	Presentation 8: Linda Hobbs & Raphaela Porsch, Australia & Germany
16:00-16:30	Research on teaching out-of-field: Synthesis of current research and a model for future research
16:30-17:30	Discussion of transnational research
17:30-18:00	BREAK
	Presentation 9: Raphaela Porsch & Fabian Gräsel, Germany
18:00-18:30	Teaching out-of-field as a problem? The school principals' perspective
	Presentation 10: Joanne Burke, Australia
18:30-19:00	Excellent secondary general science teachers – working effectively out-of-field
19:00-19:30	BREAK
	Presentation 11: Teresa Beck, Germany
19:30-20:00	Professionalization processes of career entrants: How do lateral entrants experience their career entry?
	Presentation 12: Sabrina Stanley, Dennis Sunal & Cynthia Sunal, United States
20:00-20:30	Teaching uncertified: The necessity of developing a science teacher identity
	Presentation 13:
20:30-21:00	Presentation 13(a): Máire Ní Ríordáin, Merrilyn Goos, Fiona Faulkner, Stephen Quirke, Ciara Lane & Niamh O' Meara, Ireland An examination of the development of out-of-field mathematics teachers' professional self-understanding

***Melbourne times**

Abstracts

Presentation 1

Teaching assistants as out-of-field teachers in primary schools during COVID-19

Smadar Donitsa-Schmidt, Kibbutzim College of Education, smadar.donitsa@smkb.ac.il

Rony Ramot, Kibbutzim College of Education

COVID-19 led to the immediate closure of all schools in Israel, followed by massive public criticism about the loss of school days, failure of the education system to provide an inclusive and equitable education to all, and the damage to children's social-emotional wellbeing. In response to this criticism, the MoE launched an innovative program for speedy recruitment of thousands of teaching assistants (TAs) to facilitate splitting primary school classes into bubbles and allow face-to-face instruction under the rigorous restrictions imposed by the government. Since Israel suffers from an ongoing teacher shortage, these TAs, who were meant to serve as teacher aids alongside licensed teachers, were not qualified to function as full-fledged teachers – but many of them found themselves filling the role of teachers. In other words, these TAs functioned in a way as out-of-field teachers. The proposed research seeks to examine the integration of these TAs into the schools, focusing on the tasks they were assigned, the challenges they encountered, the support and the resources made available to them, as well as to their satisfaction level and satisfaction of the schools from their work. Self-report questionnaires were gathered from 252 TAs and 137 school principals countrywide. The research sheds light on the topic of out-of-field teaching from an angle that has not been investigated until now.

Keywords: Out-of-field, teaching assistants, primary schools, COVID-19

An inequitable education system: Value-added modeling and teaching out-of-field

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Teaching out-of-field in the United States was illegal until 2015 when federal education laws legalized it. Since 2015, the rate at which teachers are assigned out-of-field classes has increased dramatically and inequitably. The same negative pattern exists for students, and students have not been equitably impacted by the change. Students of color, male students, and students in certain locales (e.g., rural) are most likely to take classes out-of-field. Using millions of detailed student-teacher records for each of seven core secondary subjects (Algebra I, Grade 7 & 8 Mathematics, English I and II, Grade 7 & 8 English/Reading), value-added modeling scores were computed to examine the relationship between teaching out-of-field and student academic growth. The results are clear: taking a class that is taught out-of-field significantly and substantially lowers the academic growth experienced by students relative to their peers who were taught in-field. Given the inequitable enrollment of students in out-of-field classes by gender, ethnicity/race, and locale, the results reflect a public education system that is not equitable. The policy implications are explored.

Keywords: teaching out-of-field, value-added modeling, student academic growth

To what extent does a subject-related degree offer security for secondary science teachers managing the use of digital technologies as they teach out-of-field?

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In the Australian state of Victoria, general science teachers have duties to teach students typically aged from 12 to 16 across four sub-disciplines of science while incorporating digital technologies into their practice. At the Seventh International OOF-TAS Symposium in 2020, a positioning theory analysis of data from secondary science teachers was presented to demonstrate how teachers negotiate their rights and duties teaching across two out-of-field areas of the curriculum, geoscience and digital technologies. Conversations stemming from this symposium and the resulting book chapter inspired further questions to be unpacked. This presentation will draw on data from four secondary science teachers with distinct training experience and at different career stages to explore the question: To what extent does a subject-related degree offer security for teachers managing the use of digital technologies as they teach out-of-field? Data analyses along the positioning triad are exemplified to demonstrate how recommendations for school administrators and leaders are grounded in teachers' perceptions of their lived experience. These recommendations are discussed in relation to the importance of crafting differentiated professional learning experiences to build teachers' personal and professional capacity in out-of-field areas.

