Application for extension WERA International Research Network Research-Informed Educational Practice (2024–2026)

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Application

We hereby apply for the extension of our network, aiming to address the persistent research-practice gap in education. Building on our achievements during the first project period, our primary goal is to deepen our understanding of the hindering and supporting factors from both sociological and psychological perspectives. However, the opportunity for regular exchange and discourse within the network has highlighted the complexity of the concept of research-informed educational practice (RIEP) and the multitude of factors that influence engagement with evidence and data. Despite progress, conceptual incoherence between different research strands remains, underscoring the need for continued exploration and exchange. In this proposal, we outline our plans to build conceptual consensus across research paradigms and advance the global debate on RIEP through collaborative efforts, international collaborations, and dissemination activities.

Aims for the extended IRN

According to the current state of research, the so-called research-practice gap persists unabatedly, and it seems that current efforts are still not fully 'hitting the mark'. Against this backdrop, this IRN strove to uncover additional insights into why educators do or do not employ research findings and other sources of evidence, and to provide practice and policy-recommendations as to how this situation can be improved. Our main aim during the first project period (2021–2024) was, therefore, to gain a deeper understanding of hindering and supporting factors (either benefit or significance) – both from a sociological (e.g., Baudrillard, 1968) and a psychological perspective (e.g., Eccles & Wigfield, 2002). It is now well established, that a multitude of different factors on data, user, organizational and context level impact whether engagement with research, evidence or data takes place at all, and if it does, whether it is superficial or profound (Gregoire, 2003; Kahneman, 2011).

During the ongoing discourse in our IRN (as reflected in our progress report), we found that the researchers involved usually centre their work around one of these levels within which the process of evidence and data use takes place. Research informed educational practice (RIEP) or research-informed educational practice (RIEP) is described as a complex, cognitive, knowledge-based problem-solving or inquiry cycle with consecutive phases, that are not ensued in a linear, but rather iterative fashion (Coburn & Turner, 2011; Groß Ophoff & Cramer, 2022; Mandinach et al., 2008; Mark & Henry, 2004; Marsh, 2012; Schildkamp & Kuiper, 2010; Schildkamp & Poortman, 2015; Schratz et al., 2018).

Based on interviews of our IRN-members at the start of the first funding period (as addressed in our progress report) we found that different streams of research already identified by Brown et al. (2017) have become even more established (Groß Ophoff & Hartmann, 2023) following either an (i) action-theoretical paradigm (focussing on educational practice) or a (ii) learning-theoretical paradigm (focussing on teacher education), without however reliably addressing the conceptual common ground.

- Ad (i): Research on data use and data-based decision-making takes different kinds of data (e.g., from surveys, observations or conversations) into consideration that can be

used for educational decisions and development processes (cf. Groß Ophoff & Cramer, 2022; Mandinach & Gummer, 2016; Mandinach & Schildkamp, 2021; Schildkamp et al., 2013).

- Ad (ii): Research in the field of evidence-informed education focusses on the training of (prospective) teachers, both in terms of initial teacher training and continuous professional development. This line of research evolves around the notion that an engagement with research (literature) can serve as a source of problem awareness, as a guide and support, and as a supplement and corrective for professional action (Bauer et al., 2015; Bauer and Kollar, 2023). Therefore, (cognitive and motivational) prerequisites, processes, and the extent and quality of evidence as well as misconceptions and mechanisms of rejection and devaluation of educational science are addressed. The international literature has a similar focus, although here, for example, an extension to questions of the professional identity of (prospective) teachers can be identifies (Graus et al., 2022) as well as a less strong dichotomisation of experiential knowledge and scientific knowledge (Li & Guoyuan, 2023).

The interviews conducted with IRN members made it even clearer that, even though a lot is already known about influencing factors, a strong conceptual incoherence between the different research strands persists. It is the strength of this IRN that international representatives of different paradigms are represented in our network, and we can report that an insightful exchange on the basic conceptual assumptions has emerged over the course of the first funding phase.

Clearly, there is a need to continue this line of work, and the continued engagement of our IRN members reflects a strong desire to do so. Therefore, in the next funding period, we intend to continue our explorations and exchanges in an effort to build conceptual consensus across research paradigms. We will do this by continuing to embrace and cultivate our internal diversity. By convening regular meetings, we aim to further advance the global debate on EIPE. The IRN provides the soil and foundation to initiate cross-national and cross-thematic collaborations. We intend to bring these collaborations to fruition in sessions at international conferences, edited textbooks, and special journal issues.

Work plan

Formal organisation

Prof. Groß Ophoff and Prof. Brown will continue to act as IRN co-convenors. As keeping the network engaged requires regular communication and coordination, they have recently been joined by an additional co-convenor, Dr. Goffin.

- **Prof. Dr. habil. Jana Groß Ophoff**
  Professor for Educational Sciences
  University College of Teacher Education Vorarlberg (Austria)
  https://www.ph-vorarlberg.ac.at/grossophoff/jana-gross-ophoff-en

- **Prof. dr. Chris Brown**
  Professor of Education and Head of Southampton Education School
  University of Southampton (United Kingdom)
  https://www.southampton.ac.uk/people/657v5r/professor-chris-brown
- **Dr. Evelyn Goffin**
  Senior researcher in educational sciences
  University of Antwerp (Belgium)
  https://www.uantwerpen.be/en/staff/evelyn-goffin/

Efforts are being made to extend the team further with non-European co-convenors, in order to better reflect the diverse composition of the IRN membership.

Meetings and membership

We will maintain our approach of convening quarterly meetings online. Meeting times will vary in order to accommodate different time zones - a very real challenge posed by the global composition of our IRN membership. We are currently exploring the possibility of installing a Teams environment that also allows for file sharing.

The online meetings will continue to be our go-to platform for presentation and discussion, with speakers from within the IRN as well as guest speakers. A number of concrete topics for these meetings have been identified at the in-person brainstorm held in Glasgow in 2023 (as elaborated on in our progress report, see Appendix C). We also intend to reach out to members asking *them* to contact guest speakers, in order to make sure we extend beyond our own existing personal networks and in order to further stimulate the engagement of researchers that adhere to diverse paradigms.

Ahead of international conferences focused on educational research, we will reach out to the IRN members in order to arrange formal and/or informal meet-ups to further strengthen the network. As the in-person meeting at the ECER conference in 2023 provided the opportunity to jointly contemplate the future and to think about the conceptual alignment of our network, we would like to repeat this initiative in future (e.g., at the oncoming ECER conference 2024 in Nicosia, Cyprus), provided that we can secure organizational support and/or funding for meeting space.

We proactively promote the IRN in scientific exchanges within other networks. In communication with the IRN members, we welcome them to invite peers and grad students to join the network or join in on (selected) meetings.

Objectives and output

An outcome of the 2023 in-person meeting in Glasgow was the shared conviction that, going forward, our IRN's preferred *modus operandi* should be:

- to hold **focused discussions** during the planned online meetings;
- to uphold the explicit intention to extend these discussions into focused **collaborations;**

- to propose joint **sessions** for scientific meetings and conferences in order to open up these discussions, and to prepare for joint publications or funding applications;
- to actively seek **publication opportunities** for ensuing special issues and edited handbooks. Our position is that Open Access publication is to be preferred, as we believe it is our community's responsibility to broadly disseminate crucial insights that can advance education. Findings related to the nature, the preconditions and the effectiveness of RIEP should be available to "everyone" and "everywhere";
- To open up a space that can stimulate the development of **joint international research proposal**s.

For the upcoming period (should the extension be granted) two central challenges are:

- To make an "inward" contribution by actively discerning diverging perspectives in the RIEP field, engaging these perspectives into discussion, and exploring whether we can **converge views on RIEP** (for instance by employing a Delphi-approach);
- To make an "outward" contribution by reflecting on **the place of RIEP within educator's professional identity** (for instance by broadening our view by investigating how evidence is used in other disciplines).

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Yearly Progress Report: WERA IRN Research-Informed Education

IRN-Activities 2021-2022

On 20 September 2021, we commenced the work of our IRN with a two hour-workshop with experts, using break out sessions and mind mapping approaches to identify key question areas that will help us build the comprehensive picture we require

We then sense checked our list of question areas with our experts and have carried out 24 individual interviews with the members of our IRN between (for Interview Guidelines, see Appendix A).

- 20211008_Aluko
- 20211020_Pushpanadham
- 20211022_vanLommel
- 20211029_Murphy
- 20211029_Ion
- 20211116_Handscomb
- 20211119_Jesacher-Rössler
- 20211112_Rickinson
- 20211112_Coldwell
- 20211203_Amatullah
- 20211105_Cramer
- 20211210_Merk
- 20211213_Schildkamp
- 20211217_Pham-Xuan
- 20211217_Zala-Mezoe
- 20220114_Qvortrup_T
- 20220128_Zumpe
- 20220128_G-Brown
- 20220204_Sogukslu
- 20220204_Maier
- 20220211_Munoz
- 20220211_Schnellert
- 20220214_Malin
- 20220215_Lai

In preparation of the interview analysis, we scheduled a 2-days-meeting in Winchester (4 – 6 March 2022). We decided to use Qualitative Content Analyse (Mayring & Fenzl, 2019) in order to synthesize the interview data and to develop a comprehensive model of research-informed education (incorporating different levels of the socioeconomic system, different actors and different forms of research engagement). While carrying out the aforementioned interviews, we identified the needs of actors as important barrier or enabler for the use of research. This was the reason, why we decided to apply theoretically-deductive categories based on Self-Determination Theory (Deci & Ryan, 2000) for the analysis of the interview transcripts. Accordingly, the satisfaction of basic psychological needs, that is autonomy, relatedness, and competence, are identified as essential for (professional) development, adjustment, and wellness across cultures.

We are still working on the analysis of the interviews, which takes longer than expected. As publication medium of our results, we are now considering a special issue in the journal Professional Development Today devoted to the work of members of this IRN (editor: Graham Handscomb, IRN-member).

Based on our insights, we are going to undertake a systematic review of literature to see how our model deepened, cohered with, and challenged existing knowledge in the field. In parallel, we want to develop a cross-national survey for a small-scale study in each participating country.

In order to discuss and decide on further proceedings, we are going to carry out two virtual meetings with our IRN members (time zones: PDT – MESZ: calendar week 24; MESZ–NZST: calendar week 26) via Zoom.

Further network activities:

- 9 July 2021: participation at the WERA Virtual Focal meeting, International Research Network (IRN)-Convener Meeting
- 22 April 2021: participation at the International Research Network (IRN)-Convener Meeting during the WERA Focal Meeting at the Annual Meeting of the American Educational Research Association in San Diego, USA

During the WERA Focal Meeting in San Diego, we organized and chaired an invitational symposium (Enablers and Barriers to Research-Informed Education: Exploring international Perspectives) with focus on the activities of some of our IRN members with four presentations (full abstract, see Appendix B):

1 Georgeta Ion, **Cecilia Ines Suarez**, & Anna Diaz-Vicario (Department of Applied Pedagogy of the Universitat Autònoma de Barcelona, Spain): Steps towards an Evidence informed education in Catalan schools. From policy makers intentions to teachers' practice
2 **Colin Cramer** (Tübingen School of Education, University of Tübingen, Germany): Research-informed educational practice in Germany. State of the art.
3 **Dominic Wyse** (UCL Institute of Education, University College London, UK): Method X = Value Y? How perceptions of research methodology can be a barrier to research-informed education.

4 **Kristin Vanlommel** & **Elske van den Boom-Muilenburg** (Hogeschool Utrecht, Netherlands). Comparing Drivers and Obstacles for Evidence-Informed Practice in two Educational Systems
5 The presentations were then discussed by **Jana Groß Ophoff**.

IRN-Activities 2022-2023

We have been meeting regularly every three months since the fall of 2022. During the meetings, members provide insights into their current plans and activities, and news or calls for contributions are shared. We alternate the times of the meetings so that members from different locations can be present. However, the differences in the time zones and the group size prove to be a challenge for our network overall.

- **5. October 2022** with presentations of
  - Martin Greisel (Augsburg University, Germany): Investigating Pre-Service Teachers' Evidence-Informed Problem-Solving in Detail
  - Liz Zumpe (University of Massachusetts Lowell, USA): Understanding education leaders' improvement mindsets
- **19. January 2023** with presentation (book project) of Becky Morris and Tom Perry (Warwick University, UK): Evidence-in formed education: Problems in a divided field
- **23. March 2023** with presentation of Colin Cramer (Tübingen University, Germany): Meta-Reflexivity in the Teaching Profession

Afterwards, the presentations are discussed among the participants and desiderata are identified.

IRN-Activities 2023-2024

We have been meeting regularly every three months since the fall of 2022. During the meetings, members provide insights into their current plans and activities, and news or calls for contributions are shared. We alternate the times of the meetings so that members from different locations can be present. However, the differences in the time zones and the group size prove to be a challenge for our network overall.

Also, the idea has come up that we should meet with as many members in person as possible. So, with the support of WERA and EERA, we have been working to make a **meeting** possible before the ECER conference in Glasgow. We have now received a commitment that we can use a room at the Glasgow university on the 21. and 22. August 2023 to meet and talk, i.e., about developing professional development materials, editing a joint book or further special issues, writing grant proposals, or, on a smaller scale, share or develop research instruments.

- **13. July 2023**: Ruth Aluko (University of Pretoria, South Africa) on Using research-evidence to improve practice in the Global South: Experiences from distance education institutions
- **21.-22. August 2023:** two-day in-person network meeting at ECER 2023, Glasgow, with the support of WERA and EERA. We discussed the future of the IRN, identified knowledge gaps in RIEP/EIP, and brainstormed about ways to join forces in advancing the debate on RIEP/EIP. Meeting notes (see Appendix C, Progress Report) were shared with the wider network.
- **16. November 2023**: discussion with Tom Perry, moderated by Izaak Dekker, on the introductory chapters and the manifesto in: Perry, T., & Morris, R. (2023). *A critical guide to evidence-informed education*. Open University Press/McGraw-Hill, and a critical discussion by Kim Schildkamp.
- **6. March 2024**: in continuation of our conceptual exploration of the nature of data (use) and evidence (use) in education, Johannes Bauer (University of Erfurt) presented his views. The presentation was followed by a lively and in-depth discussion.

As part of the regular exchange and ensuing collaboration of the IRN-members, sessions at the following conferences have been submitted (see session abstracts in the Appendix B):

- **AERA** conference, international session for Division H (April 2023, Chicago, USA)
- **EARLI** conference (August 2023, Thessaloniki, Greece)
- **ECER** conference (August 2023, Glasgow, UK)
- **AERA** conference, international session for Division H (April 2024, Philadelphia, USA)

Furthermore, Graham Handscomb, Editor of the online publication Professional Development Today, offered to devote a **special issue** of PDT to the work of members of this IRN. The special issue has been published recently (April 2024, see Appendix D), with the following contributions:

1. Handscomb, Graham: Evidenced-based professional development – global perspectives
2. Malin, Joel (USA): Teachers in control over their own professional learning
3. Farley-Ripple, Elizabeth, Mead, Hilary & Tilley, Katherine (Canada): Research Use as Professional Learning: Lessons from Four Schools
4. Kemethofer, David (Austria): Empowering school leaders in their use of data and evidenced-based decision making
5. Pham Xuan, Robert (Austria): Developing teaching attitudes and professionalism - the challenge
6. Brown, Gavin (New Zealand): Tapping into teachers' beliefs about assessment to bring about improved practice
7. Pushpanadham, Karanam (India): Why teacher professional development is essential for achieving quality education

8. Perry, Tom & Morris, Rebecca (UK): What is Research-Informed Professional Development?
9. Perry, Tom & Morris, Rebecca (UK): Leading and sustaining Research-Informed Professional Development.
10. Groß Ophoff, Jana; Brown, Chris & Flood, Jane (Austria/UK): Teacher Research Competency matters!
11. MacNeil, Kimberley; Schnellert, Leyton & Butler, Deborah (Canada): Empowering teachers for evidenced-based practice
12. Maier, Uwe (Germany): Using Teacher Dashboards to support learning
13. Jingjing, Lin (Japan): Journal Clubs – their power and possibilities

Appendix

A Interview Guidelines

Introduction: Problematic, that we still don't have a full and comprehensive understanding of what it is that influences teachers' use of evidence. This is an issue if we want to encourage teachers to engage with evidence to improve their teaching and learning

Reason for this problematic: many different potential drivers identified, including the organisational, psychological and sociological, and many models based on these drivers. From our reading of the field we recognise that while each perspective identifies a facet of teacher evidence use, a more comprehensive holistic picture is required if we are to fully understand and attend to all facets of evidence use

Our approach:

Using a DELPHI approach we convened 35 experts from 17 countries across five continents. Experts were all working in evidence use in education but from a variety of different perspectives.

Interview:

1 Why are you [interview respondent] interested in this topic?
2 What work do you [interview respondent] currently do in this area?
3 What is the policy context of the interviewee (social regulation and cohesion), and what policy initiatives and other initiatives have been put in place to facilitate EIP?
4 What is evidence/what types of education-related evidence exist? Probe into what is meant by each response
5 What is evidence-informed practice?
6 What are the properties/characteristics of different evidence types that mean that they will be more or less likely to be used by educationalists?
7 What types of transformations are required of different evidence types so that they will be used?
8 Who undertakes these transformations?
9 What needs do teachers have when trying to improve their practice or outcomes for learners?
10 What needs do educators have of evidence?
11 What are the characteristics/attributes/dispositions of individuals that mean they likely to engage in EIP?
12 What happens to/what change occurs in individuals, teams and organizations where EIP occurs
13 What processes are known to be effective in facilitating EIP (e.g. cycles of inquiry)? Which aren't effective?
14 What are the characteristics of organizations that support practitioners to engage in EIP? That don't support engagement?
15 What and who influences these characteristics?

16 What are the characteristics/attributes/dispositions of individuals that support EIP? For instance, that of EIP supportive school leaders?

17 What are the relationships that are likely to support practitioners to engage in EIP (within and outside of organizations?

B Session Abstracts

AERA conference (April 2022, San Diego, USA): Research-informed education WERA IRN invitational symposium

Symposium title: Enablers and Barriers to Research-Informed Education: Exploring international Perspectives

Chairs: Jana Groß Ophoff and Chris Brown

Discussant: Jana Groß Ophoff

Abstract: Educators can and should be using research-evidence to improve teaching and learning. Nonetheless, despite evidence attesting to the benefits of Research-Informed Educational Practice (RIEP), RIEP is yet to materialise in the vast majority of schools world-wide. In response, this symposium introduces the work and perspectives of a range of globally situated academics (emerging and experienced) interested in the topic. Each will present what they have learned about REIP for their country or jurisdiction, with the discussant for the symposium providing an overview of lessons that might be learned internationally. The symposium forms part of a broader WERA International Research Network exploring common (cross-context) and context specific factors affecting RIEP, as well as interventions for how this gap might be closed.

Objectives of the session: The aim of the session is to provide both national and cross-cutting perspectives on the factors that aid and hinder Research-Informed Educational Practice (RIEP). Part of a broader comparative study exploring common (cross-context) and context specific factors affecting RIEP, we aim to not only present insights from this study, but also gain further insight by harnessing the wisdom of symposium attendees.

Overview of the presentation: Educators can and should be using research-evidence to improve their practices. For instance, emerging evidence indicates that, if educators engage with research-evidence to make or change decisions, embark on new courses of action, or develop new practices, then this can have a positive impact for both teaching and learning outcomes (e.g. Cain, 2015; Cordingley, 2013; Crain-Dorough and Elder, 2021; Godfrey, 2016; Groß Ophoff, 2020; Mincu, 2014; Rose et al., 2017). Nonetheless, despite evidence attesting to the benefits of RIEP, it is yet to materialise in the vast majority of schools world-wide. In response, this symposium introduces the work and perspectives of a range of globally situated academics interested in the topic. Each will present lessons relating to REIP for their country or jurisdiction, with the discussant for the symposium providing an overview of lessons that might be learned internationally.

Scholarly or scientific significance: RIEP can lead to changed and improved teaching practices and perspectives as well as improvements in students outcomes (Earley & Greany, 2017). When such improvement occurs in disadvantaged areas, it can also lead to reductions in the gap in education outcomes between students from the most and least affluent families (Brown, 2020). It is imperative, therefore, that the extant research-practice gap is closed.

With this aim in mind, the symposium will present insights from the WERA International Research Network on Research Informed Education: a comparative study exploring common (cross-context) and context specific factors affecting RIEP. In addition, however, as well presenting what is currently known, we also hope to gain further insight by harnessing the wisdom of symposium attendees.

Structure of the session: The symposium will be formed of five presentations covering the work and perspectives of five national teams and six contexts (Australia, Catalonia, England, Flanders, Germany and the Netherlands). Teams comprise experienced and emerging researchers interested in the topic, who will present what they have learned in relation to what aids or hinders REIP for their country or jurisdiction (n.b. as part of our commitment to capacity building in this area, we have asked experienced researchers, where possible, to co-present with a PhD student or early career researcher). Our discussant will then conclude by outlining what lessons might be learned internationally. We envisage presentations by national teams lasting no more than 12 minutes each, and the discussant presenting for ten minutes. Accounting for the introduction and hand-overs, this leaves some 15 minutes for audience questions and interactions.

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PAPER 1

Title: Steps towards an Evidence informed education in Catalan schools. From policy makers intentions to teachers' practice.

Authors: Professor Georgeta Ion, Dr. Cecilia Inés Suarez, Dr. Anna Diaz- Vicario

Objectives/purposes: In this presentation, we will explore factors shaping the adoption of evidence-informed practice (EIP): an initiative recently encouraged in the Catalan educational system by both educational administration and private educational bodies.

Perspective(s): To address the study objective, we have explored various factors enabling teachers' use of research evidence through the lens of different explanatory models of research utilization currently coexisting in the Catalan system. These are: the lineal model, the science push model, the demand-pull model, the dissemination model, and the interaction and social activity model (Landry et al., 2001, Best & Holmes, 2010, Brown, 2012). Factors such as: research dissemination and quality of the educational research, strategies used by different stakeholders, teachers' research skills and attitudes, school organization cultures and dynamics were identified and discussed (Gorard, et al, 2020).

Methods, techniques, or modes of inquiry: We conducted semi-structured interviews (Valles, 2009), in an attempt to capture teachers' opinions regarding their conceptions of EIP approach, and the perceived enablers and barriers of EIP uptake at school and system level.

Data sources, evidence, objects, or materials: Ten informants were selected following non-probabilistic convenience sampling (Patton, 2002), using four selection criteria: teachers from primary school level with more than ten years of teaching experience who are developing a leading role at their institutions and were engaged in the innovation process in their schools. The sample comprised three principals, three heads of studies, one secretary, and three teachers who were coordinating innovation processes in their schools.

Results and/or substantiated conclusions or warrants: Our findings show that the use of research in practice is influenced by teachers' perspectives on research, as well as by their ability to understand research language, decode and make sense of research findings and adapt these to their class context. The organisational environment is key, while the creation of an ecosystem favourable to the use of evidence and ensuring the resources required to implement it. School leaders play central role since, they are identified as the main actors stimulating the teachers' engagement with research at the organisational level and create the conditions to enable teachers to reflect on their practice and to promote staff training.

Scientific or scholarly significance: The study has several implications regarding the implementation of an EIP approach. Evidence use in the Catalan context is currently situated at a crossroad between the Science-push Model, as higher education institutions are attempting to influence the research agenda required for evidence-based policymaking. However, looking at the school level, we can find islands of the Social Activity Model. The engagement of teachers can be interpreted as relating to the attitude of school organisations and their members towards research, the political and organisational context likely to promote and favour research transfer and use, and the financial context needed to foster quality results. Supporting teachers' involvement with research and creating opportunities for direct experience could strengthen teachers' attitudes toward research and enhance its use in practice.

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PAPER 2

Title: Research-informed educational practice in Germany: state of the art.

Author: Professor Colin Cramer

Objectives: This contribution addresses the situation of research-informed educational practice (RIEP) in Germany at a glance. Special attention is paid to enablers and barriers of RIEP. Educational policy prerequisites are presented as well as the research-related infrastructure. Finally, the conditions of the actors, especially teachers and school administrators, are highlighted and the paper asks why RIEP has been observed rather hesitantly so far.

Perspectives: Efforts in RIEP are so far rather unstructured. This is due to the full responsibility of each of the 16 federal states for education, but also to a culture of high autonomy of individual schools, of school leaders and teachers (Groß Ophoff & Cramer, accepted). Educational governance partially refers to evidence, but institutions and actors are widely autonomous in their way of implementing RIEP in schools. Although teachers are most often civil servants and bound by instructions, they are professionals and are largely free in their pedagogical work. There are several reasons why they trust or distrust scientific evidence (Rosman et al., accepted). Accountability is ensured by standard-based monitoring.

Data sources: An overview of the German situation of RIEP in the school system as well as in teacher education is provided. Although research on RIEP has become more important, there is currently no nation-wide and consistent system that contributes systematically to RIEP. Teachers' beliefs and attitudes towards RIEP are relevant to when considering how they use evidence to improve teaching and learning processes. Positive affective-motivational dispositions and research literacy are deemed important to support teacher's RIEP. On school level, school culture and leadership clearly have impact.

Conclusions and perspectives: Regarding the German situation of RIEP a more intense dialogue between different actors and professional groups in education is needed and initial and further education systems/processes should strive even more to impart a meta-reflective stance (Alexander, 2017) or enquiry habit of mind (Brown & Malin, 2017) to make (future) teachers aware of the power of research. It appears crucial that teachers are able (and willing) to contrast and relate their decisions and action to professional knowledge, reflective skills and to be open for a professional life-long continuing professional development.

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PAPER 3

Title: Method X = Value Y?: How perceptions of research methodology can be a barrier to research-informed education.

Author: Dominic Wyse

Objectives: To provide insights about the ways in which perceptions about research methodology effect perceptions of how research can and should be used to inform education practice and education policy; to critically explore the idea that adherence to, or use of, a particular research method implies that the researcher or research user holds a particular value position; to consider how research methodology can effect whether particular research findings are used to inform education practice and policy.

Theoretical framework: The theoretical framework for this presentation draws on philosophical debates about epistemology (e.g. Dunne, 1993). More particularly the theoretical perspective draws on philosophical positions evident in methodological debates about the use of quantitative methods to establish robust educational research findings.

Modes of inquiry: The mode of enquiry informing this presentation combines the methods used in an empirical project with critical reflections on some of the published outcomes of the project, published responses to the outcomes of the project, and some consequences of these debates for education research in relation to 'close-to-practice research' (Wyse, Brown, Oliver & Pobleté, 2020). In particular, the presentation interrogates claims made that the use of particular methods in an empirical research project allow readers of that research to infer value positions of the authors of research project reports and other publications.

Data sources: The evidence underpinning the presentation is taken from an empirical project that included a Rapid Evidence Review of relevant published research, and interviews with experienced stakeholders with expertise in how research evidence can and is used to inform practice and policy. Other data sources are published critiques of the empirical project and the response from the research team (Wyse, Brown, Oliver & Pobleté, 2021).

Results and/or substantiated conclusions: The arguments made in this presentation, based on the warrants of the empirical project and relevant published debates related to the work, are that to conflate educational value positions with researchers' selection of research methodology risks practice and policy not being appropriately informed by robust research evidence with consequences for the quality of education.

Scholarly significance of the study or work: The relationships between education practice and policy and education research are complex. One aspect of this complexity is the debates about close-to-practice research and its relationship with education as an academic discipline in universities. Better understanding of research methodology in relation to education value positions may be a productive way to enhance the use of research-informed educational practice and policy.

References

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PAPER 4

Title: Comparing Drivers and Obstacles for Evidence-Informed Practice in two Educational Systems

Author: Kristin Vanlommel & Elske van den Boom-Muilenburg

Purpose: Global challenges and growing diversity require an educational system that is responsive and agile, putting evidence-informed practice (EIP) at the center of the policy and research. Using evidence should lead to better informed policy, higher quality decisions, more effective practices, and, in turn, improved and fairer outcomes. EIP is not a common practice in education (Malin & Brown, 2019) because it is hindered by, among other things, constraints at the system level. Our aim is to describe and explain how educational systems influence the (non) use of EIP. Educational systems of Flanders (Belgium) and the Netherlands were compared. Key lessons for practice and policy are presented, aiming to deliver insights that can be used as a lens when investigating EIP in other educational systems to strengthen EIP worldwide.

Theoretical framework: We used the cohesion/regulation matrix (Hood, 1998) to analyze the systems according to the system-level factors that define it. The 'regulation' axis refers to mechanisms of control and accountability, the 'cohesion' axis is used to categorize norms and networks that bind the educational system and strengthen collective approaches (Hood, 1998). Drawing on institutional theory (Powell & DiMaggio, 1991), facilitators and constraints related to norms, rules and powerful actors are discussed.

Methods: We studied and compared two educational systems (Flanders, the Netherlands) to explore and explain how systems influence EIP. Quantitative and qualitative research findings were investigated to get a fine-grained insight in drivers and obstacles of EIP.

Results: Both educational systems (see Table 1) and a general overview of EIP-factors (see Table 2) are presented below. Flanders scores low on regulation and cohesion, whereas the Netherlands score high on both dimensions. In Flanders the necessary factors for EIP at the school and individual level are not present. The educational culture begets a strong resistance to centralized measures that foster EIP. Together with limited collaboration around data use, this makes education an individual, subjective practice rather than an evidence-informed, collective practice. In the Netherlands, factors for EIP are present at the school level to a certain extent, although there are large differences between schools. At the individual level,

teachers use evidence to a limited extent. Lack of competence is seen as the most hindering factor, as well as high trust in intuition.

Significance: Although these systems differ on the regulation and cohesion matrix, the development of human capital is a crucial condition for EIP in both systems. Educators need to be willing and able to use evidence to critically investigate assumptions and practices. EIP thus requires more than data-literacy courses. Policy-makers and researchers need to develop guiding frameworks that enhance professional development towards evidence-informed practice. They need to support a culture of reflective inquiry, collaboration, and ties can be strengthened within the profession. In the light of high-quality, equal education for all pupils, EIP should be a self-evident part of the (teacher) profession.

Table 1. Cohesion/Regulation in Both Flanders and the Netherlands.

	Flanders	The Netherlands
Regulation	Low	Higher
	Decentralized	Centralized framework and policies with decentralized administration and school management
	School autonomy	School autonomy
	Lack of central exams	Central exams
	No public disclosure of results from standardized outcome measures	Public disclosure of results from standardized outcome measures
Cohesion	Low	Higher
	School governing boards hold responsibility over one or more schools	School boards hold responsibility over one or more schools
	Little cohesion between different umbrella organizations	Cohesion between umbrella organizations

Table 2. Overview of Factors that Influence EIP in Both Flanders and the Netherlands.

	Flanders	The Netherlands
School level	Evidence use ad hoc	Systematic evidence use, but large differences between schools (Inspectorate of Education, 2021)
	Policy largely driven by short-term solution-focused actions based on experience and quickly available data	Policy driven by accountability purposes as well as policy development, school improvement planning, teacher development and instructional improvement purposes (Schildkamp et al., 2013)
Individual level	Teachers strongly rely on their expertise	Teachers report feeling overwhelmed by the availability of data, and do not always know where to start (Schildkamp et al., 2013)
	Teachers feel less competent and motivated in using evidence	Teachers use evidence (Inspectorate of Education, 2021), but their data literacy skills can be improved (Kippers et al., 2018).

	Teachers have great faith in information collected spontaneously during daily practice and in intuitive judgments deriving from experience	School leaders are more inclined to make decisions on the basis of 'tacit knowledge', such as intuition and personal motivations. But often, this does not lead to improvements in teaching performance (Neeleman, 2019).

AERA conference, international session for Division H (April 2023, Chicago, USA): Invitational international session of Division H

Symposium title: Bridging the Research-Practice Gap: Interdisciplinary Approaches to Teachers' and Schools' Engagement With and in Research

Chairs: Jana Groß Ophoff and Chris Brown

Discussant: Daniel A. Laitsch, Simon Fraser University

Bridging the research-practice gap: Interdisciplinary approaches to teachers' and schools' engagement with and in research

Symposium abstract: This symposium offers a global, 'state-of-the-art', picture of research-informed educational practice (RIEP), drawing from five current studies addressing how to foster teachers' engagement with academic research. These studies are uniquely framed, offering insight into RITP by exploring a variety of levels and perspectives; drawing on systems theory, sociological, psychological and leadership perspectives. While numerous studies have posited ways forward for RITP, it is clear that fostering it is truly complex and challenging business. In response, the session provides clear implications with practical propositions and ways forward, exploring the full gamut of RITP, from initial teacher education, to in-service professional development; and examining contextual factors from the systems level to the motivations of the individual teacher.

Objectives: The objective of this session is to provide an global overview of research-informed teaching practice in education: what it is, how it can be fostered and recommendations for how to establish teachers' engagement with research as a reality. In line with current conceptual frameworks of RIEP (e.g., Schildkamp & Lai, 2013), the session papers address the following:

a) Theoretical: What are appropriate theoretical perspectives for understanding teachers' engagement with research? For example, how can the use of systems theory contribute to establishing relationships that can support research use?
b) Contextual: How do school context, collaborative structures, distributed leadership and teacher agency impact teachers' and school leaders' use of research?
c) Individual: What is the significance of pre- and in-service teachers' competency with regards to being able to use research in educational practice? And what impact do teachers' conceptions of research, their self-efficacy and their perception of value have on the engagement with and in research?

Overview: Across the globe, many national, federal, and district level governments are seeking to bring about school improvement; increasingly by seeking to foster so-called 'bottom-up' change via the use of research-informed educational practice (RIEP). The aim of such practice is to better improve teaching and learning activity across the board. Yet despite evidence highlighting the success and benefits of teachers engaging with research, not to mention the moral imperative of doing so, RIEP, - as a 'business as usual' way of working – is yet to take hold in the vast majority of schools (Brown et al., 2022; Coldwell et al., 2017). In this context, the symposium presents findings from five current studies addressing RIED. All five studies are linked by the implications of their findings for promoting teachers' engagement with research at a variety of levels and from a myriad of perspectives.

Significance: Although numerous studies have posited ways forward for RIEP, it is clear that fostering it is truly complex and challenging business (Brown et al., 2022; Groß Ophoff & Cramer, 2022). In response, this symposium addresses this issue in a unique manner, providing insight by exploring a variety of levels and perspectives; drawing on systems theory, sociological psychological and leadership perspectives. It provides clear implications with practical propositions and ways forward.

Structure: The presentations will be in the order below. The chairs will introduce the overall theme of the symposium as well as present their research findings. This will be followed by presentations

from the other participants. The symposium will conclude with comments from the discussant and then questions from the audience.

References

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Groß Ophoff, J. and Cramer, C. (2022) The Engagement of Teachers and School Leaders with Data, Evidence and Research in Germany, in C. Brown and J. Malin, (Eds) The Handbook of Evidence-Informed Practice in Education: Learning from International Contexts (London, Emerald) (pp. 175-196).

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1. Delivering a 21st century research-informed teaching profession: Survey findings from educators in England.

Objectives

This paper considers the engagement by teachers and school leaders in England in research-informed educational practice (RIEP) and ways in which to close the gap between academic research and academic practice.

Theory

Theoretical framework: Research in the area of RIEP has been criticised for being 'under-theorised' (e.g. Nutley et al., 2007). This is problematic since it can lead to researchers failing to consider the full range of factors influencing the research-practice gap. To provide a theoretical basis for our analysis, we adopt Baudrillard's (1968) semiotic theory of consumption. Baudrillard's theory is concerned both with consumer behavior and the 'objects' which are consumed. In other words, how objects are 'experienced' and what needs they serve in addition to those which are purely functional. Specifically, Baudrillard (contends that all consumer goods possess three values: i) their 'benefit' value; ii) their 'cost' value - what it takes to consume a specific good; and iii) and the value of the good as a 'sign' - what messages an act of consumption sends. With this in mind, the research questions addressed in this paper are:

- RQ1: What potential benefit, cost and signification factors can be identified that might account for the current research-practice gap?
- RQ2: Which individual and combinations of benefits, cost and signification factors appear to be most closely associated with educators' use of research evidence?
- RQ3: What implications emerge for policy and practice in terms of how to increase educators' use of research-evidence?

Methods

A survey study was conducted to address these questions. To develop the survey recent literature (broadly 2010 and later) was reviewed that generally encapsulated the area of RIEP. The survey was undertaken by teachers in England. The aim of our sampling strategy was to achieve a representative sample of teaching staff, both in terms of their own

individual characteristics, as well as the characteristics of the schools they work in. The survey was administered by email and a one percent response rate was achieved (approximately 250 schools).

Findings

Regression analyses was used to ascertain whether the research-practice gap is caused by educators failing to perceive the benefits of engaging in RIEP; from educators believing that the costs involved with research-use are too high; or from RIEP-type activity not being sufficiently desirable for them to want to engage in it. As you might expect, a range of factors emerged across each of these three areas and policy implications include the need for training and mentoring as well as coaching for school leaders to help establish RIEP within and across schools.

Scholarly significance

By developing and testing a survey grounded in a strong theoretical basis, we have, for the first time, kickstarted an exploration of factors promising for "bridging" the research-practice gap. The result is to provide a richer and more nuanced understanding of what is required to achieve RIEP than has been possible from existing work in this area.

References

Baudrillard, J. (1968) The System of Objects, (London, Verso).

Nutley, S.M., Walter, I. and Davies, H.T.O. (2007) Using evidence: How research can inform public services, (Bristol, The Policy Press).

2. Applying a systems approach to research-use in education

Objectives

Models of research-use (RU) tend to focus on specific elements of education systems or underplay the complexity of system change, which limits their value. This paper develops and applies a systems approach to inform models of RU in local systems for policymakers and practitioners.

Theoretical framework

The paper draws on systems theory, systems thinking (Lai and Huili Ln, 2017) and complexity (Thompson et al, 2016) perspectives alongside the authors practice as researchers, evaluators and system to develop a new framework of 'systems dimensions', applied to a consideration of a set of system change initiatives.

Methods

The paper re-analyses mixed methods research data from a set of systems change interventions undertaken by the Education Endowment Foundation (EEF – England's What works Clearing House for Education), using the above noted systems dimensions. This analysis aims to illuminate the nature and complexity of scaling-up RU in schools and draw out areas requiring greater attention if the scale-up of RU is to be successfully achieved.

The principal data set relates to two inter-linked evaluations of regional pilots in England with a common focus on enabling schools to embed research-informed evidence on the deployment of Teaching Assistants. The qualitative findings comprise 32 longitudinal semi-

structured stakeholder interviews and 16 school case studies comprising semi-structured interviews, observation and documentary analysis. Quantitative data comprises impact evaluation using a synthetic control to examine change in pupil outcomes, and change over time analyses undertaken on data from pre- and post-pilot surveys. Further qualitative data draws on two further interventions (Blackpool lower secondary Literacy Project; Regional Implementation Leads pilot).

Results

The analysis points to the importance of understanding local systems and establishing relationships with key stakeholders; and attending to the implementation capacity of the research-user as a key actor in increasing the scale up of research-informed practices. Further, the degree to which RU systems self-organise, is important. In the cases reported here, the RU systems operated through a complex set of interactions between actors at different system levels that relied on trusted relationships and a mutual understanding of coordinated, but differentiated, roles. This highlights the potential need for system leadership in RU systems, as well as 'system brokerage'.

Significance

Whilst a systems approach is recognised as being important, there have previously been no systematic attempts to fully articulate what such an approach might involve, nor to apply it. The systems dimensions framework represents the first articulation of such an approach; and the application to the example projects provide a new analysis using this approach. Dealing with complex, emergent, unpredictable, adaptive systems requires research and evaluation methodologies to account for this; this paper aims to provide the basis for the development of such methodological work, and provide a framework for developers of RU initiatives.

References

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3. What impact has research-related motivation on the level of pre-service teachers' research competence?

Objectives

Despite the ever-growing body of knowledge about research-informed decision processes in education, only little is (still) known about teachers' actual research-related competencies (RC) and how its development is impacted by individual characteristics. In this paper, findings from two studies of German pre-service teachers' will be presented with regard as to whether such RC can be predicted by motivational attitudes.

Theory

Research and the use of research evidence have been identified as key to quality improvement in education. Developing the competencies of educators to purposefully access, reflect and use research (Educational Research Literacy = ERL, cf. Groß Ophoff et al.,

2017) should thus be seen as critical, but proves to be challenging in educational practice. This is even more remarkable as the state of knowledge about actual RC and how it can be supported remains unsatisfactory, even though assessment instruments have been developed in recent years. In this context, competence is defined as a context-specific cognitive disposition that is, amongst other things, influenced by motivational factors, and can therefore be (further) developed through goal-oriented learning opportunities. Therefore, in line with Expectancy-Value theory (Eccles & Wigfield, 1995) it is assumed that the acquisition of ERL is affected by motivational beliefs regarding the subjective value of educational research and the expected success of an engagement with evidence.

Methods

The reported findings are based on two consecutive cross-sectional studies at German universities offering teacher education study programs (2014, Study 1: 122 students/3 institutions; 2019-2021, Study 2: 298 students/10 institutions). Data was collected via a standardised competency test for the assessment of ERL in combination with attitudinal questionnaires (a.o. scales for the subjective value of educational research and the expected success). The data was and will be further analysed based on latent regression analysis.

Results

According to findings from Study 1, teacher training students perceive both the subjective value of educational research and the expected success of an engagement with evidence as rather moderate. The level of ERL can particularly be predicted by the perceived value of evidence ($\beta = .16$, $p < .05$). Preliminary analysis of Study 2 data indicated that the findings from Study 1 can be replicated, as the subjective value emerges again as a significant predictor of ERL ($\beta = .35$, $p < .05$).

Significance

Results from both studies highlight the importance of not only imparting knowledge and competencies, but also of initiating research-related motivation for a quality, and therefore more consequential use of evidence in education. This is all the more important, as teachers are responsible to empower future citizens to be able to separate fact from fiction, too.

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Groß Ophoff, J., Wolf, R., Schladitz, S., & Wirtz, M. (2017). Assessment of Educational Research Literacy in higher education. Construct validation of the factorial structure of an assessment instrument comparing different treatments of omitted responses. *Journal for Educational Research Online*, 9(2), 35–66.

4. Teachers' capacity to engage with research evidence in practice: continuities and discontinuities between initial and continuous training.

Objectives

The study aims to explore how teachers' competence to engage with research (RC) developed through teacher education programs at university and during teacher's professional continuous learning.

Theory

Training and lifelong professional development are needed to ensure the quality and effectiveness teaching and learning. One of the competencies associated with 21st-century schools (OECD, 2005) is for teachers to be able to make efficient use of research with the goal to improve student performance under conditions of diversity. RC provides a conceptual, attitudinal and procedural framework, that allows teachers to align their teaching practice with educational research and educational policy decisions, to evaluate their classroom activities. However, in order to be able to use research, teachers need research-related abilities and expertise, that enable them to develop, adopt, and use research-informed pedagogic strategies (e.g. Cain et al., 2019). In order to achieve this, initial and continuous training should be aligned.

Methods

The findings are based on data from a series of studies conducted in Catalan primary schools during the last 5 years (N = 856; a.o., Ion & Lopez, 2022). In addition, interviews with a sample of 24 teachers were conducted and 10 focus groups(N = 80 teachers/school leaders) are currently held.

Results

Findings show that some of the factors shaping the teachers' engagement with research in practice are their level of RC, their conception of research and the level of self-efficacy. The consideration of research as relevant in combination with the capacity to use research data and initiate research, appears to be decisive. The findings show further that teachers' experience is essential for developing RC and confidence. While experience (e.g. during initial training) strengthens confidence and the acquisition of RC, the likelihood increases that research evidence will be used in practice. Considering that the concept of research and the ability to use it are grounded in training programs, the findings support the importance of reliable teacher learning and research capacity. This capacity should involve robust in-service training, which can overcome possible deficits in research during initial stage of teacher's education. It should also include strategies designed to enhance teachers' knowledge and skills in research, transcend the formal contexts, take advantage of informal learning opportunities, and pay attention to the transference of these skills to the class context.

Significance

The study stresses the importance of the alignment between initial and continuous training in building the teachers' capacity to engage with research evidence in terms of developing their research skills, fostering their self-efficacy and configuring their conception of research.

References:

Cain, T., Brindley, S., Brown, C., Jones, G., & Riga, F. (2019). Bounded decision-making, teachers' reflection and organisational learning: How research can inform teachers and teaching. British Educational Research Journal, 45(5), 1072-1087.

Ion, G., & López Sirvent, E. (2022). Teachers' perception of the characteristics of an evidence-informed school: initiative, supportive culture, and shared reflection. School Effectiveness and School Improvement, 1-19.

Organisation for Economic Co-operation and Development (OECD) (2005, 6th edn). Teachers matter: Attracting, developing and retaining effective teachers. Paris, OECD Publishing.

5. Frameworks of School-Support for Teachers' Engagement With/In Research (FoSTER): A Comparative Study of UK and Ireland

Objectives

This research study seeks to understand the breadth and scope of the ways that schools successfully foster teachers' engagement with and in research (TEWIR) in the UK and Ireland. This is the first such mixed-method comparative study between these regions.

Theory

As policy contexts both in the UK and Ireland continue to promote teachers' engagement with/ in research (TEWIR), we sought to understand how this happens in practice, particularly since Covid-19 and its impact on education and schools. We also sought to focus on learning more about how TEWIR was successfully fostered in a variety of contexts to better understand and promote TEWIR across diverse school contexts.

Methods

This is a mixed-methods, sequential, comparative study spanning the UK and Ireland.

Data

There are a number of data sources leveraged in this project:

- Policy and literature review: desk-based research.
- Quantitative and qualitative data: Survey data, opt in for case study (n = 55).
- Qualitative data: Case study schools in UK and Ireland (n = 8) involving interviews and documentary analysis.

Results

We have a number of conclusions and warrants pertaining to fostering TEWIR successfully from our study: (i) the critical importance of distributed leadership of TEWIR (ii) the importance of TEWIR beyond evaluation (iii) collaborative structures, both internally and externally, to foster TEWIR (iv) observations on the importance of agency (v) the influence of school context on what (and when) constitutes successful TEWIR. We draw implications spanning the above, as well as comment on how our research is important to develop contemporary understanding of the intersection between teacher education and development, teacher professionalism and school improvement.

Significance

This is the first study to compare the UK and Ireland in this way, and in so doing learn about not just the extent of TEWIR, but the nature of a number of important factors (broadly connected to teachers' '*buy in*') connected to fostering it successfully.

EARLI conference (August 2023, Thessaloniki, Greece)

Symposium title: Evidence-informed reasoning of pre-service teachers

Chair: Prof. dr. Martijn Meeter, m.meeter@vu.nl, Vrije Universiteit Amsterdam, the Netherlands.

Discussant: Prof. Dr. Ingo Kollar, ingo.kollar@phil.uni-augsburg.de, Universitat Augsburg, Deutschland.

Organizer: Dr. Izaak Dekker, i.dekker@hva.nl, Amsterdam University of Applied Sciences, the Netherlands

Key words: Attitudes and beliefs; Misconceptions; Pre-service teachers; Synergies between learning, teaching and research.

Abstract: In order to improve the quality of education, educational policies across countries stimulate evidence-based or evidence-informed education. These concepts differ in nuances and in how 'strict' they are perceived but share two ambitions. To improve the degree to which educational practitioners apply (findings from) educational research, and the degree to which educational researchers provide solid evidence for educational practice. The ambitions already imply that these interactions are not a commonplace, which their reception in both educational practice and research seems to confirm. This symposium brings together four papers about what might hinder or further these two ambitions. The first three papers will describe the degree to which pre-service teachers apply findings from educational research, while the fourth paper addresses the degree to which educational research provides useful evidence. Paper one presents the findings from two studies into the beliefs of pre-service teachers about the usefulness of educational science. The second paper describes the degree to which the presentation of scientific evidence can change the beliefs of pre-service teachers based on two experimental studies. Our third paper presents the outcomes of a scenario-study, which explored the degree to which pre-service teachers use scientific evidence in their everyday reasoning. Finally, the fourth paper categorizes and evaluates the criticisms against evidence-based and -informed education. Based on the criticism, this paper proposes adaptations of educational research that could make educational research more credible and informative for practice.

Paper 1: Not useful to inform teaching? Pre-service teachers' sceptical beliefs about education science

Key words: Attitudes and beliefs; Misconceptions; Pre-service teachers; Synergies between teaching/learning and research

Authors: prof. dr. Thamar Voss, thamar.voss@ezw.uni-freiburg.de, University of Freiburg, Institute of Education Science

Paper 2: The scientific impotence excuse in education: Disentangling potency and pertinence assessments

Key words: pre-service teachers; attitudes and beliefs; critical thinking; quantitative methods

Authors: Holger Futterleib, holger.futterleib@uni-erfurt.de, Prof. Dr. Eva Thomm, eva.thomm@uni-erfurt.de, Prof. Dr. Johannes Bauer, johannes.bauer@uni-erfurt.de, University of Erfurt, Germany

Paper 3: Unpacking pre-service teachers' beliefs and reasoning: A scenario-based approach

Key words: Attitudes and beliefs, Pre-service teachers, Qualitative methods, Reasoning

Authors: Prof. Dr. Leila E. Ferguson (presenter), leila.ferguson@kristiania.no, School of Health Sciences, Kristiania University College, Oslo, Norway
Dr. Ivar Bråten, ivar.braten@ped.uio.no Department of Education, University of Oslo, Oslo, Norway

Paper 4: Evidence-Based and -Informed Education: Objections and Future Directions

Key words: Educational policy; Ethics; Social Sciences and Humanities; Synergies between learning teaching and research

Authors: Dr. Izaak Dekker (presenter), i.dekker@hva.nl, Center for Applied Research of Education, Amsterdam University of Applied Sciences, Amsterdam, the Netherlands.
Prof. dr. Martijn Meeter, m.meeter@vu.nl, LEARN! Research Institute, Vrije Universiteit Amsterdam, Amsterdam, the Netherlands.