Keywords: Positioning theory, geoscience, digital technologies, professional learning, teaching out-of-field

A multi-faceted definition for out-of-field teaching: A necessary step to support transnational research

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Out-of-field teaching is an international phenomenon that generally indicates a shortage or unequal distribution of teachers. Teachers can be clearly out-of-field because of a mismatch between qualification and what they are assigned to teach, or this distinction can be blurred by years of teaching an out-of-field subject, or because a specialisation is technically in-field but in reality out-of-field for a teacher. Further, system-related guidelines determining whether a teacher is in-field varies across educational jurisdictions, both within a country and internationally. A definition of teaching out-of-field should reflect the various factors that determine teacher suitability for teaching a subject, and not just qualification. A framework is needed for judging the suitability of a teacher for a teaching assignment that recognises the complexity of teaching out-of-field. The study drew on literature to identify several criteria that can determine out-of-field-ness. A multifaceted definition was drawn from the analysis that include an in-field definition, and then definitions of out-of-field by qualification, specialisation, workload and capability. The criteria are applied in the definitions to provide a language of out-of-field-ness, risk management, and teacher capability. The next steps are to develop a tool that can be used by a range of stakeholders to measure and inform responses to the out-of-field phenomenon. Further, additional research is needed to translate the multifaceted definition to other educational jurisdictions to enable fair comparison of the out-of-field phenomenon through transnational research.

Keywords: Teaching out-of-field, Definition, Policy, Practice

Collaborative Content Representation design to support out-of-Field teachers' Pedagogical Content Knowledge in science

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Out-of-field (OOF) teachers without suitable content knowledge may have underdeveloped pedagogical content knowledge (PCK) and student learning may be compromised. Developing teachers' PCK is a challenging task and many researchers call for strategies that encourage collaboration, reflection, and discussion about teaching and learning. In this study, OOF physics teachers collaborated with in-field colleagues using a Content Representation (CoRe) as a scaffold for teachers' discussions and decision-making to generate a collective form of PCK. To investigate using a CoRe in this way, qualitative data were collected from recorded group discussions and interviews, and lesson observations with the individual OOF teachers. Findings show the CoRe process prompted participants to explicitly share their PCK and aspects of the OOF teachers' PCK were enhanced, noticeably: improved understanding of concepts; more effective representation of concepts; and, greater attention paid to students' understanding. The discussions also promoted teachers' PCK development by stimulating integration of different PCK components.

Keywords: Teaching out-of-field, Pedagogical Content Knowledge (PCK), Content Representation (CoRe); Professional Learning and Development

Shared videos to support remote out-of-field teachers in an online community of practice

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The use of videos to stimulate critical reflection of mathematical teaching and support professional learning have been widely reported in many studies. Their use in face-to-face teaching and learning environments (e.g. university departments; schools) have shown benefits in establishing communities of practice and shared reflection, for example in Japanese Lesson Study, and the Resources, Orientations and Goals framework (ROGs) initially developed by Schoenfeld) (2010), and progressively developed in the Department of Mathematics at the University of Auckland. At the same time, a key challenge for many out-of-field teachers in mathematics in rural and remote areas is that they may be the sole teacher of mathematics in their school/region, and have limited opportunities for discussing any aspects of their teaching with colleagues, or engaging in professional learning because of time and distance constraints. This presentation will consider some of the possibilities for supporting such teachers, through the sharing of videos of their practice, and the frameworks/approaches that may be used to examine the videos as a stimulus for professional learning. Some challenges in the use of such approaches (e.g. ethical considerations; resourcing) will also be raised. While the focus of this presentation will be ostensibly on mathematics, the approach has value for out-of-field teachers in other disciplines.