Not useful to inform teaching? Pre-service teachers' skeptical beliefs about education science

Prof. Dr. Thamar Voss
University of Freiburg
Institute of Education Science
thamar.voss@ezw.uni-freiburg.de

Abstract

A goal of teacher education is to promote future teachers' orientation towards the best available knowledge. However, a lack of evidence-based thinking among teachers is often observed. Teacher beliefs are assumed to act as facilitators or barriers to evidence-based thinking. In two studies, we investigated German pre-service teachers' beliefs about education science and their consequences and potential sources. On average, pre-service teachers judged general education science as less important for successful teaching than their subject didactics and as less complex than their subject disciplines. Furthermore, skeptical beliefs were associated with a lower engagement in education science courses. Lastly, results showed that the "soft" research methods typical of education science and unrealistic expectations about the education science curriculum might contribute to this devaluation.

Keyword: Attitudes and beliefs; Misconceptions; Pre-service teachers; Synergies between learning, teaching, and research.

Extended summary

Introduction

Many countries require teachers to draw on evidence in their teacher education standards (Bauer & Prenzel, 2012). However, teachers often do not think and teach in an evidence-based manner. A central reason for this lack of evidence-based thinking lies in teachers' beliefs (Patry, 2019). Teachers often belief that findings from education science are of little relevance to their teaching (Broekkamp & Hout-Wolters, 2007). Such beliefs contradict research findings highlighting the importance of teachers' knowledge of empirical evidence from education science (e.g., König & Pflanzl, 2016). Because beliefs about teaching and

learning are based on years of one's own school experiences, these beliefs are thought to have multifarious sources. A potential source are the typical research methods in education science, which might be perceived as "soft", providing less valid results than "hard" (Munro & Munro, 2014) methods in the natural sciences. Additionally, it is assumed that beliefs have consequences for people's motivation, because they are thought to serve as a filter for interpreting new experiences.

The Present Studies

Consequently, in two studies, I investigated whether student teachers held skeptical beliefs about education science and examined the consequences and potential sources of such skeptical beliefs.

First, I captured the extent of student teachers' beliefs about the importance and complexity of education science compared to the subject disciplines and the subject didactics. Second, I examined consequences of such skeptical beliefs for engagement in education science courses. Third, I conducted an experimental study to test whether the "soft" research methods of education science are perceived as less trustworthy than "hard" methods. Fourth, I analyzed the expectations student teachers have about the science education curriculum.

Study 1:

Methods: In the first study, 210 students answered questions about the complexity and importance of (1) education science, the (2) students' subject disciplines, and (3) subject didactics. The item wording was parallel for the three disciplines ($\alpha > .73$).

Results: In line with the assumptions I found evidence for a low valuation of education science among student teachers in ANCOVAs: On average, they perceived education science as less important for professional success than subject didactics ($F(2, 352) = 59.166$, $p = .000$, $\eta^2 = .25$) and as less complex than their subject disciplines ($F(2, 348) = 150.982$, $p = .000$, $\eta^2 = .47$).

Study 2:

Methods: The 87 student teachers (1) filled in the questionnaire about the importance and complexity of education science (see Study 1), and (2) answered items about their engagement with education science ($\alpha = .88$). Furthermore, (3) students were presented with short vignettes about research findings from education science for assessment of its trustworthiness. Two questionnaire versions were randomly distributed to participants: Each finding, otherwise identical, was presented using supposedly "hard" or "soft" research methods (e.g., "the

recording of brain activity showed...” versus “the results of a standardized survey showed...”). Each participant rated 50% with and 50% without neuroscience methodology. Lastly, (4) students wrote down their expectations for education science curriculum.

Results: Regarding the consequences of student teachers’ beliefs, the results of regression analyses indicated that more skeptical beliefs about education science were related to lower engagement with research from education science (β = .34*). Furthermore, the experimental manipulation results indicated that pre-service teachers, on average, evaluated empirical findings from studies with soft research methods as less trustworthy than equivalent empirical findings from studies with hard research methods ($F(1, 69) = 7.127$, $p = .009$, $\eta^2 = .09$). The analysis of the open answers indicated that most students expected to gain “practical” knowledge about teaching strategies, while very few expected to learn about theories and evidence.

Discussion

Overall, the findings of the studies indicate that pre-service teachers, on average, held skeptical beliefs about education science compared to subject-didactics and subject disciplines. This poses a challenge to those involved in teacher education: pre-service teachers might undervalue general education science, and these beliefs are related to lower engagement with the learning content. Thus, in order to improve the degree to which pre-service teachers apply education science, it seems important to address beliefs early in teacher education programs (Stark, 2017), encourage students to reflect on their beliefs, and create specific learning opportunities to break down misconceptions and inappropriate beliefs.

The findings about the potential sources of pre-service teachers’ skeptical beliefs can provide information on where to start. For instance, the experimental evidence indicated that the ‘soft’ research methods typical of education science might contribute to its devaluation. Thus, student teachers might need more knowledge about research methods and their validity to reduce this potentially biased perception of the quality of research findings based on different methods.

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The scientific impotence excuse in education: Disentangling potency and pertinence assessments

Holger Futterleib
holger.futterleib@uni-erfurt.de

Eva Thomm
eva.thomm@uni-erfurt.de

Johannes Bauer
johannes.bauer@uni-erfurt.de

University of Erfurt, Germany

Abstract

When pre-service teachers face scientific evidence that contradicts their beliefs, they may attempt to maintain their personal beliefs instead of revising them. For this purpose, pre-service teachers resort to devaluation tendencies such as doubting the potency of science or having a decreased preference for scientific sources. By engaging in the scientific impotence excuse (SIE), individuals run the risk not only to uphold flawed beliefs but also to depreciate educational research as reliable source of knowledge. In two studies, we (a) replicated findings on the SIE in education and (b) disentangled the effects on the potency (i.e. epistemic capacity) and pertinence (i.e. normative ascription of relevant competence) of science to investigate educational topics to understand SIE-related devaluation more comprehensively. Both studies followed a 2 x 2 mixed experimental design: Pre-service teachers assessed their belief about the effectiveness of grade retention before and after reading either confirming or disconfirming scientific evidence concerning this topic. The direct replication (Study 1; $N = 147$ pre-service teachers) demonstrated the expected devaluation tendencies when facing belief-evidence conflicts. Hence, participants devalued the potency of science and indicated a declining preference for scientific sources. In contrast, in the follow-up study (Study 2; $N = 152$ pre-service teachers) these systematic devaluations of science diminished when disentangling the facets of potency and pertinence. Despite partial devaluation tendencies, both studies revealed that participants adapted their beliefs in direction of the evidence presented. Our findings suggest that the (perceived) soundness of evidence may be a relevant factor for eliciting science devaluation.

Word count: 249

Keywords: pre-service teachers; attitudes and beliefs; critical thinking; quantitative methods

Extended Summary

Aims

When people engage with scientific evidence that contradicts their beliefs, they are often reluctant to adapt them. Instead, they frequently engage in defensive responses to maintain their prior assumptions (e.g. Chinn & Brewer, 1998). One defensive response can be to devalue the potency of science to study a given issue (scientific impotence excuse, SIE; Munro, 2010). That is, individuals tend to dismiss the evidence by claiming the topic to be inaccessible by means of scientific examination. Recently, Thomm et al. (2021) showed that the SIE also occurs among pre-service teachers evaluating evidence on an educational topic. Facing belief-discrepant evidence, pre-service teachers questioned educational research's potency to examine the respective topic and devalued its sources. Such tendencies could pave the way for pre-service teachers to develop critical stances toward educational research and scientific knowledge. Yet, it remains unclear whether this devaluation concerns only individuals' doubt on its *potency* to provide valid knowledge (i.e. epistemic capacity) or expands to general doubt on the *pertinence* of research to investigate the topic at all (i.e. normative ascription of relevant competence and responsibility to do so).

In two studies, we aimed to, first, inspect the stability of prior findings and, second, to disentangle more closely the nature of devaluation in the context of pre-service teachers' evaluation of educational research. Study 1 sought to directly replicate main findings of Thomm et al. (2021). Thus, we examined whether pre-service teachers devalue the potency of educational research and decrease their preference for scientific sources to inform themselves about educational topics when evidence of educational research contradicts their prior beliefs. Study 2 extended prior research by investigating potential effects of devaluation on the pertinence of educational research in addition to its potency.

Methods

Study 1. The study followed a 2x2 mixed design with the within-participants factor *belief* and the between-participants factor *evidence*: $N = 147$ pre-service teachers assessed their belief about the effectiveness of grade retention (GR) before and after reading evidence that either confirmed or disconfirmed the effectiveness. As evidence we presented five study abstracts based on authentic research. For experimental control, we manipulated only the direction of the reported results and conclusions across the conditions (confirming vs. disconfirming GR effectiveness). After reading the evidence, participants rated the potency of science to study the topic, and its potency to study further domain-related and domain-unrelated topics as measure of generalization of devaluation. As indirect measure of devaluation, they further assessed their preferences for scientific and non-scientific sources to inform themselves about GR effects and selected their most preferred source.

Study 2. $N = 152$ pre-service teachers participated in the study. Methods and procedures were identical to Study 1 except for two differences. First, we presented summaries of original studies on grade retention effects as evidence to enhance external validity. Participants therefore read different studies across both evidence conditions that were yet also more diverse in nature. Second, in addition to all measures of Study 1, participants assessed the pertinence of science to examine the topic and other domain-related topics.

Findings

Study 1. To examine the SIE, we regressed doubt over scientific potency to study GR on evidence condition, prior beliefs and their interaction. The regression model and interaction term yielded significance. Simple slope analysis revealed that participants with high or average prior beliefs tended to doubt the scientific potency when facing belief-discrepant evidence (see Figure 1). Analogously, we analyzed participants' preferences for scientific sources. Regression model and interaction term obtained significance. Simple slope analysis showed that participants with high prior belief indicated lower preference for scientific sources when facing belief-discrepant evidence. Yet, there were no effect on source choice. Moreover, analyses did not confirm any generalization of potency devaluation to the investigation of other domain-related or domain-unrelated topics. Finally, a mixed ANOVA indicated that participants adapted their beliefs in direction of the evidence read.

Study 2. As in Study 1, we tested effects of prior beliefs, evidence condition and their interaction on the topic-specific potency, domain-related and domain-unrelated potency, source preferences and source choice. However, none of these tests yielded statistical significance. The same pertained to tests of potential effects on pertinence assessments. In line with Study 1, a mixed ANOVA showed that pre-service teachers adjusted their prior beliefs in direction of the evidence read.

Theoretical and educational significance

Both studies contribute to improve our understanding of the SIE in education (see Table 1). Study 1 replicated central findings of Thomm et al. (2021): Facing belief-threatening evidence, pre-service teachers tend to doubt the scientific potency and show a decreased preference for scientific sources. However, Study 2 did not confirm tendencies to devalue either the potency or the pertinence of science when facing belief-discrepant evidence. Possibly, this discrepancy in results can be explained by the (perceived) soundness of the evidence read. In Study 1, participants received methodologically strong and consistent evidence leaving them hardly any other option than to devalue the potency of science to maintain their prior beliefs. In contrast, evidence in Study 2 was more diverse in nature and might have offered them more opportunities to contest the evidence directly. Thus, there was no need to engage in even stronger defensive responses such as questioning the potency and pertinence of science. Surprisingly, participants in both studies still changed their prior beliefs in favor of the evidence read. Our findings call for more research to clarify the conditions and individual prerequisites that may facilitate devaluation or acceptance of educational research.

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Unpacking Pre-service Teachers' Beliefs and Reasoning: A Scenario-based Approach

Author information removed for blind review

Abstract

The beliefs teachers hold may provide information about their more or less evidence-informed reasoning about educational issues. However, gaining a clear picture of teachers' beliefs has proven difficult. A promising line of inquiry uses scenario-based approaches to assess teachers' enacted beliefs. Accordingly, we assessed 75 Norwegian pre-service teachers' beliefs about student ability, sources of teaching knowledge, and teacher efficacy by analyzing their written responses to authentic classroom scenarios, with these responses also providing information about participants' reasoning about the scenarios. While participants' responses seemed to be evidence-informed in many ways, there were also indications of the opposite, such as limited consideration of educational research in pedagogical decision-making. For example, most participants opted to rely on informal knowledge sources such as experienced colleagues, and hardly referred to educational research at all, neither as sources of teaching knowledge nor when justifying their choice of sources. The results contribute uniquely to an understanding of pre-service teachers' beliefs and reasoning about educational issues by showing the nuances of teacher beliefs about student performance, sources of teaching knowledge, and teacher-efficacy, and they provide further insight into pre-service teachers' limited consideration of research as evidence in pedagogical decision-making. As such, they may help researchers and teacher educators to better understand the beliefs preservice teachers hold, as well as to facilitate further development of these beliefs. Implications for future research and teacher education are discussed, such as a need for more qualitative investigations and the role of teacher educators in addressing pre-service teachers' beliefs.

Extended abstract

Aims

On which information teachers base their decisions and actions are important questions for teacher education, and society at large. Teacher education programs are theoretically- rather than craft-oriented and grounded in the complexities of modern teaching. At the same time, pre-

service teachers in the information society have more access to scientific knowledge than their predecessors. Still, empirical studies have clearly documented pre- as well as in-service teachers' preference for informal, experience-based over research- or evidence-informed sources of teaching knowledge (Ferguson et al., 2022).

Reproduction of teaching practices primarily grounded in own experiences may be undesirable, detrimental even, for student learning and development, and inconsistent with current national and international policies that recommend evidence-informed practice (EC, 2013).

We wanted to explore this issue from a teacher beliefs perspective. We designed and tested a scenario-based problem-solving approach in addressing how pre-service teachers enacted their beliefs about student ability, sources of teaching knowledge, and teacher efficacy, also looking for signs of evidence-informed reasoning in their responses. Our research questions were:

1. What beliefs do pre-service teachers hold about student ability, sources of teaching knowledge, and teacher-efficacy, as revealed by a scenario-based approach?
2. What do participants' responses to the scenarios reveal about their reliance on evidence from educational research to inform their decisions and actions?

Methodology

Participants (n = 75) second-year pre-service teachers in Norway (49 female, M_{age} = 21.10). They responded to three scenario-based problem-solving tasks in writing. Scenario one described a sixth-grade classroom context in which students' performance on a natural science test varied greatly. The participants were to discuss possible reasons for observed differences among students, with this discussion presumably reflecting their beliefs about students' ability, and other factors that might influence performance. The second, two-part scenario was designed to capture participants' beliefs about sources of teaching knowledge and their reasoning about such sources. Based on the large variation in student performance noted in scenario one, participants were asked to a) describe sources of knowledge they would use to design a new teaching sequence and b) justify their decisions. Scenario three was designed to capture participants' beliefs about teacher-efficacy, and asked participants to imagine a future situation where they are a science teacher of a challenging class and discuss their possibilities to ensure a

satisfactory learning outcome for all students, based on their strengths and weaknesses as a teacher.

The thematic analysis of the scenario responses was grounded in the data and informed by prior theoretical and empirical work on teacher beliefs. Two coders applied a three-stage coding process in interacting with the data and relevant literature to explore emergent themes.

Findings

Participants enacted a range of beliefs, including student ability, sources of teaching knowledge, and teacher-efficacy. We further identified signs of different degrees of evidence-informed reasoning in their responses.

The first scenario focused on possible reasons for variation in student performance on a test. We identified five emergent themes that concerned reasons for differences in student performance, which we labeled teaching (n = 70), beliefs about individual differences (n = 53), beliefs about motivational differences (n = 42) and test context (n = 15).

The second scenario was designed to target participants' beliefs and reasoning about sources of teaching knowledge. An overweight of the ideas (n = 58) reflected a reliance on informal and craft-based knowledge sources, 32 ideas reflected a reliance on more formal, evidence-informed sources of teaching knowledge. Twenty-eight idea units indicated reliance on digital resources on the Internet.

In the second part of Scenario 2, participants were asked to provide reasons for their choices. The responses referred to four justifications: gaining new ideas and inspiration (n = 13), testimony, mainly referring to colleagues (n = 10), looking for specific answers and pre-prepared exercises (n = 9), and using research-based or professional knowledge as evidence (n = 2). There was also one category (other pedagogical justifications, n = 13) that referred to principles such as academic adaption and variation.

The third scenario was designed to capture participants' beliefs about their perceived efficacy. We identified four main themes of adapting instruction (n = 114), classroom management (n = 43), social interactions with students (n = 31), and co-operation with parents and colleagues (n = 2). With respect to participants' perceived strengths and weaknesses, we identified two emerging themes representing beliefs about strengths (viz., positive personal

characteristics and mastery of tasks) and two emerging themes representing beliefs about weaknesses (viz., personal- and task-related weaknesses).

Significance of the research

The results from this study uniquely contribute to the literature by showing the nuances of teacher beliefs and they provide further insight into pre-service teachers' limited consideration of research as evidence in pedagogical decision-making. Our study used a methodological approach that provides a more contextualized understanding of teachers' beliefs and presumably generates more valid responses than those typically generated by asking participants to rate their beliefs on a questionnaire. However, our study also highlighted that pre-service teachers, despite the scenario-based approach, may find it somewhat difficult to explain and justify the sources of teaching knowledge that they draw on. Our results may also raise issues concerning the nature of evidence in teacher knowledge and educational research, and the extent to which empirical, experimental data may have to be supplemented with more ecologically valid studies that probe teacher thinking.

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Evidence-based and -informed education: Objections and Future Directions

Abstract

Over the past two decades, educational policymakers in many countries have favored evidence-based and -informed educational programs and interventions. However, Evidence-Based and -Informed Education (EBIE) have met with growing resistance from educational researchers. This essay reviews the objections against EBIE and its preference for randomized controlled trials (RCT). We conclude that the objections call for adjustments, but do not justify abandoning EBIE. Three future directions could make education more evidence-based whilst taking the objections against EBIE into account: 1) study local factors, mechanisms and implementation fidelity in RCTs, 2) utilize and improve the available longitudinal performance data and 3) use integrated interventions and outcome measures.

Extended summary (600-1000 words) Nu 756

Introduction

Over the past two decades, a movement has grown around the idea that education should be evidence-based (Slavin, 2020). This means providing sounds evidence where it is lacking and using the best available evidence to advice educational practice (Davies, 1999). Some prefer calling this evidence-informed education, emphasizing the difficulty of transferring interventions across contexts. Whenever choosing between interventions, and wanting to know what contributes to the desired goal, large-scale randomized controlled trials (RCTs) usually are the preferred methods for establishing what works or does not work. While this movement has inspired educational policymakers in many countries, evidence-based education has also met with growing resistance from educational researchers. Critiques against it are numerous and highly influential. Strikingly, there is limited dialogue between proponents and opponents of evidence-based education: The arguments of opponents do not seem to reach the papers of proponents, and vice versa. Here, we contribute to the literature on evidence-based education by analyzing the critiques against it and against its reliance on RCTs, and by proposing ways forward that take these arguments into account.

Three strains of critique

Three strains of critique on evidence-based education can be identified. We give examples of each. A first strain of criticism focuses on the status of RCTs and generalizations based on them. For example, RCTs are claimed to have low external validity because samples are often not representative (being selected for convenience), and treatment effects are too dependent on context, which means results do not generalize (Joyce & Cartwright, 2020; Morrison 2021). However, as Morrison admits, “pace Churchill, the RCT is the worst form of design except for all the others” (2021, p. 211). Contributions such as Joyce and Cartwright (2020) raise the standard for the educational sciences, and suggest RCTs should be improved and be complimented by other types of research. However, they do not disavow the vital role that RCTs fulfill.

A second strain questions whether evidence-based education is worth the costs. For example, they question the cost-effectiveness of educational RCTs, or suggest that evidence-based

ECER conference (August 2023, Glasgow, UK)

Symposium title: Can We Cross the Research-Practice Gap? New Perspectives to Teachers' and Schools' Engagement with Research

Chairs: Marie Gaussel, Institut français de l'Éducation/ENS de LYON, France

Discussant: Carol Campbell, University of Toronto, Canada

Proposal Information of Contribution 705

ID: 705 / 10 SES 14 B: 1
10. Teacher Education Research
Symposium
Part of larger Symposium: no
Alternative EERA Network: 01. Professional Learning and Development
Topics: NW 10 Special Call: The Diversity of 'Evidence-Relations' in Teacher Education, Politics and Research
Keywords: Research-Practice Relationship, Evidence-Based Policy, Research-Informed Educational Practice, Engagement with Research, Teacher Education

Can We Cross the Research-Practice Gap? New Perspectives to Teachers' and Schools' Engagement with Research

Chair: **Marie Gaussel** (Institut français de l'Éducation/ENS de LYON)
Discussant: **Carol Campbell** (University of Toronto)

Abstract: This symposium offers a global, "state-of-the-art", picture of research informed educational practice (RIEP, e.g., Brown, Schildkamp & Hubers, 2017; Groß Ophoff, Brown & Helm, 2023), derived from the current evidence-based policy, drawing from numerous studies from across Europe addressing if, how and to what effect teachers' engagement with academic research can be fostered. These studies are uniquely framed by the widely shared fundamental conception of evidence and data use in education as a complex, cognitive, knowledge-based problem-solving or inquiry cycle with consecutive phases that are not ensued in a linear, but rather iterative fashion (a.o. Groß Ophoff & Cramer, 2022; Schildkamp et al., 2013). In this research field, RIEP is explored on a variety of levels (e.g., data, user, context) and in different contexts of application in the educational sector (e.g., educational practice or teacher education) and draws on sociological, psychological and leadership approaches. In this connection, the differentiation between fields of research and practices allows us to understand that the diversity of publications (more scientific or more praxeological) constitutes more of a richness than a problem, on the condition that we distinguish the contexts, the purposes and the modalities of production and diffusion. Indeed, recently, several research currents have engaged in hybrid work, of a scientific nature (distanced, objectified, instrumented) but conducted in partnership with field actors (Albero, 2017). While recommendations on the use of research findings are available in abundance, it becomes more and more clear that fostering it is a truly challenging business, the very desirability of which deserves to be questioned. In response, this session provides clear implications with practical propositions and ways forward, exploring the full gamut of RIEP, from initial teacher education, to in-service professional development; and examining political and contextual factors from the systems level to the motivations of the individual teacher. The objective of this session is not only to provide a European overview of research-informed teaching practice in education, but to address the ways research findings can be mobilized, and to question the many variations of "evidence relations" in teacher education: What are they? Where does the desire to strengthen RIEP come from, what is its history? Should it be encouraged and how, under what conditions? What are the relevant conclusions on how to make teachers' engagement with research a reality? How does RIEP differ from other approaches such as evidence-based practice in education?

Significance: Although numerous studies have posited ways forward for RIEP, it is clear that fostering it is truly complex and challenging business (Brown et al., 2022; Groß Ophoff & Cramer, 2022). In response, this symposium addresses this issue in a unique manner, providing insight by exploring a variety of levels and perspectives; drawing on systems theory, sociological, psychological and leadership perspectives. It provides clear implications with practical propositions and ways forward.

Structure: The presentations will be in the order below. The chair will introduce the overall theme of the symposium. This will be followed by presentations from the other participants. The symposium will conclude with comments from the discussant and then questions from the audience.

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Presentations of the Symposium

Papers in Symposium: 3
National Perspectives: 3

Delivering a 21st-century Research-Informed Teaching Profession: Survey Findings from Educators in England

Chris David Brown (University of Warwick)
National perspective: United Kingdom

This paper considers the engagement by teachers and school leaders in England in research informed educational practice (RIEP). Research in the area of RIEP has been criticised for being "under theorised" (e.g. Nutley et al., 2007); leading to researchers failing to consider the full range of factors influencing the research-practice gap. In response, we adopt Baudrillard's (1968) semiotic theory of consumption, which is concerned both with consumer behaviour and the "objects" which are consumed. Specifically, how objects are "experienced" and what needs they serve in addition to those which are purely functional. The research questions addressed in this paper are: • RQ1: What potential benefit, cost and signification factors can be identified that might account for the current research-practice gap? • RQ2: Which individual and combinations of benefits, cost and signification factors appear to be most closely associated with educators' use of research evidence? • RQ3: What implications emerge for policy and practice in terms of how to increase educators' use of research evidence? Methods: A survey study was conducted to address these questions. To develop the survey recent literature (broadly 2010 and later) was reviewed that generally encapsulated the area of RIEP. The survey was undertaken by teachers in England. The aim of our sampling strategy was to achieve a representative sample of teaching staff, both in terms of their own individual characteristics, as well as the characteristics of the schools they work in. The survey was administered by email and a one percent response rate was achieved (approximately 250 schools). Findings: Regression analyses were used to ascertain whether the research-practice gap is caused by educators failing to perceive the benefits of engaging in RIEP; from educators believing that the costs involved with research use are too high; or from RIEP-type activity not being sufficiently desirable for them to want to engage in it. As you might expect, a range of factors emerged across each of these three areas and policy implications include the need for training and mentoring as well as coaching for school leaders to help establish RIEP within and across schools. Scholarly significance: By developing and testing a survey grounded in a strong theoretical basis, we have, for the first time, kickstarted an exploration of factors promising for "bridging" the research practice gap. The result is a richer and more nuanced understanding of what is required to achieve RIEP than has been possible from previous work.

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Can the Intention to Use Research in Educational Practice be Fostered by Research Learning Opportunities during Teacher Initial Education?

Jana Groß Ophoff (PH Vorarlberg), **Christina Egger** (PH Salzburg), **Anne Frey** (PH Vorarlberg), **Johannes Dammerer** (PH Niederösterreich)
National perspective: Austria

In recent years, Austrian teacher education was faced with far-reaching reforms based on an expertise on the future of pedagogical professions (PädagogInnenbildung NEU) by the Austrian Ministries of Education and of Research in 2010. Therein, the recommendation was expressed that scientificity and research need to be established as constitutive elements of teacher education with the goal to support research-related attitudes and an inquiry habit of mind (Brown & Malin, 2017; Reitinger, 2013). Groß Ophoff and Cramer (2022) identify the latter "soft" aspect of research competence as the intention to use evidence, which marks the Rubicon between predecisional phase and volitional processes (Heckhausen, 1989) of RIEP. However, findings on influencing attitudinal factors and the effects of inquiry learning in teacher training (Groß Ophoff et al., 2018; Wessels et al., 2019) raise the question, to what extent this can be accomplished in teacher education: The two studies presented aimed therefore at exploring (1) how useful Austrian teacher students find research and for what, and (2) to what extent their intention to use research can be predicted by the perceived value, but also their research-related learning opportunities (RLO). Data is analysed via structural equation modelling (Muthén & Muthén, 2017). In Study 1 (Haberfellner, 2016), 295 students at two teacher training institutions were surveyed about their perception of the utility value of research evidence (e.g., for their bachelor thesis, or teaching in classrooms) and their inquiry habit of mind. Study 2 was carried out in 2021 at two institutions. 125 Teacher training students were surveyed about the same topics as in Study 1, but also about RLO (Rueß et al., 2016). Results from Study 1 indicate, that the perceived value of evidence for classroom teaching has a positive effect on the general intention to use research, even though research appears to be mainly perceived as useful for thesis writing. Student teachers' research-related mindset could be further differentiated in Study 2, according to which they particularly show a pronounced praxeological (research averse) stance. Vice versa, only students' research-oriented stance (orienting lesson development on scientific principles as a necessity) could be predicted by the perceived usefulness of research, but also by the extent of RLO during their studies. The results will be discussed against current developments in Austrian teacher education still faced with the challenge that the aspirations and ideas of academization come up against structures and traditions that are sometimes at odds with each other.

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Why Teachers Resist “Evidence”? Critique of the Epistemological Foundations of Evidence-based Policy in Education

Sonia Revaz (University of Geneva), **Hugues Draelants** (University of Louvain-la-Neuve)

National perspective: Belgium

Objectives: Starting from a reflection on the history of statistical reason (Desrosières, 2010), this contribution questions the relevance and the conditions of the usefulness of scientific evidence in educational policy-making. Through a critical perspective of the epistemological foundations of evidence-based logic, we propose analytical tools aimed at better understanding the resistance that educational reforms regularly encounter when they are implemented. Theory: Evidence-based policy in education is part of statistical reasoning and, more directly, an extension of evidence-based medicine (EBM). It aims to rationalise educational policies and practices through the use of research results, data considered as evidence, in decision-making. In this contribution, we propose to question the transposition of the epistemological principles of these two currents to the field of education. Insofar as the educational sciences are part of the humanities and social sciences, their scientific regime is different from that of the natural sciences. The SHS are historical sciences, which are characterised by the absence of “repetition of phenomena taking place in a constant or indifferent context” and which therefore rely on evidence that is “always dependent on a singular context of observation, measurement and argumentation” (Passeron, 2001). Due to their positivist epistemology, evidence-based approaches ignore this or do not take it into account. Methods and findings: To analyse the impact of the epistemological foundations of evidence-based policies on their implementation in the schools, we draw on previous research (Draelants, 2009) carried out on the reform of the abolition of grade retention in Belgium in the 1990s. The analysis of the design processes of the reform and of semi-structured interviews with teachers allows us to identify the knowledge and evidence that are left “out” - the willful ignorance (Weisberg, 2014) - and that contribute to the resistance that puts the reform to failure and, more broadly, to the distrust of public action and the expertise on which it is based. Significance: Evidence-based policies are gaining ground in many sectors of society, including education. The originality of our proposal lies in the perspective of the design processes of educational policies based on so-called "evidence" with the epistemological foundations of the evidence-based logic to better understand the resistance often observed in the practices of professionals. Our contribution aims to provide tools for analysing educational policies and to advocate for a broader definition of the evidence to be taken into consideration in public action in education (research and practice informed policy).

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ECER conference (August 2023, Glasgow, UK)

Symposium title: Reflection and Reflexivity in the Context of Inquiry-Based Learning: Chances to Initiate Professionalization in Teacher Education?

Chairs: Jan-Hendrik Hinzke, Martin-Luther-University Halle-Wittenberg, Germany

Discussant: Antonia Scholkmann, Aalborg University, Denmark

Proposal Information of Contribution 2538

ID: 2538 / 10 SES 06 A: 1
10. Teacher Education Research
Symposium
Alternative EERA Network: 01. Professional Learning and Development
Topics: NW 10: Research on programmes and pedagogical approaches in teacher education
Keywords: Teacher Education, Reflection and Reflexivity, Inquiry-Based Learning, Professionalization

Reflection and Reflexivity in the Context of Inquiry-Based Learning: Chances to Initiate Professionalization in Teacher Education?

Chair: **Jan-Hendrik Hinzke** (Martin-Luther-University Halle-Wittenberg)
Discussant: **Antonia Scholkmann** (Aalborg University)

Reflection and/or reflexivity are discussed as means to foster processes of professionalization of student teachers in teacher education at university level in various European countries, e.g. for Scotland (Huang, Klein & Beck, 2020), Austria and Germany (Groß Ophoff & Cramer, 2022; Kunze & Reintjes, 2022). The definitions thereby vary because of diverse theories used to describe reflection and/or reflexivity. Some authors also use these terms as synonyms (e.g. Hauser & Wyss, 2021), others not (e.g. Bohnsack, 2017). To support the development of student teachers´ ability to reflect the didactic approach of Inquiry-based learning (Pedaste et al., 2015) has recently enjoyed much popularity in teacher education (e.g. Spernes & Afdal, 2021). It is presumed, that such ability can be gained by passing through a whole research process (Healey, 2005), from developing a research question, identifying and planning an appropriate research approach, collecting data in the context of school, analysing this data by using methodical steps to find answers to the research question, presenting the results in a report and to the schools and/or other stake holders involved. Rethinking such experiences might be the starting point for reflections: on teaching and learning, on school, but also on one's own learning process and the role of a prospective teacher. Doing so, this might support the process of professionalization, e.g. for developing a reflective, research-based attitude or habitus.

The sparse available evidence on inquiry-based learning in teacher education (Ophuysen et al., 2017) is somewhat sobering and it remains open as to how reflection and/or reflexivity can be fostered by inquiry-based learning in teacher education. Against this backdrop, this symposium considers two questions: (1) whether and under which conditions the described expectations about reflection and/or reflexivity in the context of inquiry-based learning in teacher education can be fulfilled. Furthermore, a methodological question occurs: (2) Which methodological approaches are suitable to investigate reflection and/or reflexivity in the context of inquiry-based learning?

The symposium addresses both questions by bringing together three current research projects in which forms of reflection and reflexivity are analysed by using different methodical approaches. Each paper presents in a first step an overview on the discourse on reflection by inquiry-based learning in teacher education in the respective country having in mind the diversity of teacher education programs across Europe and explaining the underlying understanding of reflection and/or reflexivity. In a second step the relation between using certain research methods and gaining empirical results will be focused. Finally, the papers give an outlook for consequences for further research and teacher education.

By comparing the three papers, commonalities and differences will become evident that might become the starting point of an international discussion on the potentials and limitations of inquiry-based learning to foster reflection and/or reflexivity in teacher education.

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Presentations of the Symposium

Papers in Symposium: 3
National Perspectives: 3

Developing Reflexivity in Scottish ITE through Enquiry: A tale of Divergent Conception

Anna Beck (University of Glasgow), **Kate Wall** (University of Strathclyde, Glasgow), **Susann Hofbauer** (Helmut-Schmidt-University Hamburg), **Nova Scott** (University of Strathclyde, Glasgow)
National perspective: Scotland

The concept of the reflective practitioner is well established, but to move beyond reflection to strategic action can be seen as risky. Engaging in and with research (Cordingley, 2015) through cycles of practitioner enquiry is seen as one way to facilitate this active stance (Hall & Wall, 2019), with the assumption being that the process of asking questions will align with grassroots professional learning (Mintrop et al., 2018). For these reasons practitioner enquiry has become a central feature of initial teacher education (ITE) across Scottish universities (Forde, 2015). While reflective practice and enquiry-based learning have been consistent features of ITE for some time in Scotland (Menter et al., 2010), there is now more of an explicit focus on enquiry as essential to teacher preparation (Donaldson, 2011) following growing awareness of the connection between research-engagement and professionalism. Its role in the 'professionalisation' of teachers is further reinforced by the General Teaching Council for Scotland's (GTCS) Professional Standards (GTCS, 2021), which state that teachers must demonstrate knowledge and understanding of enquiry to meet the standard for provisional registration. While this positioning might suggest unified acceptance of its importance, there is divergence in its conceptualisation (Forde, 2015). Although this might not immediately present as problematic, there is the possibility that it could lead to tensions within practice. These conceptualisations fit broadly into two themes: 'project' and 'stance' (Wall, 2018). A potential key difference is the role of reflexivity, with it playing a more significant role in the latter. We argue that reflexivity, within a practitioner enquiry frame, is the cumulative, reflective and strategic narrative that connects and overlays cycles of enquiry. This ensures enquiry is embedded across professional learning trajectories with a metacognitive narrative thread that makes the learning explicit (Porthillo & Medhina, 2016). This paper is embedded in a larger project on the knowledge politics of the 'Teacher-as-Researcher' in Scotland and explores the extent to which different models of practitioner enquiry might facilitate a reflexive stance. We draw on data collected from three Scottish universities over two phases: 1) document analysis of handbooks from ITE programmes; and 2) semi-structured interviews with teacher educators in those universities. Using reflexive thematic analysis (Braun & Clarke, 2020) for dataset analysis, we explore the extent to which 'reflexivity' is framed as an integral part of enquiry in ITE courses and compare conceptualisations across ITE models.

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Lessons Learned: Are Inquiry Learning Opportunities Actually Beneficial for Student Teachers' Research Literacy?

Jana Groß Ophoff (PH Vorarlberg), **Anna Lippert** (Weltkirchliche FriedensDienste)
National perspective: Austria

Reflection ability requires knowing and using adequate terminology, interpreting, and appraising available information, and drawing valid conclusions (Paseka et al., 2021). Due to its conceptual proximity to the understanding of research as knowledge-based problem-solving, and the traditional link between research and teaching in university-based education, inquiry-learning opportunities (ILO; Rueß et al., 2016) are regarded as promising to support student teachers' reflexivity (Fichten, 2010). This is considered key to teacher professionalization (KMK, 2019), but the assessment of reflection ability, and related to that, the investigation of the proposed benefit of ILO remains a challenge (Wessels et al., 2019). In this presentation, an approach will be presented, in which reflection is operationalized as generic aspect of Educational Research Literacy (ERL), that is the ability to access, comprehend, and reflect research information as well as apply the resulting conclusions to educational decisions (Groß Ophoff et al., 2017). While some evidence for the construct-related validity of this test instrument has been reported already, this contribution aims at investigating criterial validity, that is, whether the number of the seized ILO is of incremental validity for the prediction of teacher training students' ERL and with it, their reflection ability. Findings from three studies will be reported. In Study 1, 104 German students in the field of education (mainly teacher training) participated during summer semester 2014. However, results indicated an inadequate operational validity of assessing specific ILO. In reference to the ILO taxonomy by Rueß et al. (2016), a compilation of 12 ILO was contrived and used as operationalization in Study 2 and Study 3. Study 2 was conducted online in 2018 (N = 126 education or social sciences students from various German higher education institutions). The new measure proved to incrementally contribute to the variance explanation of ERL: The more ILO were reportedly seized, the more research-proficient, and thereby reflexive study participants turned out to be ($\beta = .08$; $p < .05$). In Study 3 (2018-2021), 298 teacher training students at ten German universities were investigated (paper-surveys). Preliminary results corroborate with the findings from Study 2 ($\beta = .25$; $p < .05$). Even though the results give cause for optimism, cross-institutional intervention studies are needed to clarify whether these effects are not rather an expression of personal traits. In this line of reasoning, as early as 1999 Weinert fundamentally questioned, whether such higher-order thinking skills can be learned at all.

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Reflection Between Theoretical Thinking and Practical Acting. How Teacher Students Reflect on ‘Research’ at the Beginning of Inquiry-Based Learning Courses

Jan-Hendrik Hinzke (Martin-Luther-University Halle-Wittenberg), **Alexandra Damm** (ustus Liebig University of Gießen), **Vanessa-Patricia Boldt** (University of Hamburg), **Angelika Paseka** (University of Hamburg)

National perspective: Germany

In the discourse on teacher education, there is a tendency to emphasize the ability to reflect with the aim to promote professionalization processes of preservice teachers. However, the understanding of what ‘reflection’ might be, differs. Going back to Schön (1983), two options exist: reflection-on-action as process when professionals look back in a distance mode at a situation and their actions (e.g. Häcker 2017 for Germany) and reflection-in-action as rethinking a concrete situation when decisions have to be made to go on in a process. In the last years, Bohnsack (2020) has developed the concept of practical or implicit reflection based on the sociology of knowledge of Karl Mannheim and the system theory of Niklas Luhmann. Such a practical reflection has to be distinguished from an explicit reflection which is embedded in theoretical knowledge that is used for argumentation but does not guide the habitual practices of social actors. However, both modes of reflection are able to broad perspectives by using comparative horizons whereas reflexivity is defined as using existing horizons. Against this background, the paper follows the question which forms of reflexivity and reflection can be found in discussions of preservice teachers and whether these forms can be the starting point for professionalization processes. Findings from a research project on inquiry-based learning courses in teacher education carried out at two German universities (see Hinzke et al. 2023; Paseka et al. 2023) will be presented. In such courses, the preservice teachers go through an entire research process in the context of teaching and schooling (Pedaste et al., 2015). In our research project ‘ReLieF’, funded by the German Research Association, 15 group discussions at the beginning (t1) and at the end (t2) of the Masters’ two-semester courses were carried out. The group discussions were analysed by using the documentary method, a qualitative-reconstructive method for data analysis (e.g. Bohnsack et al., 2010). In this presentation, we enquire for forms of reflexivity as well as implicit and explicit reflection. First results show that the preservice teachers at t1 mostly use quite established knowledge when talking about ‘research’ and their research experiences so far. This can be analysed as expression of reflexivity in the sense of reproduction. Nevertheless, in some groups, forms of theoretical as well as of practical reflection could be found. These results will be discussed in light of professionalization processes as well as of consequences for teacher education via inquiry-based learning courses.

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AERA conference, international session for Division H (April 2024, Philadelphia, USA)

Symposium title: Educational Leaders Maximising the Social Capital Benefits of Networks: Thoughts from an International Symposium

Chairs: Chris Brown, Southampton University, UK

Discussant: Stefan Brauckmann-Sajkievicz, Klagenfurt University, Austria

Session Summary

Educational Leaders Maximising the Social Capital Benefits of Networks: Thoughts from an International Symposium

Fri, April 12, 11:25am to 12:55pm, Pennsylvania Convention Center, Floor: Level 100, Room 115C

Session Type: Symposium

Abstract

High quality teaching requires educators to engage in acts of continuous, collegial learning and to use this learning to improve their practice; with students benefitting as a result (Wagner, 2014). If such learning is to be truly effective, however, educators should be able to utilize and augment the social capital that exists within networks and communities (e.g. the new ideas or innovations such networks provide access to). A challenge for school leaders, therefore, is understanding how best to realise the potential of the the social capital resource present in education networks so as to improve the teaching quality in their schools. Our practice question for this symposium, therefore, is how can school leaders be supported to do this?

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Division H - Research, Evaluation and Assessment in Schools

Chair

Chris Brown, University of Southampton

Papers

Educational Leaders, Social Capital and the Benefits of Inter-School Networks - *Chris Brown*, University of Southampton; *Ruth Luzmore*, University of Southampton

Knowledge Mobilization in Open Innovation Networks: What's in It for Schools? - *Marcus Pietsch*, Leuphana University - Lueneburg; *Chris Brown*, University of Southampton; *Burak Aydin*, Ege University; *Colin Cramer*, Eberhard Karls Universität Tübingen

Social and Personal Resources and Their Relation to Psychological Well-Being of School Leaders: Do Leadership Networks Make a Difference? - *Jana Groß Ophoff*, University College of Teacher Education Vorarlberg; *Marcus Pietsch*, Leuphana University - Lueneburg; *David Kemethofer*, University of Teacher Education Upper Austria; *Jonas Pfurtscheller*, University College of Teacher Education Vorarlberg

A Social Network Perspective on Knowledge Brokerage in Education: An International Comparison - *Stephen W.*

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Discussant

Stefan Brauckmann, Alpen-Adria-University Klagenfurt

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C Meeting protocol

WERA IRN Research-Informed Education Network meeting at ECER 2023, Glasgow August 21-22, 2023 (in-person)

Mike Coldwell, Evelyn Goffin, Jana Groß Ophoff, Livia Jesacher-Rößler, Gavin Murphy, Enikö Zala-Mezö

Brainstorm: future directions for the IRN

Context

- WERA provides no funding for IRN's but does facilitate meetings and symposia at international events
- WERA IRN's are acknowledged for three years; we need to decide now whether or not to ask for an extension for our IRN
- Current IRN co-conveners are Jana Groß Ophoff and Chris Brown
- There is a lot of interest for the IRN and its meetings but active engagement in the network tends to be low; for virtual meetings the time zone differences are of course an issue

Discussion

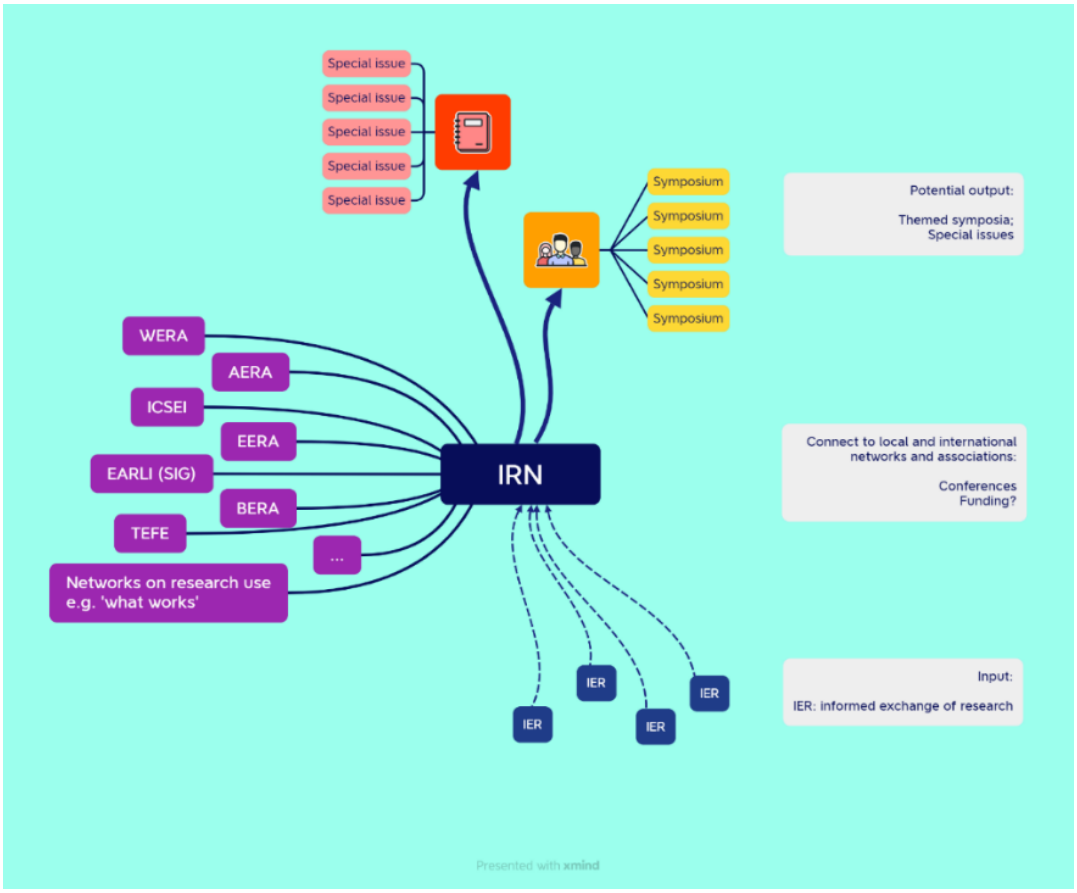
- Alternative to continuing the IRN:
    - linking to / joining another SIG such as the ICSEI Data Use Network (which is currently considering a name change – e.g. *Evidence-Informed Practices, Research-Informed Practice in Education* – and [thus] a branch-out)
- To continue or not to continue?
    - Present participants are strongly in favor of continuing the IRN as a platform for informal exchanges; IRN provides a space to:
        - Discuss our own research
        - Discuss work of emerging researchers such as PhD students
        - Reflect on strategic perspectives for research on Evidence Informed Practices in education: broad Area of EIP, how do we get research into practice, continuous professional development, …
        - Collaborate in terms of jointly participating in formal meetings such as conferences
        - Collaborate in terms of jointly proposing/preparing special issues
        - …
    - Ideally, we strive to follow up on themed meetings by disseminating joint research on the topic at hand by actively proposing symposia and special issues
- Convenors:
    - Jana and Chris are willing to be part of the IRN convenor team, but would appreciate support in tending this network.

    - Evelyn (who recently defended her PhD) is willing to take up an active (supporting) role.
    - Ideally, they are joined by someone outside of Europe as well. Elizabeth Farley-Ripple has expressed a strong interest in the IRN in the past; perhaps she would be willing to take on a co-convener role?
- Practical organisation:
    - We should look for a virtual platform that allows us to meet virtually and potentially also exchange/collaborate on documents. Microsoft Teams emerges as the an option – are there better options (e.g., not located at a specific institution)?
    - To lift the organizational effort, it is proposed to:
        - set topics for the upcoming meetings so the schedule is clear for the next 1.5 years
        - invite/assign one main presenter for each meeting who then determines the further agenda, invites other presenters, convenes the meeting, and is in charge of the follow up
- Funding
    - Is an issue.
    - Look into grants from the Spencer Foundation?
    - More funding suggestions welcome!

Conclusion

- We will apply for an extension of this WERA IRN. This will entail writing a report/proposal.
- **We change the name of the IRN** to Evidence Informed Practice(s) in Education
- **Convener(s)**: Jana and Chris will be joined by amazing Evelyn. They will reach out to Liz Farley-Ripple.
- **Re-organisation**: IRN members will be informed of the proposed meeting topics. Convenors will reach out to main presenters, who will be asked to take responsibility for the organisation of the meeting at hand.

Concept map



Brainstorm: key topics for the upcoming meetings

Our goal was to identify important, cutting-edge, "hot" topics, describe these topics, and think of IRN-members or *prospective IRN-members* who could contribute.

- This is work in progress, meant to be further elaborated on in exchange with the wider IRN.
- Input is welcomed.

Tension between truth and trust

Highly topical

Link with areas the Spencer Foundation is interested in (suggestion by Gavin Murphy)

Who?

- Liam Guylfoile
- Samuel Merk
- Chris Brown
- …

EIP: Using it vs. Doing it? Engaging WITH research or engaging IN research?

Engagement is a slippery word, so we want to develop a shared understanding.

WITH: How is evidence used, accessed, enacted etc. in initial teacher training and/or educational practice.

IN: Action research?

Who?

- Herbert Altrichter
- Chris Brown
- Jan-Hendrik Hinzke
- Kim Schildkamp
- William Penuel
- …

Beyond Brokerage

There is a lot of work on knowledge brokering, brokers, brokerage. The concept of brokerage implies some kind of linear relationship between evidence and practice. This might not be appropriate for the complexity of the system. We need to move on to more complex ways of thinking about knowledge mobilization.

But who can be a evidence-broker and how should this be done?

How can researchers become brokers in a way?

Who brings the ideas into the system (researchers) and what are the agendas connected with that?

How to facilitate productive spaces within organizations?

Who?

- Cynthia Coburn
- Carrie Conaway
- Amanda Cooper
- Liz Farley-Ripple
- Thomas Hatch
- Joel Malin
- Lucy Rycroft- Smith
- …

What are the underlying processes of EIP?

Theory – part I

Is there theory on EIP?

What are the models of EIP?

What influenced these models?

Who?

- Evi Agostini (vignettes)
- Mike Coldwell (RCT)
- Stephen Gorard
- Mei Kuin Lai
- Alexander Renkl
- Mike Sharples
- *Howard White (*hwhite@gdn.int*)*
- …

What is our understanding of Evidence as a central concept in EIP?

Theory – part II

What is data? What constitutes evidence?

Data – information – knowledge || Evidence?

Educational knowledge – Evidence production

Learning/Knowledge-Co-Construction/ Sensemaking

Cognitive perspective, learning theories

Who?