Keywords: Videos, Professional Learning, Community of Practice (COP), Noticing, Mathematics

Professional development for out-of-field post-primary teachers of mathematics: an analysis of the impact of mathematics specific pedagogy training

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Niamh O'Meara, Technological University Dublin

Research shows that teachers influence students' attitudes towards; performance in; and perceptions of a subject. Hence, the need to improve the teaching and learning of many curricular subjects has been well documented for many years. This paper focusses on efforts made to develop competence among out-of-field teachers of mathematics and evaluates the impact of one component of a continuous professional development (CPD) programme on teachers' self-efficacy and self-reported teaching styles. As part of this CPD programme, teachers engaged in a series of subject-specific pedagogy workshops and while classroom observations were not feasible they did complete pre- and post-workshop questionnaires to determine the impact that these workshops had on their mathematics teaching efficacy and their reported approach to teaching, both of which researchers consider to be key to effective teaching. Analysis of the quantitative data showed that the workshops led to statistically significant improvements in mathematics teaching efficacy among participants, while analysis of the qualitative data highlighted a shift from procedural or teacher-led approaches to more student-centred approaches that focussed on developing understanding. As such the programme was deemed to have a positive effect on the effectiveness of these teachers.

Keywords: Out-of-field teaching, mathematics teaching, efficacy, continuous professional development, teaching styles, teacher effectiveness

Research on teaching out-of-field: Synthesis of current research and a model for future research

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In 2014, the participants of the inaugural symposium of the TAS Collective composed an agenda for research, policy and practice based on what we knew then about important research directions, practical considerations for teachers, school leaders and schools, and possible policy drivers. Five years later in 2019, the synthesis of our first book identified priority actions and an agenda for research and policy. Seven years on, the latest TAS Collective book represents the outcomes of research that are more informed, more debated, and more nuanced. This final paper poses a synthesis of this research and proposes a model of the dimensions of the OOF teaching phenomenon and a roadmap for future research into the challenges and practices associated with the teaching out-of-field phenomenon. The model captures the range of contexts, research foci, methodological considerations, and research outcomes represented in the book, and draws together generative research directions for future research proposed by authors.

Keywords: Teaching out-of-field, Research agenda, Synthesis

Teaching out-of-field as a problem? The school principals' perspective

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The likelihood of out-of-field teaching in Germany is high for teachers in primary and lower secondary schools, in particular in subjects such as STEM. Although only a few researchers have focused on the situation, it is mostly regarded as a problem among German educationalists based on the argument that teachers lack the necessary expertise in a subject they regularly teach. Following Bacchi's (2012) concept of problematization, we see a need to study how the problem is regarded by principals since school leaders are responsible for teachers' professional learning and development as well as for ensuring teaching quality. Studies show that assumptions about out-of-field teaching are influenced by several factors such as the year level (e.g., du Plessis, 2013). Building a strong relationship with a class teacher is often seen as more important as the primary school teachers' subject-specific expertise (e.g. Lagies, 2019). A systematic analysis of the school principals' perspective is not known; thus, our research questions are: Do principals regard out-of-field teaching as a problem? What factors influence the principals' views? The findings are based on data from eleven interviews with principals from German primary and lower secondary schools. Applying the qualitative content analysis, we identified three categories that influence the assumptions about out-of-field teaching: (1) the 'context' such as support structures at schools as they might minimize the problem, (2) the 'stakeholders' and their characteristics such as subject-specific competencies or high enthusiasm of teachers, and (3) the 'content', which relates to features of the different subjects. For example, a number of principals possess the view that German is easier to teach than math since "every teacher speaks the language".

Keywords: Germany, out-of-field teaching, principals, problematization

Excellent secondary general science teachers – working effectively out-of-field

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In most Australian schools, year 7-10 science, is taught as one subject and encompasses concepts of biology, chemistry, physics, and earth science. It is suggested that a teacher with tertiary qualifications in biology and biology teaching could be teaching 'out of field' during at least part of a general science class, for example, when teaching a topic in physics. This qualitative study explored factors that influence the classroom practice of three excellent science teachers in years 7-10. The teachers were selected based on reputation amongst science teacher educators and confirmed by members of their school community. Semi-structured interviews were conducted to gather data about their background, qualifications, past experiences, and their knowledge about teaching and learning science in the years 7-10. Observations of multiple lessons were conducted, and their students were interviewed to understand their perspective of their teaching practice. Data were analysed through thematic analysis with reference to factors related to excellence in the Australian Science Teachers Association's (ASTA) Standards For Highly Accomplished Science Teachers (ASTA, 2002) and the Teacher Behaviour Checklist (Keeley, Smith, & Buskist, 2006). Findings signal that excellent science teachers require more than professional knowledge to develop their teaching practices. Recommendations for initial teacher education and teaching experiences for early career teachers are made to support teachers to work effectively out of field in general science.