- Melanie Bertrand
- Amanda Datnow
- Evelyn Goffin
- Gina Ikemoto
- Julie Marsh
- *James Spillane* (Cognitive perspective, learning theories)
- Enikö Zala-Mezö
- …

EIP – a success story?

What are successful EIP examples?

What do we consider “successful” in EIP? Popular? Or effective? (perhaps and open discussion to reflect on “What is success”)

Who?

- Jo Beth Jimerson
- Gemma Moss
- Mark Rickinson
- Dominic Wyse

- Someone from TUM
- …

EIP – as part of professional identity of educational staff?

Research Designs for EIP

Brainstorm: outreach

This list below is an overview of people who are aware of the IRN in the sense that they are already in the mailinglist.

We will reach out to the people who were suggested in the topic-brainstorm in order to ask them to join.

- More suggestions welcome!
- Consider forwarding invitations for meetings and events to your PhD students as well.

Last Name	First Name	Affiliation
Altrichter	Herbert	Johannes Kepler University
Aluko	Ruth	University of Pretoria
Amatullah	Tasneem	Emirates College for Advances Education Abu Dhabi
Benhayoun	Jamal	Université Abdelmalek Essaâdi
Brown	Martin	Dublin City University
Brown	Gavin	University of Auckland/ Waipapa Taumata Rau
Brown	Chris	University of Warwick
Burn	Katharine	University of Oxford
Campbell	Carol	University of Toronto
Coldwell	Michael	Sheffield Hallam University
Cramer	Colin	Eberhard Karls Universität Tübingen
Dekker	Izaak	
Farley-Ripple	Liz	University of Delaware
Goffin	Evelyn	University of Antwerp
Greisel	Martin	Uni Augsburg
Groß Ophoff	Jana	University College of Teacher Education Vorarlberg
Guilfoyle	Liam	University of Oxford
Handscomb	Graham	University College London
Hinzke	Jan-Hendrik	Justus-Liebig-Universität Gießen
Ion	Georgeta	Universitat Autònoma de Barcelona
Jesacher-Rößler	Livia	FAU Erlangen
Kallenbach	Lea	Erfurt University
Kemethofer	David	University College of Teacher Education Upper Austria
King	Laura	University of Oxford
Lai	Mei	University of Auckland
Lehtomäki	Elina	University of Oulu
Lin	Jingjing	Toyohashi University of Technology
Maier	Uwe	University of Education Schwäbisch Gmünd
Malin	Joel	Miami University

Marquez	Mayra	University of Nevada, Las Vegas
Merk	Samuel	University of Education Karlsruhe
Mok	Ka Ho	Lingnan University
Morris	Rebecca	University of Warwick
Muñoz	Carla	Universidad Catolica Maule
Murphy	Gavin	Trinity College Dublin, the University of Dublin
O'Leary	Michael	Dublin City University
Perry	Tom	University of Warwick
Pham	Robert	University College of Teacher Education Upper Austria
Pushpanadham	Karanam	Maharaja Sayajirao University of Baroda
Qvortrop	Lars	Aarhus University
Rickinson	Mark	Monash University
Schildkamp	Kim	University of Twente
Schnellert	Leyton	University of British Columbia
Soguksu	Fulya	Ankara University
Suárez Rivarola	Cecilia Inés	Universitat Autònoma de Barcelona
Thorborg	Mathias Merrild	Aarhus University
vanlommel	Kristin	University of Applied Sciences Utrecht
Wiesner	Christian	Pädagogische Hochschule Niederösterreich
Yürekli	Hülya	Center for Research and Practice in Statistics at Yildiz Technical University
Zala-Mezö	Enikö	University of Education Zürich
Zumpe	Liz	University of California, Berkeley

D Special Issue “Professional Development Today”, issue 23.3
(edited by Graham Handscomb)

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The front cover of Professional Development Today - Issue 23.3!

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Imaginative Minds Ltd
(TeachingTimes Group)
U320 Zellig Building
The Custard Factory
Gibb Street
BIRMINGHAM
B9 4AU

Phone: +44 (0)121 224 7599
Email: enquiries@teachingtimes.com

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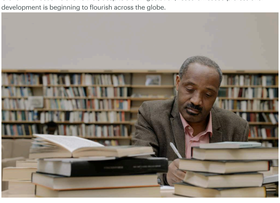
Author
Graham Handscomb
26th Feb 2024

Blogs

Research-Based Professional Development – Global Perspectives

Graham Handscomb shows that, despite a slow gestation, research-based professional development is beginning to flourish across the globe.



'We know a lot about teachers and research. We know that they should mix and there can be significant benefits if they do so, but we also know that teachers and research often fail to socialise.' – Chris Brown, Jane Flood and Graham Handscomb (2020)[1]

Great expectations!

Much has been said about the merits of research as a fundamental element of teacher professional development – whether this be teachers using research in their thinking and practice, carrying out their own enquiries, or being part of the research of others.[2] Indeed the advent of evidenced-based professional development has been widely heralded (some might say hyped!) for many years. Way back at the beginning of the century, folk like Dyson were proclaiming:

> All teachers should have an entitlement to research thinking in order to develop their role as critical users of research. All schools and colleagues should have an entitlement and perhaps a responsibility, to participate in a relevant research partnership for appropriate periods.[3]

But, despite these great expectations, the prevalence of such practice within education and in our schools has been woefully thin. At best, it has been a slow burn! However, there are now, at long last, real signs that the era of research-based professional development has arrived. Not only in the UK, but across the world, there has been a genuine groundswell of interest and an array of activity and development which has the potential to transform professional learning through evidenced-informed approaches.

One powerful example of this has been the formation of an International Research Network (IRN) focused on Research-Informed Education. This was initiated by Jana Groß Ophoff and Chris Brown, and sponsored by the World Education Research Association (WERA). The network has 33 leading educationalists from Asia, Australasia, Europe, the Middle East, North America, South America, and Scandinavia – all working together and taking forward major developments in evidence-informed professional learning. A rich flavour of their thinking and practice is provided in Professional Development Today Issue 23.3, which has contributors from Austria, Canada, Germany, India, Japan, New Zealand, the USA and the UK.

Teacher ownership and confidence

Perhaps one of the main factors in the hitherto slow and over-cautious pace of development in this area is that evidenced-based professional development embodies the whole principle of autonomy and control, empowering teachers and giving them agency. Whereas, across the world, this has been singularly lacking in many education systems. So, for example, Joel Malin, in the USA, observes that:

> a lack of trust has been manifested for instance by policies aimed at managing them (e.g., via tightened accountability, teacher-proofing curricula, and teacher evaluation policy) rather than investing in, nurturing, and empowering them.[4]

Instead, he argues for a bottom-up, self-directed, evidence-informed approach to professional learning. Further advocacy from the USA of the potent effect of research to transform is given by Elizabeth Furley-Ripple and colleagues.[5] Drawing from four case studies, they show that when research is woven into the very fabric of school life and learning, there are considerable benefits in professional development, the quality of teaching and school improvement.

However, there are considerable challenges to be tackled in creating the conditions to achieve this. David Kemethofer, investigating the Austrian experience, highlights the crucial part that school leaders play in the development of data-based decision-making. He finds that there is much to be done to foster confidence and competence if they are to effectively fulfil this role.[6]

Similarly, Robert Pham Xuan, also working in Austria, emphasises the pivotal factor of teachers' beliefs and attitudes and the need for schools to be 'designed not only as a scientific and reflective institution' but also as a meeting place for 'multi-professional teams'.[7]

Teachers' beliefs and attitudes are also at the core of the research Gavin Brown has carried out in New Zealand.[8] He found that there were some key implications for enquiry-based professional development related to the conceptions teachers had about assessment and its practice. Key messages emerging for school leaders included the importance of assessments being clearly designed to tell teachers what they need to know about student progress and needs, and to allow teachers to discover 'bad news' without shame or blame so that they welcomed the discovery of failure to guide improved teaching.

Culture, context and competence

All of this points to the fundamental importance of culture and context. There is a need for teacher ownership to enable drawing on research in thoughtful and context-sensitive ways.[9] Reflecting on the experience in India, Karanam Pushpanadham is adamant that understanding the contextual factors and implementation challenges that influence the effectiveness of professional development are crucial.[10]

So, appreciating the range, scope, depth, and indeed, complexity of different forms of professional development, and how research-informed thinking and practice play out with this, is crucial. Thus, Tom Perry and Becky Morris, from the UK, argue for the necessity of a practical framework for understanding this complexity and which will enable teachers and school leaders to design, navigate and sustain high-quality research-informed professional development.[11]

For Jana Groß Ophoff (Austria), Chris Brown and Jane Flood (UK), there is a fundamental challenge in teacher research competence that needs to be faced.[12] Their investigation in English schools, with implications for other world settings, strongly indicated that achieving a research-informed teaching profession requires radical reform in teacher training and development which prioritizes research competence. Such competence includes not only data and assessment literacy but also becoming adept at identifying clear problems and posing robust questions.

Resources and opportunities

In addition to equipping teachers with research competencies, there is also the question of access to relevant resources and support. Kimberley MacNeil and colleagues, from Canada, explored how evidence-based resources can be positioned to enable knowledge construction in a way that supports educators to make connections between useful ideas and their practice contexts. They reported:

> Our studies have shown the importance of providing teachers with access to relevant resources paired with opportunities for them to act with agency in making decisions about when and how to draw from them.[13]

Elsewhere, Uwe Maier in Germany has explored how teachers can learn to adapt their pedagogy and individualised support to students through the use of a resource like teacher-facing dashboards. These are designed to summarize and display student learning processes and outcomes.[14] He found that teachers needed to develop adept approaches and skills to successfully use such tools, another facet of research competency.

Meanwhile, in Japan, Jingling Lin has explored the potential of online journal clubs for teacher professional development, and particularly for teachers researching into their own practice.[15] Intriguingly, she also examines the contribution that AI technology has to make to such practice.

Bold aspiration

Taken together these contributions reveal a wide range of thinking, research and development in evidenced-informed professional learning across the world. We have known for some time that enquiry and research are key contributory factors to effective professional development.[16] A few years ago I attempted to articulate a vision about what this means for schools going forward:

> The third-millennium school is required to be self-evaluating, open to scrutiny, evidenced-based, data data-rich.[17]

On reflection, this strikes me now as a truly challenging aspiration. What is clear from this powerful set of WERA contributions from across the world is that the flourishing of evidenced-based professional development will depend on two inter-related factors: embedding practice within the very culture of the school and tenaciously renewing/recreating it over time. As Joel Malin observes:

> a research-informed culture is a long-term goal—a culture in which practitioner and research knowledge can be cyclically and dynamically co-created.[18]

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Gibb Street
BIRMINGHAM
B9 4AU

Phone: +44 (0)121 224 7599
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U320 Zellig Building
The Custard Factory
Gibb Street
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B9 4AU

Phone: +44 (0)121 224 7599
Email: enquiries@teachingtimes.com

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Author
Joel Malin
28th Feb 2024

Professional Development

Teachers In Control Of Their Own Professional Learning

Joel Malin explores a bottom-up, self-directed, evidence-informed approach to professional learning.

When contemplating whether I had something to contribute to this exciting special issue, I spent most of my time thinking about the nature and potential of professional development. It soon became clear that I have a range of key reflections to share based both on my ongoing scholarship and on my engagement in learning networks such as the WERA-WIN. Overall, I offer up five broad recommendations which frame my vision of a bottom-up, self-directed, evidence-informed approach to professional learning.

1. Let's shed/replace the term '*Professional Development*'

I align with scholars and educators[1] who propose reconceptualising 'professional development', shifting to focus on individual and collective 'professional learning'. This may seem like a small move, but I see it as carrying large benefits. First, this reframe can help to free us from limiting notions of teachers being developed by outside entities or experts. A shift toward emphasising professional learning implies, instead, that as practicing education professionals we all bring considerable knowledge to the table already, and our main focus should be on how we can build on and develop and build on this knowledge in the pursuit of continued (individual and collective) growth.[2]

Such a way of thinking also appropriately demonstrates trust in educators as competent and creative professionals, protecting their agency to pose questions, identify strengths and issues and work to address their own (and their colleagues') prioritised needs.

I write this as someone who lives and works in an environment that has been insufficiently trusting of teachers and other educators, to put it mildly. This lack of trust has been manifested for instance by policies aimed at managing them (e.g. via tightened accountability, teacher-proofing curricula and teacher evaluation policy) rather than investing in, nurturing and empowering them. Such approaches might fit within a 'low teacher agency'[3] approach to educational change.

My vision sharply contrasts: I desire a bottom-up and 'high teacher agency'[4] approach to making educational change, one that would freely acknowledge that schools and school systems can and must seek to improve, but that would draw on and integrate educators', scholars', and partners' diverse perspectives and knowledge regarding how to identify and actualise such changes.

2. Let's continuously assess what we know and need to know, and go from there

Knowledge assumes multiple forms. We can think of scientific or factual knowledge ('episteme', using Aristotle's nomenclature), technical knowledge ('techne'), and practical wisdom ('phronesis'). In this regard, moreover, educators, researchers, policymakers and other interested stakeholders all can and should be viewed as 'holders of valuable knowledge … that can be brought to bear on educational policy and practice.'[5] The primary focus for those desiring to facilitate and catalyse professional learning accordingly then should be on connecting people and knowledge on the basis of their wants and needs.

This implies a pivotal role for knowledge brokers who can help to co-create, utilise and mobilise knowledge between communities.[6] The main idea is that there is richness within and around any community – e.g. a school or a grade-level team – and solutions and improvements invariably can emerge under the proper conditions (i.e. those in which participants are empowered to discuss, explore, share successes and challenges, test out and combine ideas, etc.).

Perhaps the biggest key issue, though, is for educators to feel free to be open and vulnerable with colleagues who have knowledge and ideas, and leaders who may also be able to provide resources and structural support. It is critically important for educators to be able to share what is not going so well, to share one's struggles, knowledge gaps and insecurities, so that resources and ideas can be marshalled to rectify issues and make continued improvements.[7] This in turn is why trusting, open, learning- and improvement-oriented organisational cultures are pivotally important, as are the leaders who are able to shape them.

Given this way of understanding, the development of a professional learning plan could and should involve, first, bringing people together to share knowledge and to identify individual and collective strengths, needs, interests, and areas for growth. And there would be a recognition and appreciation of diverse perspectives, ideas and knowledge – and on how those could be discovered, surfaced and integrated.

3. Let's draw upon research, but in thoughtful and context-sensitive ways

This is based upon an understanding of research as 'evidence that is the result of systematic investigation, regardless of whether or not it emanates from a research setting.'[8] Certainly, there will be many instances when research is indispensable for professional learning, and it will accordingly be important that learning community members are continuously scanning for relevant findings and concepts that can support professional learning, thinking and decision-making.

This can be fuelled by the recognition that the world is now small and accessible, and that there are many useful ideas 'out there' for consideration, use and/or adjustment 'in here'. Indeed, beyond just drawing on the rich fund of research evidence originating in the external research community, teachers individually and collectively possess and can (co)-produce a deep range of knowledge to draw upon within their own schools and classrooms. And again, it is the integration of these that is particularly potent.

At the same time, it is important to recognise the limitations and contingencies associated with research evidence and accordingly to be able to take a meteoviderati approach[9] toward using research, examining its compatibility or incompatibility with their current focal areas, contexts and ways of knowing. Fully embracing this type of teacher agency approach to professional learning means aiming both "to ensure that teachers can make use of research but can also choose not to in the smartest way as possible."[10] The idea again is that powerful educational knowledge is invariably a blend of different knowledge forms, and that research engagement and use is dependent on greater dialogue, collaboration and knowledge integration.

What this implies, too, is that a research-informed culture is a long-term goal – a culture in which practitioner and research knowledge can be cyclically and dynamically co-created, and one in which teachers' and educational leaders' ethics-laden and judgment can be supported.[11] It will likely be that in some cases, on a school-wide basis, it is not yet within reach to establish such a culture. But even then I would advise educators to think about whether and how to work within or establish these as sub-cultures – e.g. within one's grade level, content area, team, etc.

4. Let's look for opportunities to learn beyond the organisation

As noted earlier, opportunities for learning beyond one's organisation are perhaps more abundant now than ever before. For one – and for better or worse – there is an ever-expanding array of educational intermediaries available to educators and policymakers.[12] There are also many possibilities to join existing professional learning networks, and/or to develop one's own. There are webinars, social media platforms, teacher-to-teacher learning sites, evidence aggregators and more. There are also non-educators who are interested in partnering with educators to, for instance, enrich student learning opportunities by offering internships and work-based learning experiences.

Though it may be difficult to appraise and navigate all of these opportunities, it would behoove the members of any learning organisation to be substantially outward-looking and outward-facing and committed to sharing their learnings with colleagues. Doing so, ultimately, promises to increase the likelihood that new and powerful ideas will be taken up, and that successful school efforts will be transferred into additional contexts.

5. Let's put it all together: It will work!

One big, recent source of validation and inspiration for me: My advisor[13], Dr. Amy Brennan[14], was creative, ambitious, and quite successful (along with her colleagues) at reconceptualising professional development as 'self-directed professional learning' within her large school district in Ohio, USA.

This was a redesign in which teachers were given control over what and how they wanted to learn. In this model, each teacher (with the support of their department chairs) developed an individual learning goal and identified/designed the learning resources and activities that would be necessary to meet it. Department chairs offered support and facilitated individual and small group check-in meetings. Administrators, in turn, 'provided protected time and resources, such as learning materials, funding to attend conferences and connections to other educators in the building and region who could offer insights and support.'

This model, according to the evidence she shared, had both direct and indirect impacts on teachers' instructional practices. She was also able to identify relational, structural and cultural affordances that served to support teacher learning. Overall, her study's findings convinced me of the importance of:

- **'designing professional learning models for all levels of the school system, recognising the role of teachers' internal characteristics and external school-based supports';**
- **'articulating a clear shared vision for student learning and then trusting in teachers' ability to pursue related learning goals'; and**
- **'involving teachers as active participants and leaders in designing and implementing the model'.**

Getting better at getting better

Altogether, what I am envisioning and hoping for is that more and more schools and school systems are set up to continually learn how 'to get better at getting better.'[14] Above all, for some, this may require reshaping professional identities as 'analogical scavengers'[15] or as 'omnivores'[16] who seek to learn from diverse sources within and beyond education about how to refine and improve their practices.

Specific methodologies and approaches, such as improvement science and research-practice partnerships, are available to frame continual improvement work; here, though, I wish more modestly just to emphasise the importance of educators (and teams) first adopting 'open, inward- and outward-looking disposition[s]/orientation[s]', which an essential first ingredient. In any case, such improvement work is complex, multifaceted and highly meaningful, ultimately requiring trust, collective vision and positive- and learning-focused cultures.

Joel R. Malin is associate professor and director of graduate studies in educational leadership at Miami University. His research interests include research-practice-policy connections, cross-sector collaboration and the politics of education. With Chris Brown, he has authored two recently edited volumes: '*The Role of Knowledge Brokers in Education*' (Routledge, 2020) and '*The Emerald Handbook of Evidence-Informed Practice in Education*' (Emerald, 2022).

[i] Dr. Brennan was enrolled in our Doctor of Education program and I was fortunate as dissertation co-chair to be able to provide advice and feedback (and to learn from her!) as she worked to complete her doctoral thesis.

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Author
Elizabeth N. Farley-Ripple
28th Feb 2022

Author
Hilary Mead
28th Feb 2022

Author
Katherine Tilley
28th Feb 2022

Professional Development

Using Research For Professional Learning: Lessons From Four Schools

A study of four schools reveals how research use is woven into the fabric of learning. Elizabeth N. Farley-Ripple, Hilary Mead and Katherine Tilley set out the benefits gained in professional development, quality of teaching and school improvement.

Research which fuels new ways of thinking, learning and improvement

When we talk about evidence-informed policy and practice, most of us think about using evidence to make decisions. What does the research say about this practice? What will work for my students? Sometimes this is called 'instrumental use' and this way of using research can help ensure schools are adopting strategies that are likely to improve learning outcomes.

But we want to shift thinking away from such uses for a moment and focus on research use as a form of professional learning. Thinking this way makes engaging with research valuable in and of itself, not merely an administrative task as part of school duties. This kind of use, which is a type of 'conceptual' use, can promote new ways of thinking about educational issues, inspire new approaches and lead to schoolwide improvement.

We base these claims – and the examples that follow – on our recent study of four elementary schools that were identified as 'deep users' of education research in a national survey of US schools.[1] Importantly, these schools are not very different from any other school on many criteria – both within the US and in contexts elsewhere. They are not especially high-performing nor located in affluent communities. They serve diverse student populations. The types of problems they face and the types of decisions they make in response are not especially unique, including adopting an early literacy curriculum, working to ensure students have equitable opportunities to learn and supporting teachers' professional growth.

These schools also represent different communities, governance arrangements and visions for their work. What distinguishes them from other schools is in our larger project is that research use is *the* work of their school, not *more* work for the school. Across all four schools, educators and leaders not only use research to inform ideas, improvement efforts but engage with research in ways that advance their own knowledge and skills, supporting both individual and collective learning.

What does research use as professional learning look like?

In these schools, research use is often enacted within larger school routines, which provide important space and support for research use. Importantly, deep-use schools rely on common structures found in most US schools to support research use – not new, additional structures, but existing structures that help organise the day-to-day work of the school. Research use is part of faculty meetings, instructional coaching, professional learning communities (PLCs) and curricular and instructional decisions. Often these routines create structured, formal opportunities for research use, including:

- **Book and article studies on school-wide issues held during faculty meetings**
- **Teacher teams tasked with finding, evaluating and using research for curricular decisions**
- **Coaches, consultants or other technical assistance providers sharing and using research with teachers as part of their work**
- **Bringing in international experts or scholars to present on a local initiative**
- **Teachers enrolled in graduate programs conducting and sharing research with others in the school**
- **Designated space in faculty meetings to share and discuss data and research**

These types of formal or structured engagement with research are common across the four schools and create opportunities for collaborative learning about curriculum, instructional practices and student needs in the context of their school.

But teachers in these schools also use research in less formal or structured ways that support their own professional growth. For example, one educator described research as 'current articles and research on what's being done, like what's good. That's why, you know, things like publications, like Education Leadership helped me to know … to get it. It like an overview, a scattering of what's really going on.'

Similarly, identifying and using research-based solutions is seen as a form of professional responsibility to students and to each other. As a school leader explained, 'Because things are changing. Technology changes. And that's the same thing with education. We want what the research is showing right now is working with kids and what's being effective now within this, so that kind of goes along with like the programs and the curriculum and everything that we do here.'

What did teachers *learn* through research use?

Central to research use as professional learning is, well, the learning. We found that teachers developed a wide range of knowledge and skills. These included technical skills related to using research, data and other kinds of evidence, such as the ability to search for, access, understand, interpret and critically evaluate empirical research.

For example, teachers learned about credible starting points for research, such as national organisations, as well as relationships with 'brokers' who could help them vet the information available. As one teacher shared, 'I don't like Googling things…There's too much stuff, too much crap, and that's just low impact, right?' Teachers also learned to read research critically, particularly concerning participant demographics and context. One teacher described her thought process: 'I'm like, 'well, how do I know that will work?' I want to know how you did it. Then I can be like, 'Okay, that makes sense,' or question it.'

Through engaging with research use, teachers also learn what we might call 'soft' skills related to leadership, collaboration, communication and decision-making. For example, in one of our case study schools, a committee of teachers and leaders collaborated in the selection of a new literacy curriculum. Each member investigated one option (including its research base and where it had been used successfully) and summarised her findings; the group then discussed and made a choice.

In a different school, teachers used external research to help them through a complex schoolwide shift to standards-based grading. Recalling an international expert who had spoken in the district: 'We just had to keep referring back to the book.' this is what the research says, this is what [author] says is the reason we do it.'

A third type of learning might be called 'context knowledge', where educators develop new and shared understandings of their practice or of student needs. For example, one of our case study schools capitalised on schedule changes due to the coronavirus pandemic. With students learning remotely and asynchronously, educators gathered weekly to review evidence about student learning, attendance and socio-emotional wellbeing. 'We expect the questions or the data or the graphs or whatever, you know, we're looking at that day, and that way every staff member can see exactly what we're talking about.'

In another school, one teacher saw the need for professional learning around race as the country contended with the racial reckoning brought about by the death of George Floyd. She approached the principal, who empowered her to propose a response and a book to read. So she spent most of the summer doing research on books and journals and stuff like that that would help us view the culture of African Americans differently, in particular. And she took it upon herself and she did a lot of research…' This teacher's actions led to a schoolwide book study on 'Other People's Children'.[2]

Perhaps most importantly, they develop content and pedagogical knowledge based on research on up-to-date, evidence-based practices. For example, a coach at one school described visiting a PLC and hearing teachers describe challenges with teaching students to read. She described her practice in the following manner: 'I'm going to check it out … I have a lot of teacher books that are going to give me some ideas, do some research on it, and then try to get back to [the teachers] as quickly as possible.' In this case, research was introduced as one of the resources that supported teachers' learning about and implementation of literacy instruction.

Teachers shared what they learned at conferences, in graduate courses and through their own research and experimentation in their classrooms. They were also open to learning from their colleagues, school or district administrators and external consultants. Sometimes this exchange was structured: 'We scaffold off each other's ideas and in [professional development] we give, sometimes other teachers will present on topics of what they do really well so then they can share it with the other teachers,' said one teacher. Other times it was highly informal, like a brief hallway conversation: 'Hey, have you read this article?'

Why is research use as professional learning effective for supporting instructional improvement?

In the four schools engaging with research, there appeared to be a central component of *creating change in practice*. It aligned with many principles of effective professional learning; it was content-focused, collaborative, job-embedded, linked with coaching or other supports, sustained over time and involved active learning.[3][4]

Book studies

Consider book studies as an example. All four schools have book studies for teachers – and also, in some cases, for administrators. Book studies are a clear example of introducing research into school practices, and books themselves are a common way for teachers to engage with research, whether in the context of how to teach in an online environment during COVID-19, related school closures or staff grappling with the educational implications of racial inequality.

Book studies are enacted thoughtfully as part of school improvement and professional learning initiatives, and often book studies are successful when they map closely to the school's new initiatives or teaching programmes. One teacher explained, 'Yeah, we kind of use [a book] as, this is the North Star. Like, a lot you do has to come back to this, because this is what the research shows, this is the best practice.' Importantly, book studies were not considered additional work but part of the improvement and learning work itself: they were embedded within school processes. For example, one school used every other staff meeting (already designated and protected time) for book study.

Successful book studies were highly practical. The book itself and the discussion around it helped teachers reflect on their practice and apply ideas to the classroom. In another case, one district reported book study among principals and central office staff, which was part of a district administrator's approach to coaching leaders on what the district was going and why.

Further, a high level of engagement is expected. Teachers reported making posters to showcase learning from a given book, preparing lessons to teach each other about the book, working in teams to read and present on a chapter, and hosting book discussion boards that were the basis for in-person discussions. One described it as 'just like a college class basically when you're assigned all that fun stuff to do.'

Research use = a part of teachers' identities

Conceptualising research use as professional learning can be professionalising. In contrast to focusing on research use as adoption or implementation of 'what works', reframing research use as learning can enhance teaching as a profession, defined as 'knowledgeable practitioners who can make sound decisions about how to shape education for the specific clients they serve'.[4] In an era where teachers globally express concerns over autonomy, support for continued learning and other challenges[5], teachers' engagement with research in these four schools made opportunities for leadership, collaborative learning, and learning tailored to their professional needs.

Ultimately, research use became part of teachers' professional identities, characterised by collective responsibility for student learning and an improvement mindset. One teacher explains, 'I think a lot of it just comes from inside the teachers themselves… This is what's going to help my kids, this is what I'm going to do and then you see the kids thriving with it.'

What can you do in your school to support research use as professional learning?

We can look to these four schools as exemplars for ideas of what research use as professional learning might look like – but there's no one way to engage with research in ways that support learning and improvement. In fact, each of our schools engaged their work differently, from teacher-led to district-driven. However, we offer a few starting points for your journey.

First, recognise that research use **can itself** be professional learning, not something extra added onto the plate or mandated from above – which is how most new initiatives are framed. Rather, the examples shared above offer many ways of engaging with research outside of formal decision-making about teaching approaches or practices but within typical practice. As a result, it became 'the way we do things' for school staff.

Second, bring research into professional routines such as professional learning communities, team or faculty meetings, or other spaces where there already is a group of teachers talking and making decisions. This creates rich opportunities for not only your own learning but the collective learning of your colleagues and school.

If these opportunities don't yet exist in your school, create them or advocate for them. In the four schools we worked with, a foundational element for improvement was what we called the 'virtuous diamond', in which leadership, school culture, resources and structures sustain and reinforce engagement with research use as professional learning[6]. Creating these supporting conditions within your school can have a tremendous impact on the role of research in your school.

Even if there are not clear opportunities within school routines, you can also identify the ways research can show up in your professional life. Capitalise on these opportunities, sharing with colleagues where possible. For example, bring back research-based ideas or strategies you gain at a conference. If you are pursuing graduate studies, talk about what you are reading or learning with your team.

You can also build your own professional learning network for finding and accessing research that is valuable to you and your school[7], adding a few new resources to your reading list can provide you with a wealth of information, as can developing relationships with colleagues who use research themselves.

New path for professional learning

Research can be a valuable, useful part of our work as educators. As we've described here, engaging with research can be an effective, professionalising lever for learning, not just decision-making. Whether you are in one of these four US elementary schools or a school halfway around the globe, and whether you are beginning your journey to make research use part of your professional growth or working to cultivate a culture of research use across your school, the lessons and examples here can help envision a new path for professional learning.

Elizabeth N. Farley-Ripple (corresponding author) enf@udel.edu) is Professor of Education at the University of Delaware.

Hilary Mead is an evaluation researcher at the Center for Research in Education and Social Policy at the University of Delaware.

Katherine Tilley is a post-doctoral researcher at the Center for Research in Education and Social Policy at the University of Delaware.

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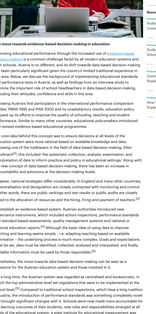
Are School Leaders Adapting To Data-Based Decision-Making?

How confident are school leaders in their role as data-based decision-makers? David Kemethofer looks at research in Austrian schools and finds implications for similar countries.



The move towards evidence-based decision-making in education

Improving educational performance through the increased use of [evidence-based decision-making](#) is a common challenge faced by all modern education systems and their schools. Austria is no different, and its shift towards data-based decision-making has been particularly significant over the past decade in the implementation of reforms in this area. Below, we discuss the background of implementing educational standards and standardised assessments in Austria, and the findings from interview study to examine the current state of school headteachers as data-based decision-making, including their attitudes, confidence and skills in this area.

Following Austria's first participation in the Programme for International Student Assessment (PISA) in 2000, which revealed a number of deficiencies in the system, it stepped up efforts to improve the quality of schooling, teaching and student performance. Similar to many other countries, educational policymakers introduced and revised evidence-based educational programmes.

The core idea behind this concept was to ensure decisions at all levels of the education system were more closely based on available knowledge and data. Following one of the trailblazers in the field of data-based decision-making, Ellen Mandinach[1], this includes the systematic collection, analysis, examination and interpretation of data to inform practice and policy in educational settings.[2] Along with this, the data should be of sufficient quality, and easy to be seen or reviewed, for accountability purposes at the decision-making levels.

However, national strategies differ considerably. In England and many other countries, decentralisation and delegation to schools and regions is a key feature of reforms. In other words, there are generally vast networks of public bodies and schools linked to the allocation of resources and the hiring, firing and evaluation of staff.[3]

To establish an evidence-based system, Austrian policymakers introduced more governance instruments, which included the introduction of educational standards, a standardised school-leaving exam (Matura), and national and regional student reports.[4] Although the basic idea of using data to improve teaching and learning seems simple – i.e. adapting teaching based on available information – the underlying process is much more complex. Data and expectations must be set, data must be identified, collected, analysed and interpreted, and finally, available information must be used by those responsible.[5]

Nonetheless, the move towards data-based decision-making can be seen as a milestone for the Austrian education system and those involved in it.

For a long time, the Austrian system was regarded as centralised and bureaucratic, in which the only administrative level accountable for schools was the Ministry of the school level.[6] Compared to traditional school inspectorates, which have a long tradition in Austria, the introduction of performance standards was a fundamentally conceptually novel and brought significant changes with it. Schools were now made more accountable for the learning outcomes of their students, new roles and responsibilities emerged at all levels of the educational system, a state institute for educational measurement was established[7] and a series of standardised assessments was implemented.[8]

Educational performance standards policy in Austria

The discussion about the introduction of a framework of educational standards in Austria began at the turn of the millennium. In 2008, they were legally introduced for 4th grade (primary level) in the subjects German and mathematics and for 8th grade (secondary level I) in German, mathematics and English.

The formulation of the standards and the underlying competency models were derived from the current curricula. In this respect, they were primarily intended to orientate teachers on what competencies students should possess before important transitions in school education. Linked to this were expectations that student performance could be improved by standards-based teaching and promoting data-informed development of teaching and learning.[9]

Furthermore, between 2012 and 2016, a domain-oriented and nationwide assessment of the educational standards took place. This meant that, in every school year, all students in 4th grade were tested in German, and in 8th grade in German, English, students took part in these performance assessments. Recently, a comprehensive revision of the educational standards policy has taken place. From the 2021/22 school year, participation will be mandatory for all pupils in the 2nd, 4th, 8th and 12th grade on an annual basis.[10]

The reports of these assessments allow teachers and school leaders to approach the data from different comparative and analytical perspectives. This included identifying critical performance indicators or the distribution of competencies that are in line with the educational standards, point values in contrast to the Austria-wide results and comparisons with schools that have a similar profile.[11] Additionally, the reports allow for the consideration of subgroups (e.g. gender and migration background) and includes context information on the school and classroom climate as well as the students' self-concept and learning enjoyment.

Teachers, school leaders and school authorities receive the results in aggregated form. For example, school headteachers gain insights into the results on the school level, but not individual student results. In addition, public reports are provided at the federal and state levels for monitoring purposes and as a governance tool for educational planning.

In the course of implementing educational standards, additional support structures were created: the Informal Competence Measurement (IKM) is an instrument for teachers to measure the competence level of their pupils in a voluntary basis. Feedback moderation was available to support data interpretation.[12]

Overall, Austrian educational standards policy represents a new Austrian approach without sanctions for schools or publication of individual school results. Advocates of this policy emphasise that it is a tool for school development, which can lead to the improvement of the quality of schools and student performance.[13] Critics point to the setting goals and visions to guide staff, creating school structures and processes and promoting staff capacity.[14]

In this sense, data can see be actively promoted by making it part of the school culture, ensuring that staff have the capacity to draw context-conclusions from the available data and providing the necessary resources and structures. For school leaders, this means modelling the sensible use of data, discussing data flexibly within the organisation and supporting the development of data literacy among teachers.[15]

In other words, school leaders need to be able to support their staff in reading, understanding and interpreting data and ensure that the right conclusions are drawn from the data. Consequently, expertise is needed to identify and implement development measures based on these conclusions. This means that an appropriate background knowledge about the strengths and weaknesses of the staff as well as staff and instructional practice at the school should be known and coordinated well.[16]

Research has shown that data-based decisions – when used appropriately – can lead to significant changes in teaching practice and student performance in primary schools.[17] However, Schildkamp and Kuiper[18] also found that the use of data is rather weak in secondary education. Recently, a comprehensive literature review of the educational standards and standardised assessments policy has become more favourable since its introduction.[19]

The confidence of headteachers for data-based decision-making at schools

Both research and education policy have now ensured that it is not enough to stipulate educational standards, but that in order to unfold the intended effects, the basic idea needs to be accepted, the intention needs to be understood and perceived as meaningful and the skills to work with the data must be available and developed.[20] In this respect, school leaders play a crucial role in implementing reforms by setting goals and visions to guide staff, creating school structures and processes and promoting staff capacity.[21]

Accordingly, the focus in Austria is on feedback and support as an impetus for educational development. Schools and other stakeholders, which often need support as an argument in favour of publishing results, has to be done by the schools themselves.

The significance of school headteachers for data-based decision-making at schools

Both research and education policy have now ensured that it is not enough to stipulate educational standards, but that in order to unfold the intended effects, the basic idea needs to be accepted, the intention needs to be understood and perceived as meaningful and the skills to work with the data must be available and developed.[22] In this respect, school leaders play a crucial role in implementing reforms by setting goals and visions to guide staff, creating school structures and processes and promoting staff capacity.[23]

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> What I can say is that the opinion at school has changed. […] That stuff is much more open about it. Personally, I've always been interested in it, mine hasn't really changed, but the reality itself, it has. (ASD1: 47-51)

In any case, the interviewed headteachers were aware of their influence on the attitude of teaching staff towards data-based decision-making and educational standards. For example, one headteacher explained that in their view, uncertainty and fear of innovation are the result of a lack of knowledge about it, particularly among teachers. At their school, this had been overcome through intensive clarification efforts, which was why the process of engaging with data-feedback had been relatively unproblematic (ASD1).

Data feedback is used by headteachers in different ways. Most of them start by gaining a first impression of school's performance, regarding both the school's own expectations and those of peer schools.

However, part of headteachers report being able to measure the school-wide use of support services. Those headteachers who view themselves as particularly proficient in reading data distinguish themselves from others through specialised prior knowledge (e.g. a former mathematics teacher or having received additional training). Subsequently, discussions are typically held with the teachers involved, as all teachers with students participating in the tests. In larger schools, the evaluation of the data is also left to the subject teams (ASD1), as illustrated in the following excerpt:

> In mathematics, we intend to analyse specific areas where particular deficiencies occurred. We were able to identify such shortcomings in a structured way in the past, as we went into a lot of detail and tried to find out what could have been the reason, because the results were already not as expected. (ASD2: 162-168)

However, some headteachers criticised the overly long time gap between testing and feedback.

> One problem is simply the large time difference between testing and feedback. It takes half a year, so even for those who took part, a lot has already been forgotten. (ASD1: 154-156)

School leaders' measures to support data use at their schools ranged from selected in-service training to the introduction of formative assessments. Also reported were structural changes in lessons, e.g. a stronger focus on certain content or experimenting with new ways of teaching (ASD2). Moreover, changes were made of using new teaching materials. Most of the materials were provided as part of the support offered by the state institute for educational measurement (BIFIE) mentioned above. However, there was no reason for development activities due to the positive test results.

Outlook and implications – for Austria and beyond

The data from the interview study presented here indicates that headteachers do use data for development activities. However, the findings also illustrate that not all school leaders are fully aware of their role as data leaders. This is likely due to the fact that probably due in part to their rudimentary training, even though they are explicitly stated.

In order to remedy this, the curricula of the newly introduced training programmes for headteachers at the Austrian University Colleges of Teacher Education cover the evaluation process as an essential component of school and instruction. However, there is so far no evidence as to whether this is successful. The first generation is still in the middle of their training[29] since the study programs were introduced.

In addition, the use of data is supposed to be further exacerbated through the newly initiated [QUIS Quality Management System for Schools](#) (QMS). The core of QMS, tools such as development plans and procedural handbooks for schools are available online. All schools are obliged to prepare development plans and to hold target agreement meetings with the school authorities on the basis of these plans. Here, the evaluation of the school development plan is to be the central development scene as the starting point for the development plan.[30]

In conclusion, the requirement of data-based decision-making is a recent development in the Austrian education system, and headteachers data-processed a positive attitude towards this. Educational policy is responding to the growing criticism and is set to internal discussion[31] and is reviewing concepts that were part of [Austrian] reforms. In some respects, the latest revision also addressed actual requests from schools (e.g. shorter interval between testing and feedback). In any case, there is room for optimism as, with increasing habituation, data seems to be becoming an increasingly integral part of professional actions in schools and classrooms.

An attempt to reflect upon the findings outlined here in comparison to development and practice in academic systems in other countries highlights, in particular, a declining scepticism towards external testing, but very much in the context of schools and their development processes. Here, the Austrian system is similar to Germany and colleagues attribute this to the growing consensus that external testing has negative consequences limited to test results.[32] Similar views were expressed by the interviewed school leaders.

In addition, the wide range of support services provided seems to have a positive impact. It seems obvious that the use of data feedback could be more elevated and accountability pressure is far from an ideal strategy instead producing unintended effects.

David Kemethofer is Professor for Empirical Educational Research at the University College of Teacher Education Upper Austria. His research focuses in the areas of quality management in the school system, school evaluation, school development and leadership.

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Author
Rahul Kumar Dutta
Assistant Professor

What Teacher 'Habitus' Can Tell Us About Teacher Development

What is teacher 'habitus' and how can it help us better understand teaching attitudes and beliefs? Rahul Kumar Dutta explores the concept and its implications for teacher development, professionalism and schools

The concept of "teacher habitus" – an overview

In discussions about teaching and learning, the term 'teacher habitus' is often used when referring to teachers' attitudes and beliefs in the context of educational professionalism.[1][2] Teachers' habitus refers primarily to their attitudes, judgements and behaviours in relation to school issues, such as assessing pupils' willingness to learn or evaluating their performance. Crucially, the habitus concept does not understand these attitudes and behaviours as something explicitly outlined, but rather as unconscious and pre-conscious dimensions of human action that precede conscious decisions.

In other words, the teacher's habitus has the effect, for example, in the context of evaluating a pupil's performance, that the evaluation is not influenced by a conscious teacher understanding but by performance, but this involves a much deeper dimension of unconscious habitus that is difficult to articulate. In this sense, it is important that there are different subforms of the term habitus that relate to various aspects, such as the much discussed 'researching' or 'scientifically reflective' habitus in teacher education. Essentially, the aim is for teachers to adopt a research-based attitude and habitus in learning, which should enable them to justify their decisions with scientific evidence.[3]

The concept of habitus helps to explain teachers' actions, but it is also controversial in the professionalisation debate. This relates to three important points.

Firstly, habitus must be understood as an implicit system of knowledge. This means that all decisions and actions are based on unconscious, pre-conscious dimensions, namely the habitus, which is the product of the individual socialisation and associated social opportunities for existence. This also means that although the habitus is a product of the past, it attempts to propagate itself into the future through its social practices.[4] In other words, the habitus is the way we talk, the tastes we have, the preferences we cultivate – in short, how we perceive the world.

Secondly, it is important to note that the habitus only emerges through the repetition of social practice in the context of its socio-economic environment, and thirdly, the habitus always requires a social field in which to operate.[5] In the case of a teacher's habitus, this is the school as a social institution. In this sense, the habitus develops in the first few years when one takes account and it is then fine-tuned for its social practice in the field in which it has to operate.

This seems to be an important starting point for the training of teachers and for their work in the school environment. Even if teacher training could succeed in promoting the development of a teacher habitus, schools must also adopt practices that constitute professional action, otherwise a teacher habitus cannot be further formed within them. So, as well as researching the habitus of teachers and their habitus and its genesis, we must also critically reflect on the changes that are required in schools and in the professionalisation of teachers in order to promote a research and reflective habitus in practice.

Teacher habitus in the context of professionalism

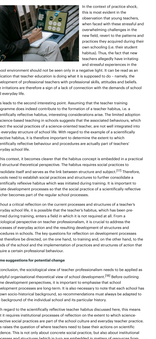
Bourdieu conceptualises habitus as a bridge between the individual subject and the overarching social structure. In this relational framework, habitus emerges as a result of culturally and historically specific social contexts and conditions of existence. On the one hand, it is shaped by these social conditions, and on the other, it serves as the basis for the generation of human actions and practices.[6]

Habitus therefore manifests itself in social practices such as the way a person speaks, their tastes, the way they dress, the opinions they hold on social issues, etc. The habitus also provides the context for the formation of an implicit conception of knowledge and ability to explain human actions. This means that habitus is a pre-conscious and unconscious dimension of actions and decisions.[7]

With regard to the emergence of habitus, Bourdieu's concept must be understood as a dialectical relationship between the individual and the social structure. Habitus emerges through practice and is consolidated through the repetition of that practice. Therefore, it should also be noted that the habitus is primarily a concept for explaining the relative stability of structures and patterns of behaviour. Bourdieu describes this starting point in the question of why social class structures are so persistent. Kramer sums it up well when he says that the habitus was created in the past, but through its social practice it seeks to reproduce itself into the future.[8]

In relation to teacher habitus, habitus is the way a teacher speaks, the attitude they have towards their students, the way they define and evaluate performance, etc. On the one hand, the teacher habitus is shaped by the socio-educational experiences of one's own school days (ie. the past). In this context, it can be said that the teacher habitus is also a product of institutional practices.[9] The teacher habitus therefore provides a linked to the professional goals of the teacher training programmes and should be supported by seminars and lectures. This implication is particularly important for the discussion of the inertia of school systems and teachers' actions.

In pedagogical discourse, reference is often made to teachers' attitudes and beliefs in the context of professionalism.[10] Particularly in the field of education, numerous studies have already dealt with habitus and habitus research and the multiplicity of dimensions associated with it (such as student or teacher habitus).[11]



Various other characteristics and approaches have also been identified that relate to different aspects of a teacher's habitus, including the much discussed 'researching' or 'scientifically reflective' habitus in teacher education.

This part of a professional teaching habitus aims at a research-based attitude towards the professionalism and everyday school activities of teachers. Using higher education concepts, pre-service teachers should not only be trained to think scientifically but should also be encouraged to develop a habitus that is based on a research attitude. From the perspective of teacher professionalisation research, a scientifically reflective habitus is crucial in the teaching profession as it enables teachers to critically reflect on their pedagogical practice and to proceed in a research-based manner.[12]

In terms of teacher training, it is therefore a question of developing a scientific attitude or habitus of pre-service decisions about the design of teaching and interactions with children. This should ensure that teachers are able to argue and design their lessons on the basis of science. The demand for a "scientific habitus" (Hericks, 2006, p. 135, in principle, indisputable. Who would deny that teachers should base their teaching on their daily professional actions on scientific knowledge and valid training? However, if one considers how rich in implications the creation of a habitus is, then this demand turns out to be too simple a postulate.

Teacher Habitus and application within the school "field"

As already explained, a person's habitus – and thus also parts of it, such as the teacher's habitus – develops through extensive practical social experience. However, these practical experiences only have the quality of forming the habitus if they are constantly repeated and to this take place in a field where the concrete social practice takes place. In this sense, it can be said that the habitus can only develop if the teacher's workplace remains the[13]

This market metaphor is best illustrated by a negative example. Let's imagine a person who has no experience of fine dining living in a luxury restaurant. The usual behaviour in this field, such as the correct use of cutlery, would probably be unknown to him. So if he is a tradesfolk, the unusual guest will have to operate in an unfamiliar field. This will probably not understand why there are several forks next to the plates. In other words, their habitus does not fit the habitus required in the field. Nevertheless, it will be very difficult to meet the demands of the field. This also means that the development of a habitus that is customary there cannot happen without further training.

Transferring this metaphor to the teaching profession, the first premise [a] states that, for example, seminars during training aim to develop a scientifically reflective habitus the constantly practising the social practice of scientifically reflective behaviour in the school field. Only in this way can a habitus be developed that is characterised by reflexive and scientific tactics, knowledge and practice-oriented case studies.[14] The aim of such lectures is therefore to create a scientifically reflective habitus so that future teachers can justify their actions scientifically in their future professional field.

Let us now assume that such lectures in teacher training can contribute to the development of a scientifically reflective habitus. The focus will thus be on the premise of the field metaphor [b]. This raises the question of the connection between a habitus and the field in which it is supposed to operate. In other words, it is common in schools for teachers to have to reflect, coordinate and argue scientifically about what they are doing?

Habitus clash and practice shock?

After teacher training, newcomer teachers often have training, unexpected and overwhelming experiences when they enter the profession. This phenomenon is known as practice shock.[15] Processes of disprofessionalisation can be triggered by this shock.

For example, research has demonstrated that novice educators tend to rely on familiar practices that they encountered as students shortly after joining the profession. As a result, newcomers to the profession tend not to implement evidence-based knowledge and new ways of doing things, but rather to adapt their actions to the prevailing attitudes and behaviours of their colleagues.[16] In this context, a contradiction between theory and practice is often postulated: although there is little empirical evidence to support this, there is a widespread belief in educational research and new institutional tasks being the new teachers.[17]

From the point of view of a habitus theoretical perspective, this phenomenon is interesting from two perspectives. The practical shock could be an indication that the habitus developed in teacher training does not fit the habitus in the field. The phenomenon can be understood as a lack of connection between the habitus being formed at the university and the new field. As mentioned above, the teacher habitus can only be understood if it is seen as an interaction between field and habitus.

In the context of practice shock, this is most evident in the observation that young teachers, who have had their own ideals and overwhelming challenges in the first few years of their practice and practices they acquired during their own schooling (i.e. their habitus clash). Thus, Klusi that new teachers allegedly have existing ideals and practices in their habitus that they bring with them from

Author
Gaetano Romeo

Professional Development

What Do Teachers Think Of Assessment?

Teachers' beliefs about what assessment is for and how it works may prove a vital platform for improving its educational value.

The Assessment Battleground

Historically, in many societies, assessment has been simply an end-of-course (or semester, year, or programme) formal examination. That assessment system meant teachers acted as coaches and instructors, whereas external bodies or agencies made decisions about the quality of individual student performance. School leaders looked at examination or qualification success rates and used that information to evaluate teacher performance (e.g. a good teacher had a higher than predicted rate of success compared to the ability level of the class the teacher had). Students, in turn, were used to evaluate teacher quality based on whether their child passed. This was not the purpose of assessment but it was the dominant model of assessment practice.

Policy reform throughout the 1980s and 90s, now associated with the Global Education Reform Movement[1], led to the development of standardised tests of student achievement as a formal government mechanism to hold schools and teachers accountable for the use of state or public resources. This approach gained momentum in England because there was a perception that 'the lack of an examination or national system of testing at the end of primary school left the school sector of schooling wide open to criticism of performance standards across the primary age range (5-11)'[2] Hence the introduction of Standardised Assessment Tasks (SATs) at Key Stages of schooling (i.e. ages 5, 11 and 14) and many other mechanisms with the 1988 National Curriculum.[3]

A substantial response against Key Stage census testing, combined with the publication of league tables[4], led to a substantial resistance to using standardised tests to make judgments about schools.[5] That reform movement, known as Assessment for Learning (AFL), insisted the proper place of assessment was a formative, improvement-oriented process for use of data to inform instruction in interactive practices that would deepen understanding and reduce the consequences attached to assessment scores or reports.[6]

The pedagogical priority of AFL[7] meant that assessment was no longer used to judge teachers, schools or students; instead, it was meant to serve better learning outcomes. Nonetheless, the tension between governmental desire to collect data on the effectiveness of schools and educators' insistence that assessment serve learning created a contested system of students' learning.