Keywords: excellence, secondary science, professional knowledge

Professionalisation processes of career entrants: How do lateral entrants experience their career entry?

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This paper is based on the dissertation project SeLe an Grundschulen, which focuses on teachers with an alternative approach into the teaching profession and different experiences with teaching in-, between- and out-of-field. Since several years the teacher shortage moves the country and different special measures have been realized. One of these measures is the recruitment of lateral entrants (Seiteneinsteiger*innen). The research interest focuses on the professionalization process of lateral entrants while reconstructing their professional biographies, their entrance into the teaching profession, their experiences in teaching practice and their didactic convictions of teaching. The methodology of the sociologist of knowledge, the qualitative method of the documentary method and narrative interviews from 15 teachers with different approaches form the basis. The framework is given with the construct of habitus and norm while exploring habitualized action practice for a praxeological perspective on professionalization processes from in-, between- and out-of-field-teaching teachers. The presentation shall give an inside of the current analysis from the interviewees, showing a collective orientation framework and orientation figures along the reconstructed career entry. Additionally, I would like to highlight the first finished types and outline the typical orientation figures. Subsequently, I would be very pleased about a lively discussion of my results.

Keywords: Teaching out-of-field, lateral entrants, career entry, professionalisation

Teaching uncertified: The necessity of developing a science teacher identity

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An increasingly common approach to solving secondary science teacher shortages is to make available provisional certification to uncertified college graduates both in and out of field as well as out of discipline. Without strong self-efficacy and identity as teachers or as science teachers, these candidates are unlikely to significantly help overcome the US science teacher shortage. They exhibit poor teaching performance and inability to successfully adopt appropriate teaching and learning strategies, often abandoning teaching early. An extended ethnographic study was conducted to develop an understanding of the factors and important variables involved in non-standard alternative certification. The development of three high school science teachers was followed. They experienced an identity shift from scientist to science educator by completing formal higher education science teaching certification requirements while participating in an innovative pre-service preparation program followed by in-service induction. The results suggest an argument and rationale for applying a theoretical framework of identity to participant teachers' lived experiences. The development of teacher identity necessitated evolving large changes in self-efficacy, professional educational practice, and pedagogical content knowledge (PCK). Overall, this study explores and proposes changes these teachers identified in their ability to teach science through their unique process of teacher education and certification.

Keywords: identity, certification, induction, efficacy

Transition, out-of-field teaching, implications for practice

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In Australian secondary schools, geography is often taught by an out-of-field teacher which raises implications for student learning and engagement with the subject, and teacher understanding about ways of knowing and doing geography within and beyond the classroom. This presentation reports on the experience of teacher education students (TES) as they transition into the profession. The TESs enter the profession with an expectation of being able to teach geography, however, they find their timetables include an out-of-field teaching load. Not only do the TESs discern and act upon ways to respond to their identified challenge of teaching out-of-field, they are also recognised as specialist geography teachers who are called upon to support out-of-field colleagues to teach geography. Results show it is the strength of personal values and beliefs about teaching and what it means to be a teacher combined with a sustained explicit process of theory-practice reflection that enables the challenge of out-of-field teaching to be overcome. Results also reveal implications for initial teacher education programs.

An examination of the development of out-of-field mathematics teachers' professional self-understanding

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Research has demonstrated that teacher identity matters in mathematics education. This is of heightened concern when we consider those teaching mathematics out-of-field, a phenomenon prevalent at the post-primary level in the Irish context. A national program (PDMT) to upskill out-of-field teachers was established and current research is appraising graduates' experiences. In this chapter we bring together out-of-field teachers' knowledge and identities, using Kelchtermans' (2009) concept of professional self-understanding, which is an essential part of a teacher's personal interpretive framework and acts as a lens through which teachers view their job, give meaning to it and act in it. We report on aspects of an online, primarily quantitative, survey administered to graduates of the PDMT examining their professional self-understandings on completion of the program. The findings contribute to our understanding of important considerations relating to the development of professional learning programs for upskilling out-of-field mathematics teachers.

Keywords: Commitment, job satisfaction, mathematics, professional self-understanding, self-efficacy