These contextual factors (i.e. assessment for learning versus assessment as accountability) generate considerable tensions for teachers.[8] On the one hand, they are encouraged to use assessment to improve student learning, and on the other, they are subjected to the consequences of cycle standardised tests. This has required a substantial shift in teachers' assessment identity[9] from their traditional identity as instructors and coaches to one of being judges or evaluators, albeit for formative goals. However, simultaneously, teachers have to ensure student test performance makes the school, their colleagues and themselves look good in the eyes of the public and governments.

An expectable outcome of this expectation is that teachers would behave in such a way as to ensure those expectations are fulfilled, a known effect of accountability.[10] This has led to unfortunate practices in which teachers (1) teach students directly what will be on the test, (2) use old tests that have made-known comparison norms, (3) teach items in class based on an early copy of the official test, (4) encourage low-performing students to not come to school on testing days, (5) exclude low-performing students, and (6) concern student test responses before sending the tests to a central agency.[11] Indeed, teachers involved in that bad practice were jailed in Atlanta, USA for falsifying student performances on school accountability tests.[12]

Beliefs and Purposes of Assessment

Extensive research has established that teachers have existing beliefs about the nature and purpose of assessment.[13] These beliefs matter[14] because beliefs filter what individuals pay attention to, frame how individuals understand their information and guide their actions or behaviours around the phenomenon in question, in this case assessment. Further, teachers beliefs are strongly shaped by their own experiences as students.[15] Consequently, they tend to be resistant to change, even when policies require different assessment practices.[16]

Thus, because teachers enact assessment policy in schools and classrooms, it is essential to know what they believe and how they might use assessments. Their beliefs may also constitute an interesting possibility of resistance and change.

I propose that understanding teacher conceptualisation of assessment should focus on the nature and purposes of assessment[17] rather than the format.[18] Consequently, the first question to ask is 'is assessment useful?'

For those who say **no**, there is no reason to tend to with the narrowness of assessment compared to the breadth and depth of the curriculum[19], the unjustifiable power of assessment to control children[20] and the stigma attached to children who are labelled negative as a result of low scores. Related to these negative views of largely formal assessments, many classroom practices associated with them will be assessment interactions with a child; they simply know better than a test who knows what and who needs to be taught what.

For those who say **yes**, the second question is 'for which specific purposes?' There appear to be three possible purposes of assessment (PS) to inform improved teaching and learning, PS2) to judge the quality of student performance and PS3) to judge the quality of instruction and schooling. Clearly, in the English context, public examinations (e.g. GCSE, A Levels) aim at purpose PS2 and PS3 aim at purposes PS1 and AFL aims at purpose PS. The challenge for teacher professional development is that teachers can understand and value all three purposes at the same time and it is important to tease out carefully which idea teachers have in mind.

Research Exploring Teacher Conceptions of Assessment

The self-report inventory

To contribute to possible professional development, the Teachers Conceptions of Assessment self-report inventory[21] was developed to explore not just how much teachers agree with each of these four conceptions but also how those attitudes relate to each other. The inventory has four major scales addressing the answers to the research questions. 'Improvement' says assessment is useful for informing better teaching and student learning. 'Student Accountability' says assessment is useful to evaluate and judge student learning. 'School Accountability' says assessment is used to evaluate teachers and schools. 'Irrelevance' says that assessment is bad and ignored.

The first studies with New Zealand primary and secondary school teachers[22] found statistically equivalent responses to the items but higher scores among secondary teachers for Student Accountability, a sensible response given how those teachers are involved in judging students for credits or qualifications and the National Certificates for Educational Achievement in the last three years of schooling. Both groups gave the lowest scores to Irrelevance, which is good news for low relevance, with a strong negative correlation (r = -.74) between the two scales, indicating that, as assessment was for improvement, it was not ignored.

Simultaneously, Irrelevance had a small negative correlation with Student Accountability (r = -.30) and a weak negative one with School Accountability (r = -.14). Together, these associations suggest evaluating students is a bad thing, while evaluating schools is a little bit relevant. In contrast, assessment for improvement was beautifully related to Student Accountability (r = .23) and much more with School Accountability (r = .47). These relations suggest that evaluating students does not really help them improve, but schools that bring about improvement are good quality schools.

International comparisons

International comparative research began in Queensland, a jurisdiction with a very low tradition of standardised testing policy in primary schooling and a secondary school policy in which teachers awarded grades for school qualifications. Equivalent structures were found between New Zealand and Queensland primary teachers[23], but structural differences were required to account for Queensland secondary teachers.[24]

Like New Zealand, Improvement was moderately related to School Accountability (r = .43) and weakly linked to Student Accountability (r = .09), suggesting good schools improve outcomes with assessment but do not judge learners. Irrelevance was strongly negative to Improvement (r = -.50), indicating assessment is not ignored. Irrelevance was strongly related to Student Accountability (r = .64), suggesting judging students with assessment was a bad thing. On the other hand, the relationship of Irrelevance to School Accountability was close to zero (r = .06), together suggesting Hong Kong teachers ignored testing.

The first studies with the Hong Kong version of the inventory[25] were reported in the book in the People's Republic of China[26], teachers most strongly endorsed Improvement (r = .80). In contrast, Irrelevance was strongly and inversely related to Improvement (r = -.23) and positively related to Accountability (r = .28), making clear that improvement was seen as relevant, while holding schools and teachers accountable was seen as a bad thing.

What the Research Tells Us

These studies show us several important principles. The first: teachers' conceptions of assessment depend very much on the policy and cultural context in which they are employed, and teachers must engage with and internalise social norms to function within a schooling context.

A second principle is that assessment matters to teachers who generally want to use it to improve student learning. This means that teacher beliefs are not the obstacle to improving how teachers use assessment. Rather, if the context in which teachers work imposes unfair and negative consequences for poor student scores, without considering factors that make high performance hard to achieve, then teachers are likely to think assessment is irrelevant (e.g. New York teachers when given a knowledge but persisted in their negative view of assessment[28]).

I have argued that decentering the pattern of teachers' conceptions of assessment is a key step in improving the relevance of assessment to improve learning.[29] Knowing how teachers perceive what assessment is for and how it works is a good starting point for professional development. However, because conceptions are sensitive to context, professional developers should consider whether there are obstacles in the policy and regulatory environment that undermine those views about assessment.

Perhaps the problem lies in a policy which uses low quality standardised tests that do not provide diagnostic insights to teachers when they need them.[30] Perhaps the problem lies in managerial practices in which assessment tools are used by school leaders to fulfil accountability expectations rather than for classroom teachers who need to discover if their teaching has worked for all.[31] Clearly, developing teachers to have a positive attitude toward improvement-oriented assessment for learning is wise. It is hard to ensuring teachers have the tools, knowledge and policy that support them to discover high-need views (i.e. my teaching did not work, my students don't understand what I taught). Only in such a context is professional development around assessment likely to be effective.[32]

A Checklist for Professional Development Assessment Policy and Practice

Some key messages emerge from these findings about the crucial importance of teacher conceptions of assessment. These may help to provide a helpful checklist of assessment practice for teachers and leaders:

- **Teachers generally believe that assessment can contribute to better understanding of what teachers need to know about how their teaching is working.**
- **Teachers believe that assessment is not about what they need to know about student progress and needs.**
- **Leaders need to allow teachers to discover 'bad news' without shame or blame; rather, they need to welcome the discovery of failure to guide improved teaching.**

Gavin T. L. Brown is Professor of Education in the Faculty of Education and Social Work at The University of Auckland, where he directs the Quantitative Data Analysis and Research unit and the Learning Sciences and Psychological Studies in Education group in the School of Learning and Professional Practice. He can be contacted by email at gt.brown@auckland.ac.nz

[1] https://en.wikipedia.org/wiki/Alberta_Public_Schools_cheating_scandal

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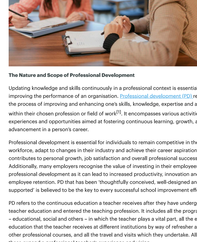
Why Teacher Professional Development Is Essential

Professional development of teachers in 2024 is dominated by varied schools of thought. Karanam Pushpandham examines the state of teacher PD today and its importance to advancing practice in education.



The Nature and Scope of Professional Development

Updating knowledge and skills continuously in a professional context is essential to improving the performance of an organisation. Professional development (PD) refers to the process of improving and enhancing one's skills, knowledge, expertise and abilities within their chosen profession or field of work[1]. It encompasses various activities, experiences and opportunities aimed at fostering continuous learning, growth, and advancement in a person's career.

Professional development is essential for individuals to remain competitive in the workforce, adapt to changes in their industry and achieve their career aspirations. It contributes to personal growth, job satisfaction and overall professional success. Additionally, many employers recognise the value of investing in their employees' professional development as it can lead to increased productivity, innovation and employee retention. PD that has been 'thoughtfully planned, well-designed and well-supported' is believed to be the key to every successful school improvement effort.

PD refers to the continuous education a teacher receives after they have undergone teacher education and entered the teaching profession. It includes all the learning – educational, social and others – in which the teacher plays a vital part, all the extra education that the teacher receives at different institutions by way of refresher and other professional courses, and all the travel and visits which they undertake. All of these expand a professional teacher's experience and vision.

PD has traditionally been provided to teachers through school in-service workshops. The term 'in-service' is self-explanatory; in the classic conception of that model, the district or school brings in an outside consultant or curriculum expert on a staff development day to give teachers a one-time training session on a variety of pedagogical, curricular, or classroom management topics. This approach has been routinely lamented in professional literature.

Different types of professional development are needed at varying levels to fulfil different purposes. PD is taken by teachers to keep themselves up to date with current thinking in their subject area and pedagogy. PD can be used to help deepen and broaden content knowledge and enable teachers to anticipate and prepare for changes in curriculum and learning processes. It also empowers teachers to identify problems and make complex decisions to solve them. The knowledge and skills of teachers are impacted by ongoing professional and staff development.

PD directly addresses the issue of capacity which Cohen, Raudenbush and Ball (2003) [2] characterise as operationalising a number of elements in which the teacher's knowledge, instructional skill and material resources are combined to create the interaction among students with curriculum content and result in learning. Desimone [3] highlights that effective PD increases teacher knowledge and skill, which then leads to a change in instruction that results in greater student learning. While this seems a reasonable theory of action, it has seldom been shown to evolve.

Helpful Theoretical Frameworks

Several theories underpin professional development, offering frameworks for understanding how educators learn, grow, and improve their practice.

Reflexive Practice Theory emphasises the importance of reflective thinking in professional learning.[4] It suggests that practitioners can enhance their skills and knowledge by critically reflecting on their experiences, actions and beliefs. Reflective practice encourages educators to examine their teaching practices, identify areas for improvement and make informed adjustments to enhance student learning.

Social Learning emphasises the role of social interaction and observation in learning. [5] In the context of professional development, this theory highlights the importance of collaborative learning communities, mentorship and peer observation in supporting educators' growth and development. Through interactions with colleagues, teachers can acquire new knowledge, skills and perspectives, as well as model effective teaching practices.

Communities of Practice (CoP) is an effective strategy that focuses on social learning and collective knowledge sharing in professional learning. CoPs are groups of practitioners who share a common interest, engage in joint activities and collaborate to solve problems and improve practice. Within CoPs, educators exchange ideas and resources, fostering mutual learning and professional development.

Mark S. Schlager & Judith Fusco[6][7] argue that the recognition of how CoPs can play important, direct and catalytic roles in teacher learning has spurred great interest in how to harness the power of CoPs in the context of systemic school reform and professional development.

Diffusion of Innovations Theory explains how new ideas, practices or technologies spread and are adopted within a social system. In the context of professional development, this theory highlights the importance of understanding the factors that influence the adoption and implementation of new teaching strategies, curricular innovations and educational technologies. Effective professional development initiatives consider the needs, motivations and concerns of educators to facilitate the successful uptake of innovative practices.

These theories provide valuable insights into the processes, contexts and strategies that shape professional development for educators. By understanding and applying these theoretical frameworks, educational leaders can design more effective and impactful professional learning experiences to support teacher growth and improve student outcomes.

Key Areas

Professional development for teachers makes a critical contribution to ensuring the continuous improvement of educational practices and student outcomes. It involves a range of activities designed to enhance teaching skills, deepen subject knowledge and support the professional growth of educators.

Subject-specific training: **Teachers often participate in workshops, courses and conferences focused on the specific subjects they teach.** These sessions may be updated on the latest curriculum standards, teaching methodologies and subject-specific pedagogies.

Pedagogical training: **Professional development programmes provide teachers with opportunities to learn about effective teaching strategies, instructional techniques, classroom management, differentiated instruction, assessment methods and student engagement strategies.**

Technology integration: **With the increasing use of technology in education, professional development helps teachers develop the skills to effectively integrate technology tools and resources into their teaching practices, enhancing student learning experiences.**

Collaborative learning communities: **Teachers benefit from collaborating with their peers through professional learning communities (PLCs) where they can share ideas, experiences and best practices, as well as engage in collaborative planning and problem-solving.**

Action research: **Teachers engage in action research projects to investigate and address specific challenges or issues in their classrooms. This process empowers educators to gather data, analyse outcomes and make informed decisions to improve their teaching.There is a range of ways that teachers engage in enquiring into their practice, of which action research is one example.**

Mentorship and coaching: **New teachers often benefit from mentorship and coaching programs, where experienced educators provide guidance, support and feedback to help them navigate their early years of teaching and develop effective instructional practices. Cordingley and colleagues[8] highlighted that the involvement in collaborative and sustained CPD – including through mentoring and coaching – was linked with pupils' enhanced motivation to learn, better performance, improved organisation of work, and more effective teaching. Sustained participation in group work and increased ability to select and use a variety of learning strategies.**

Continuous learning opportunities: **Professional development is an ongoing process that extends throughout a teacher's career. Schools and districts may offer a variety of professional development opportunities, including workshops, seminars, online courses, peer observations and book studies to support teachers' continuous growth and development.**

Alignment with school goals and priorities: **Effective professional development programs are aligned with the goals and needs of the school or district, ensuring that teachers receive targeted support and resources to address specific challenges and improve student outcomes.**

Taken together, this range of professional development engagements plays a crucial role in empowering teachers to enhance their teaching practices, meet the diverse needs of their students and contribute to the overall improvement of the education system.

Global Policy Priorities for Professional Development of Teachers

Global policy priorities regarding the professional development of teachers vary depending on the specific needs and contexts of different countries and regions.

– Many countries prioritise the development and implementation of quality teaching standards that outline the knowledge, skills and competencies expected of educators. These standards serve as a framework for teacher preparation programmes, licensure requirements and professional development initiatives, ensuring that teachers are adequately prepared to meet the diverse needs of students. There is a growing emphasis on providing teachers with opportunities for ongoing professional development throughout their careers. Governments and educational authorities invest in CPD programmes, workshops and resources to support teachers in enhancing their pedagogical skills, subject knowledge and instructional practices.

– Effective teacher evaluation systems are seen as crucial for identifying areas for improvement, providing targeted support and recognising exemplary teaching practices. Many countries also prioritise the development of robust evaluation frameworks that incorporate multiple measures of teacher effectiveness, including classroom observations, student achievement data and peer reviews.

– Supporting new teachers during their initial years in the profession is another priority for many countries. Mentorship and induction programs pair novice educators with experienced mentors who provide guidance, support and feedback as they navigate the challenges of teaching. These programs aim to improve teacher retention rates, promote instructional excellence and facilitate the successful transition into the profession.

– With increasing diversity in classrooms, there is a growing recognition of the importance of inclusive education practices and cultural competence among teachers. Policymakers prioritise professional development initiatives that help educators create inclusive learning environments, address the needs of diverse student populations and promote equity and social justice in education.

– The rapid advancement of technology is reshaping teaching and learning practices worldwide. Many countries prioritise professional development programmes that help teachers effectively integrate technology into their instruction, develop digital literacy skills and leverage digital tools to enhance student engagement, collaboration and learning outcomes.

– Policymakers emphasise the importance of evidence-based and research-informed teaching practices in improving student learning outcomes. They support professional development initiatives that encourage teachers to engage with educational research, apply research findings in their classrooms and participate in action research projects to evaluate the impact of their instructional practices. Recognising the crucial role of teacher leadership in school improvement efforts, many countries prioritise the development of career pathways that offer opportunities for teachers to take on leadership roles, mentor their colleagues and contribute to educational innovation and policy development.

Overall, global policy priorities on the professional development of teachers reflect a commitment to fostering high-quality teaching, improving student learning outcomes, and building a more equitable and inclusive education system. By investing in the continuous growth and development of educators, countries can strengthen their education systems and prepare students for success in the 21st century.

Growing What We Know About Effective Professional Development

Research priorities on the professional development of teachers evolve as educational contexts change, new challenges arise and innovative approaches emerge. Several key research areas and priorities have been identified to inform the design, implementation and evaluation of effective professional development initiatives for teachers.

- Examining the impact of different professional development approaches on student learning outcomes has been and continues to be a primary research priority. This includes investigating the effectiveness of specific professional development interventions, such as pedagogical training, subject-specific content knowledge, technology integration, and classroom management strategies in improving student achievement, engagement and motivation.

– Further research is needed to explore the long-term effects and sustainability of professional development programmes. It would be helpful if there were further studies examining the lasting impact of teacher learning. These might encompass exploring the extent to which newly acquired knowledge and skills are retained and applied in practice over time, or how the factors that contribute to sustained professional growth are essential for informing both the development and implementation of effective professional development initiatives.

– Understanding the contextual factors and implementation challenges that influence the effectiveness of professional development programmes is critical. Research in this area examines how factors such as school culture, leadership support, teacher collaboration, resource availability and policy environment shape the implementation and outcomes of professional development initiatives in different educational settings. Research on teacher beliefs and distributed leadership models examines how empowering teachers to take on leadership roles, collaborate with their colleagues and drive school improvement efforts can enhance professional development outcomes and contribute to positive changes in teaching practice and student learning.

– With the increasing use of digital and blended learning environments, further research is also needed to explore effective strategies for delivering professional development through online platforms, virtual communities of practice and technology-enabled learning resources. This includes investigating the efficacy of online courses, webinars, social media networks and digital tools in supporting teacher learning and collaboration.

– Other vital areas of professional development research activity include equity and inclusion in professional development, which focuses on ensuring that all teachers, regardless of background or context, have access to high-quality learning opportunities that address the diverse needs of students. This includes examining strategies for promoting cultural competence, addressing implicit biases and creating inclusive learning environments within professional development programmes.

By addressing these key research priorities, scholars and practitioners can contribute to the ongoing improvement and innovation of professional development initiatives for educators around the world.

Karanam Pushpanadham is Professor and Head of the Department of Educational Administration, Faculty of Education and Psychology, The Maharaja Sayajirao University of Baroda Vadodara-390002, Gujarat, India.

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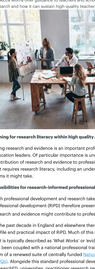
What Is Research-Informed Professional Development?

Various forms of research can contribute to professional development. Thomas Perry and Rebecca Morris offer guidance to teachers and school leaders in understanding this research and how it can sustain high-quality teacher professional development.



Aiming for research literacy within high-quality professional development

Using research and evidence is an important professional skill for teachers and education leaders. Of particular importance is understanding the potential contribution of research and evidence to professional development. This is something that requires research literacy, including an understanding of what research is and the forms it might take.

Possibilities for research-informed professional development

Both professional development and research take many forms. Research-informed professional development (RIPD) therefore presents a rich field of possibilities for how research and evidence might contribute to professional learning.[1]

In the past decade in England and elsewhere there has been a huge increase in the profile and practical impact of RIPD. Much of this has drawn from a form of research that is typically described as 'what works' or 'evidence-based' practice.[2] Research has been coupled with a national professional training and qualifications offer in the form of a renewed suite of centrally funded National Professional Qualifications (NPQs). Alongside standard professional development offer, organisations such as ResearchED, universities, practitioner networks and 'teaching and learning hubs' specifically,[3] many schools engage with research-based professional learning approaches such as lesson study,[4][5] models of 'action research' or practitioner research,[6] and research-practice partnerships.[7][8][9]

Also noteworthy is that research has come to inform the professional development design as well as content. Research reports over the last decade[10][11][12] have influenced the Standard for Teachers' Professional Development, the content of frameworks for initial and early career teacher training and development (soon to be combined) and inform the design of professional development programmes.

In short, RIPD is a rich and diverse space and there is much to be celebrated in terms of what is available for teachers, school leaders and organisations seeking RIPD. This includes more accessible and actionable guidance and models of practice, underpinned by varying degrees by rigorous evidence and theories of educational practice. All of this represents strengthening research to practice connections and greater opportunity to engage with research.

Against this fairly positive backdrop, there are also some serious limitations of and issues with the current form that much of RIPD takes. A particular risk is that the national qualifications and training approach has been quite centralised and prescriptive in its approach, as well as narrow in its conception of both research and professional development. The coupling of this (or any) particular approach to qualifications and professional development arguably undermines school autonomy and ability to exercise choice over professional development provision for their staff. Over-prescription also risks a mismatch between perceived needs and what is available and (indeed) the crowding out of alternative forms of RIPD.

Moreover, in terms of the research credentials of much of the current RIPD landscape, what is not visible to most policy-makers and practitioners is that 'What Works' (WW) research and related educational effectiveness and improvement (EEI) research has been sustained criticism for many decades.[13] There is now wide recognition of numerous serious, fundamental flaws in WW and EEI research within the academic research community and a concerning disconnect between forms of research with each other and with policy and practice.[13]

As explained in a recent book by Perry and Morris[13], research approaches (or 'paradigms') face trade-offs when it comes to developing and appraising theory and evidence designed to support teaching: they must balance rigour and practicality, general principles or interventions with context or need-specific approaches, simplicity with accuracy and detail, and so on. Competing research approaches are often weak where others are strong. This means that different approaches are often complementary, supporting an argument for mixing methods and for variety in the range of research approaches in use.

A similar line of thinking might be followed in relation to PD. Forms of professional development make choices between subject-specific and general pedagogy[14], between building school professional learning communities and supporting individuals, between core skills and more targeted approaches and so on. What makes for effective PD depends very much on the starting point and needs of the teacher(s) and what we are trying to achieve.

In relation to both research and PD, we might develop an argument for a mixed economy and mechanisms (e.g. school control of PD budgets) which result in a good match between needs and what RIPD is available. Outside of the standard professional qualifications and training offer, there is a need to seek out, navigate, curate, design and tailor professional development, including judgements on what contribution different forms of research might make.

This brings us to the core question for this article: What is research-informed professional development? Our aim is to present some brief definitions and a framework which can be used to better see what we are currently doing and thereby support choice, diversity and fitness for purpose in relation to RIPD.

What is it to be research-informed?

The best place to start is with a definition of research. Our go-to definition tends to be Stenhouse's[15] description of research as 'systematic, self-critical inquiry'. More fully, Stenhouse characterises research as 'systematic and sustained inquiry, planned and self-critical, which is subjected to public criticism and to empirical [i.e. using data] tests where these are appropriate'.[15] A general definition is helpful in terms of understanding that research is already a key part of professional practice, often going under the name of reflective enquiry, professional development, evaluation, review, monitoring, improvement, development or similar.

In essence, research is about providing the best possible answer (or solution) to the questions (or problems) that we face. We can understand this answer in terms of 'theory' and 'evidence'. There's simply refers to the ideas we use to describe, explain or operate in the world. Evidence refers to the information or data we have available to support (or refute) our theories.

As discussed in Perry and Morris[13], there is quite a bit of thinking and methodology needed to get from 'data' to evidence (note that, in research, 'data' refers to all forms of organised information, including both quantitative data [e.g. numbers] and qualitative data [e.g. words, images etc.]). A person might say 'this data is evidence that this approach is successful', but to do so, they must have a theory, planned and self-critical, which is subjected to public criticism and to empirical [i.e. using data] tests where these are appropriate.[15] A general definition is helpful in terms of understanding that research is already a key part of professional practice, often going under the name of reflective enquiry, professional development, evaluation, review, monitoring, improvement, development or similar.

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Theory and evidence

In essence, research-informed PD is anything which draws upon theory and evidence from research – in which we include doing research as a form of PD.[16] One problem in research is that some ideas are easier to test than others. There is often a conflict between rigour and practicality. As a general rule, the more complex or subtle the theory, the harder it is to test against the evidence. 'What Works' research tends to prioritise the robustness of the evidence at the expense of being restricted to testing fairly simple propositions (e.g. 'programme X is effective compared to normal practice').

In other words, What Works is geared towards identifying broad 'best bets' in which we can place a high level of confidence; however, at the level of describing and explaining practice, the evidence or research design offers little of merit. There tends to be far less focus on what is known as 'implementation and process' evaluation looking at the detail of how the programme or practice works. Even for EEF trials, which are usually some of the highest quality studies available, only a minority have 'high quality' implementation and process evaluation (30%), with 22% having 'low quality'.[17]

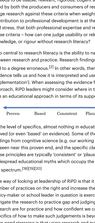
This all means that it is very hard to say why, for whom and in what circumstances something works[18][19] and describe effective practice in a way which a practitioner would recognise as credible and actionable. Much of the gap is filled in with not very evidence-based guidance and interpretation in the accompanying reports that seek to bridge the gap between the headline trial result and actionable advice beyond a simple recommendation of signing up for the intervention programme. What Works research also tends to seek a static picture of effective practice as a model to aim for as opposed to understanding the current situation and the development process needed to reach it.

Let's contrast this brief description of What Works research with another form of research, namely practitioner research. Practitioner research is typically focused on actionable, context-relevant and developmental problems of practice. The level of professional dialogue, thinking and (practical) theory is potentially much richer in practitioner research context and more connected to the complex, contextual and dynamic aspects of practice and the developmental processes for changing it.

However, the ability of practitioner research to test the ideas and claims in whole or part using robust evidence is typically highly constrained. With this simple example we can see how different forms of research can serve different purposes, and complement each other's strengths and weaknesses. As is argued at length in Perry and Morris[13], broader, more adaptive and eclectic research approaches are more likely to produce evidence that combines rigour with potential practical relevance and impact.

Another helpful lens for understanding variation in research is to the particular blend of theory and evidence informing professional development. Below is a simple framework for evidence and theory which recognises that they can be described as on a continuum from – at one extreme – more abstract, academic and general to – at the other extreme – more concrete, context specific and practical. Perry and Morris[13] depict the overall space in which education research operates in a simple 2×2 grid, reproduced in Figure 2.1, below.

Figure 2.1 – The research and evidence for the educational improvement landscape, from Perry and Morris[13]



Considering the 2×2 grid as a map of the landscape in which research works, one might ask which theories and evidence are available in RIPD and how coherent and expansive the research approach is. Even this simple framework opens up a large set of questions about the nature and purpose of different forms of research-informed development.

With this variation in mind, we are led to conclude that the pertinent question for PD is less whether it is research-informed, but rather what form and focus of research it is informed by. The 2×2 grid above frames a response to this question in relation to how practically or academically focused the theory and evidence is and how well these are combined. More generally, there is a need to consider the quality of the evidence and whether it is suitable for meeting the purposes of a particular instance of PD.

Research literacy for research-informed professional development

Let's reflect on research literacy and teacher judgement in relation to evidence quality. There are many ways of thinking about the quality of evidence, many focused on the level of certainty that can be placed in the claims being made. We are of the view that level of certainty (often discussed in terms of 'rigour' or 'robustness') is important but just one consideration for appraising research that we hope might inform policy or practice.

Our own criteria for high quality evidence, as described in Perry and Morris[13], are that it needs to be usable, relevant, rigorous, cogent and coherent. These criteria can be used by both the producers and consumers of research and evidence. The ability to judge research against these criteria when weighing up a potential research contribution to professional development is at the heart of research literacy. We note, and stress, that both professional expertise and research literacy are needed to assess these criteria – how can one judge usability or relevance without professional knowledge, or rigour without research literacy?

Also central to research literacy is the ability to navigate the well-documented 'gap' between research and practice. Research findings are inevitably incomplete, uncertain and to a degree erroneous.[20] In other words, there is a gap between what the evidence tells us and how it is interpreted and used (often described, narrowly, as 'implementation'). When assessing the evidence for and against any given practical approach, RIPD leaders might consider where in the following continuum they would rate an educational approach in terms of its support in the evidence:

At the level of specifics, almost nothing in educational research can be said to be proved (or even 'based' on evidence). Some of the more general statements of findings from cognitive science (e.g. our working memory has a limited capacity) can be seen near this proven end, as can the specific classroom practices we associate with these principles are typically 'consistent' or 'plausible'. There are very many widespread educational myths which occupy the 'tenuous' to 'contradictory' end of the spectrum.[18][19][20]

One way of looking at leadership of RIPD is that it is a process of trying to reduce the number of practices on the right and increase the number on the left. The teacher, policy-maker or school leader in question is exercising their research literacy to navigate the research to practice gap and judging what the implications of the research are for practice and how confident we can be in our conclusions. The specifics of how to make such judgements is beyond the scope of this article. What does need stressing is that using research and evidence should be recognised as an important, complex, professional skill[21] which, at its heart involves aligning and integrating research and practice and exercising expert judgement about what evidence does and does not reveal.

Substantial capacity building is needed in relation to both research literacy and PD design and leadership for the potential of RIPD to be realised. There are signs that this capacity development is already underway: it now needs sustained resources, systematic training and support and professional recognition. Most importantly, RIPD needs teachers, school leaders and practitioners with understanding and vision about the potential contribution of research to professional development to champion and foster it in all its forms.

Thomas Perry and Rebecca Morris are Associate Professors at the University of Warwick.

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Author
Rebecca Morris
Author
Thomas Perry

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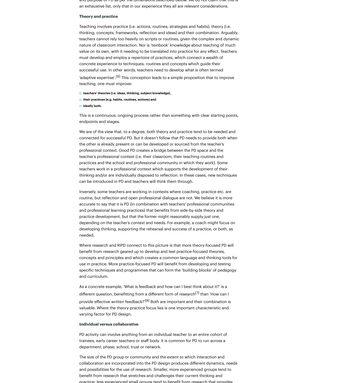
How To Lead Research-Informed Professional Development

Blog

"RIPD" is a rich and vibrant field of activity that intersects educational practice and the lives of young people. Thomas Perry and Rebecca Morris share their advice for how teachers and school leaders may design and sustain it.



Dimensions of professional development purpose and approach

We started our previous article on research-informed professional development (RIPD) with the observation that both research and professional development (PD) take many forms. We went on to describe what research is, the many ways in which it varies and how teachers, school leaders and policymakers might think about the contribution of research to professional development.[1] Now, we focus on the other side of the equation: in this article, we explore how professional development way which effect how (and which) research might contribute to its success?

Much previous research has characterised professional development in terms of its forms, features, characteristics, components, and content. Recently, mechanisms.[2][3][4][5] Common types of PD include training events, online communities, coaching or mentoring, review and feedback exercises, self-directed learning and reflection, collaborative development projects, and so on. Research such as that by Sims and Fletcher-Wood[6] and Coldwright and colleagues[7] has explored the common components and characteristics (for the latter) and forms and mechanisms (for the former) that underpin what makes professional learning effective.

Here we offer an additional, complementary lens by considering common differences in the purpose and focus of professional development rather than in the precise construction of research to do PD. We also offer a framework for mapping our approach to RIPD against these dimensions of purpose and focus. We argue that the form that general components (or mechanisms) take will depend on the focus and purpose of PD as per the dimensions described below. We do not claim that this is a comprehensive list, but it is our experience they all are common themes.

Theory and practice

Teaching involves practice (i.e. actions, routines, strategies and habits), theory (i.e. thinking, concepts, frameworks, reflection and ideas) and their combination. Arguably, teachers cannot rely too heavily on practice or routine, given the complex and dynamic nature of classroom interaction. Nor is 'textbook' knowledge about teaching of much value on its own, with it needing to be translated into practice for any effect. Teachers and school leaders must therefore combine theory and practice to develop the professional capacities to address the unique routines and concepts which guide their successful use. In other words, teachers need to develop what is often termed 'adaptive expertise'.[8] This conception leads to a simple proposition that to improve teaching, one must improve:

- **teachers' practice (i.e. how, where, when and how much/least);**
- **their practitioner (e.g. habits, routines, science) and**
- **needs both.**

This is a continuous, ongoing process rather than something with clear starting points, endpoints and stages.

We are of the view that, to a degree, both theory and practice tend to be needed and connected for successful PD. But it doesn't follow that PD needs to provide both when the other is already present or can be developed or sourced from the teacher's professional context. Good PD creates a bridge between the PD space and the teacher's professional context. It is important to be clear about the relationship between practice and the school and professional community in which they work. Some teachers work in a professional context which supports the development of their thinking and are individually disposed to reflection. In these cases, new techniques can be introduced in PD and teachers will think them through.

Inversely, some teachers are working in contexts where coaching, practice etc. are the norm and where PD is more concerned with theory and ideas. In this case, it is accurate to say that is a PD (in combination with the wider classroom communities and professional learning practices) that benefits from side-by-side theory and practice development, but that the former might reasonably supply just one, depending on the teacher's context and needs. For example, a coach might focus on developing thinking, supporting the rehearsal and success of a practice, or both, as needed.

Where research and RIPD connect to this picture is that more theory-focused PD will benefit from research geared up to develop and test practice-focused theories, concepts and principles and which creates a common language and thinking tools for use in practice. More practice-focused PD will benefit from developing and testing specific techniques and programmes that can form the 'building blocks' of pedagogy and curriculum.

As a general example, 'What is feedback and how can I best think about it?' is a different question, benefitting from a different form of research[9] than 'How can I provide effective written feedback?'[10] Both are important and their combination is valuable. Where the theory-practice focus lies is one important characteristic and varying factor for PD design.

Individual versus collaborative

PD activity can involve anything from an individual teacher to an entire cohort of trainees, early career teachers or staff. It is common for PD to run across a department, phase, school, trust or network.

The size of the PD group or community and the extent to which interaction and collaboration are incorporated into PD design produce different dynamics, needs and possibilities for the use of research. Smaller, more experienced groups tend to benefit from research that stretches and challenges their current thinking and practice, less experienced small groups tend to benefit from research that provides evidence-informed pedagogical 'models' and strategies. Larger groups, with a greater range of starting points in terms of experience, often require research to create a common language to share and discuss practice and a space in which all can develop.

The possible benefits of collaboration can increase a sense of purpose and aim, potentially, commitment and enjoyment. Gracey and Maxwell[11] discuss collaborative research and development models in which teachers research from multiple teaching school alliances work together to design and undertake enquiry and development projects. The targeted approach has in its favour the ability to identify and attend to teacher or department/phase level needs, whereas the aims of a whole school approach to ensure consistency and coherence of school culture, climate and expectations, as well as potentially offering a more coherent and comprehensive approach.

Collaboration also comes with the dangers of 'recycling poor practice and ideas'[12] and the increased need to find ways to tailor to teachers' needs and interests, subjects and contexts. As the level of collaboration increases, research can variously provide a vehicle for collaborative enquiry (e.g. a lesson study or practitioner research), a guard against ineffective practice and a source for activating and testing them against evidence from and through research, and a way of tailoring and embedding general concepts and strategies from PD to the specifics of teachers' thinking and practice.

Holistic versus focused

Looking at the PD we have researched or supported, we see a broad range, from the very targeted to far more holistic PD programmes. PD could, for example, focus on a particular approach to giving written feedback in a single subject,[13] or it could be addressing a whole-school approach, encompassing broader aspects of literacy and student experience. The targeted approach has in its favour the ability to identify and attend to teacher or department/phase level needs, whereas the aims of a whole school approach to ensure consistency and coherence of school culture, climate and expectations, as well as potentially offering a more coherent and comprehensive approach.

A challenge common to both, but in different ways, is understanding how the PD focus may change and develop over time and in response to teacher learning. For example, may emphasis can be modelled and sustained in the classroom in the long-term, and how desired relationship between models of teaching from PD and existing practice influences whether the keen contribution of research to PD takes the form of an 'out of the box' comprehensive programme, a targeted evidence-based strategy, a framework or process for integrating new and existing practice, or a combination of these.

This dimension also connects to a point made above about seeing in combination a PD course and the teacher's professional community and ongoing professional learning practices. In the context of a rich professional community which is geared up to collaboratively review and develop practice and expertise, the more focused and building subject knowledge may not need to incorporate extensive activity aimed at the practicalities of curriculum design (and indeed it might be inefficient or create issues of consistency between teacher and school curriculum to do so). In the absence of this professional learning environment, however, a PD course on subject knowledge is unlikely to translate into improvements in the classroom.

Application versus creation

One purpose of PD currently not prominent in standardised programmes is that teachers might be supported to develop as well as apply practices. In essence, it is a question of whether the endpoint is known at the outset. Sometimes RIPD takes the form of an evidence-informed technique (and known endpoint) being explained, modelled and then implemented as faithfully to the model as possible, e.g. with the tools of coaches.

Alternatively, there might be an improvement focus where the endpoint is only partially known. For example, there might be a broad set of principles for effective feedback where 'what it looks like in the classroom' or how to make it work for a particular subject is unknown and part of the PD process is to work out what form it should ultimately take and make it work **in situ**.

Most PD involves both application and creation, with ideas and strategies emanating from the research requiring a degree of translation, contextualisation and intelligent adaptation. Some practices are easier to specify and routinise, some are more context free, while others depend heavily on the particulars of the classroom circumstances or curriculum content. Lurking near the more generic and the practical questions here are some profound questions about the extent to which professionalism and expertise can/can or are defined by the need to create as well as implement.

Research, by definition, is designed to generate and test knowledge, when RIPD takes the form of teachers implementing effective strategies, as determined by researchers (whose claims to expertise usually rest more on their data analysis skills than demonstrable classroom effectiveness and expertise), this is a very different conception of professionalism to a model in which the research is done in whole or part by teachers focused on generating local, situated, subject- and individual-specific knowledge, and the concomitant judgements about what is effective and feasible.

In our view, a rounded perspective on the value and the limitations of research knowledge[14] means that professionalism is to be found in the combination of forms of research and forms of knowledge. We see the balance between knowledge creation and application as an important PD design variable that will vary to the level of teacher experience and expertise and has important implications for what and how research can contribute to the process.

Examples of research-informed professional development

The differences in PD purpose and focus described in these dimensions (as above) open up a range of possible forms that PD can take. We can then connect this to the (equally varied) number of forms that research can take and the many ways in which research can contribute to PD (as discussed in our earlier article in this issue).

Previous research in this area reveals a range of ways in which research can contribute to PD, key variables include whether RIPD is led by teachers or researchers and whether teachers engage **with** or **through** research.[15] Here we consider the variation relating to focus and purposes that we have identified above and provide a small number of concrete examples which illustrate forms that RIPD might take. We have chosen these examples with one eye on our broad definition of research from our earlier article and our PD dimensions above in mind.

Selected examples of RIPD:

1) Carrying out research as part of practice. Some schools ask teachers to select an enquiry question or research objective – perhaps as part of their performance management cycle – and work on developing their practice using research-informed approaches to address this.[16] This is an action-focused approach, encouraging teachers to apply and embed research knowledge and to reflect upon the impact of employing it to develop practice.

2) Engaging with current research. Many teachers engage with published research and use this to inform their own practice or that of their colleagues. This can be challenging in terms of navigating and accessing what is out there and potentially in 'curating' it so there is a manageable way for others to access. Some schools have research 'leads' who are responsible for this kind of activity and who seek to embed research into their practice.[17]

3) Participating in and collaborating on research. Some schools choose to participate in local or national research projects (such as the EEF's trials) or with universities or other research organisations), many of which include substantial elements of PD as part of interventions or approaches being studied. There has also been a growing movement to encourage teachers to lead or be part of studies in conjunction with researchers.[18][19]

4) Engaging in formal courses or qualifications. Many teachers choose to study Master's programmes. If these are education-focused then they tend to include at least some element of research and enquiry which can be connected to practice. This is similar for those studying for National Professional Qualifications (NPQs) and those who undertake doctoral study (via PhD or EdD routes).

In Wales, there is government funding available for teachers to enrol on MA Education courses. In England, there are examples of some organisations offering this kind of support to small numbers of practitioners (e.g. the Association of Colleges' 'Research Further' initiative for those working in the post-16 sector). New teachers in England are required to follow the Early Career Framework, which provides two years' worth of one form of RIPD during their induction period.

5) Networks and research-informed organisations. Beyond their schools, many teachers are members or affiliates of subject or phase-level associations or organisations (e.g. the National Centre for Excellence in the Teaching of Mathematics (NCETM), the History Association, the National Association for Primary Education (NAPE), etc.). These organisations often provide resources, publications, dialogue and support as part of their offer.

Other examples in this space include the EEF's Research Schools Network and the British Educational Research Association (BERA) and its numerous networks and special interest groups, as well as many more local and specialist groups. In recent years, England has also seen the introduction of the Chartered College of Teaching, which offers CPD activities, a research-informed journal (Impact) and a podcast. Some of these organisations are membership organisations, which can offer further, network and other research and practice (e.g. Research Ed Practice Exchange).

6) Designing and choosing PD using research. There is extensive research into what makes PD effective,[20][21][22] in addition to contributions of research in the content, focus or process of PD, many schools, local authorities, academy trusts and PD users, and providers draw on this evidence base when they design and choose PD to offer and engage with.

An eclectic, profession-led approach

What should be abundantly clear just from the small number of considerations and examples is how variable RIPD potentially can be. In our earlier article, we argued for eclecticism and diversity regarding which forms of research might contribute to PD and how. Here we have explored the other side of the coin, considered variation in the purpose and focus of PD and outlined how this variation connects to different needs, contexts, career stages and potential contributions from research.

RIPD has the potential to be a vibrant field of activity, one that could and sustain the profession and, ultimately, benefit the lives of children and young people. Unfortunately, we do not think that this potential is near to being realised at the moment. In our earlier article, we concluded by arguing that research literacy is needed to develop and realise the value of RIPD and that concerted, systemic support and resources were needed to build it. Following our discussion of the purposes, foci and forms of PD in this article we would add that equally essential are the capacity for teachers and education leaders to create, shape, select and curate the RIPD that their community needs.

A significant step for RIPD in England has been the core entitlement, standardised and fuelled offer of training and PD that we see in the reformed suite of National Professional Qualifications (NPQs). There is great value in the content of these being informed by research about teaching and learning, as seen in the EEF's framework and the Initial Teacher Training and Early Career Framework.

Equally, we should not lose sight of the limitations of any particular conception of RIPD and any attempt to centrally create and control a standardised offer. Putting the matter positively, we think that our ambition for RIPD should not rest with the NPQs, we should see our sights on building a broader, richer, more eclectic and more advanced field. We have argued that this is a task for the profession as a whole, and that means it connects with variation, innovation and experimentation and reflects the 'art and mind' when it comes to meeting the needs of teachers as their careers develop and their aspirations, needs and contexts change.

Worse, there is a danger as a system that we settle for something imperfectly fitting, too narrow a purpose and an approach which places too great an emphasis on teachers implementing what researchers determine to be effective. This is an approach that risks undermining certain aspects of professional expertise and leadership.

In our view, a healthy RIPD environment is principally led, created, influenced and shaped by the teachers and school leaders who are, after all, the experts in effective teaching in their subject and phase and in the needs of their school community. We don't think England has achieved this yet, and we argue that progress lies in a more eclectic and profession-led approach to RIPD (including to researcher education). We believe that there is space for a pluralistic and multifaceted RIPD environment which recognises variation in the purposes and foci of PD and in which different forms of research make well-matched contributions across different forms of PD.

RIPD leaders have a key role in maintaining this system. We have sought to support them by defining, describing and mapping out an RIPD landscape that educators might explore and inhabit. What is also needed to advance RIPD is systemic support, resources and recognition for research literacy, professional expertise and those able to combine them in bold RIPD.

Thomas Perry and Rebecca Morris are Associate Professors at the University of Warwick.

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Abstract

Why research competency is fundamental to development and improvement

As a crucial antecedent for the use of evidence in policy and practice, Nutley, Walter and Davies (2007) and Brown (2014) assert that educational professionals at all levels should be able to engage in four key tasks:

- appraise research evidence critically
- assess its relevance and applicability to practice
- seek out relevant research-based information
- evaluate the impact of changed practice.

These key tasks correspond to the stages of research consumerism often described as a cyclical, ongoing, evidence-based problem-solving activity (Brown, 2014). Assuming that similar processes can be found in analogous frameworks relating to approaches to teaching and learning (Biggs, 2003; Kolb, 1984), Coe (2013) argues that the ability to engage in these processes is dependent on one's level of research – that is, the ability to demonstrate an crucial for quality improvement and professionalism in educational practice.

Actually, school leaders are experiencing pressure across several areas of data and evidence, including their own data (e.g. student performance data), school improvement data (e.g. self-evaluation and development planning), teacher performance data (e.g. assessments, external examiners and more recent generic 'scientific' evidence from academic and professional literature). Accordingly, there is some evidence that if school leaders are research competent, they are more likely to engage in the full exercise of action or develop new practices that can improve pupil outcomes in teaching and learning.[1]

Yet, many school leaders appear to fall back more readily on intuition than, rethinkingly, to come to the end conclusion.[2] We are now witnessing the decay the capacity of school leaders and practitioners to engage in reflective problem-solving, based on research and developing a 'data-wealth'[3] can become an issue in ensuring that practice is evidence-informed.

It is essential that a general obstacle in the context is that profound data based on evidence-informed decision-making processes require a research ethos that we proficient in a range of interrelated areas of research competency. These include:

- identifying a problem of practice
- reviewing literature to develop a conceptual framework
- collecting, analysing, synthesising and using data to test the assumptions and
- considering a variety of contextual and ethical conditions.

Such a level of research competency has been characterised as being a 'developing practice'.[4] Yet, the ability to engage in research competency is not a simple matter. Rather, it is a complex, multi-faceted process that requires a certain level of knowledge, skills and attributes. Hence, the ability to engage in research competency is not a matter of one-off training, but rather a process of continuous learning and development.[5]

For a long time, research competency was mainly studied through self-assessments. Such self-assessments are based on the idea that they are a reliable source of information.[6] However, self-assessments are not always reliable.[7] Research competency is a complex construct that requires a more objective assessment.[8] Therefore, a standardised assessment procedure has consequently emerged, and these have been developed and validated in recent years (Schaffhauser et al., 2016; Schaffhauser & Lavonen, 2017). Such assessments are based on the Technological Pedagogical Content Knowledge framework (TPACK) and have been developed to assess the competencies of teachers in higher education (e.g. Schaffhauser & Lavonen, 2017).

We, too, have developed a standardised test which proved psychometrically sound for the assessment of research competency. Based on the TPACK framework (Mishra & Koehler, 2006), Technological Literacy and Evidence-Based Reasoning[9] were developed. Based on that, we have already demonstrated that German in-service teachers are less competent in the area of technological literacy than in the area of evidence-based reasoning. The required competencies can be supported in order to be able to respond to exercise courses.[10]

Such training courses also aim to teach 'soft' elements. By this, we mean effective motivational characteristics that have been shown to have a beneficial learning effect on the development of competencies (Bandura, 1997; Dweck, 2006). One of these important characteristics is self-efficacy. Self-efficacy is the belief in one's own ability to engage with evidence or negative feelings about one's competence in dealing with research-related tasks (Bandura, 1997). Self-efficacy and these characteristics further influence the development of research competency.

The situation in English teacher education

In comparison to Germany, the situation in England is somewhat less well-advanced. To begin with, conceptualisation is limited. The British Educational Research Association, for example, defines research thus: "Research is the process of investigation leading to new insights, effectively shared. It is conducted within a framework of values and it requires research findings and with the implications of the research" (BERA, 2018). Although this is a good definition, it is not clear what is meant by 'new insights'. Therefore, it is not clear to what extent it is necessary for teachers to be able to engage in research competency and to what extent they need to acquire it.

Yet, this is all the more surprising, therefore, that little is known about the general level of proficiency in engagement with evidence and research-related tasks of school leaders – and particularly whether such proficiencies can be acquired in teacher training courses. Accordingly, we have developed a test that is able to reliably and validly assess the necessary competencies in the context of two different English teacher training programmes.

What is meant by research competency?

The competency to engage with data, evidence, or more generally research, is described in a variety of ways (Brown, 2014; Coe, 2013; Nelson & Cordingley, 2017). Some authors use the term evidence-informed practice[11] while others prefer to make instructional decisions based on various kinds of data feedback[12] or evidence-based practice[13] to mean two different data representations and assessment statistical concepts.[14]

The term Educational Research Literacy I use that the used to explicitly address the engagement with data and evidence-based practice and to emphasise the aspect of a comprehensive research cycle.[15] We define Educational Research Literacy as the ability to accurately access, critical use and to produce research-based information.[16]

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To this can be added the thoughts of Boud[17] who argues that teachers' research competency is dependent on the ability to engage in a cycle that includes the understanding of educational research in relation to positive attitudes/values and critical skills in interpreting professional practice.

The issue is that these definitions are to be operationalised (i.e. transformed into research instruments). Unfortunately, therefore, our comprehension of the extent to which teachers are competent in engaging with research is limited. Nevertheless, acknowledging that further research is required to extend our understanding of teachers' research literacy). While we know the extent to which teachers report engaging with research, we do not know whether they are actually competent enough to engage with research in an appropriate – that is, systematic – depth.[18]

Why is research competency important, then?

Research competency is important, mainly, because it is the means by which teachers can access research and suggests that teachers have the research competency needs to be 'translated' and made practitioner-friendly if they are to use it effectively.[19] We consider initial and in-service teachers to be 'consumers' of research, as a part of a continuous process in the aim and the idea of 'evidence learning'.[20] This is why we see the ability to engage with research as a key competency for teachers in the initial teacher education. Another reason for this was that, because of the traditional link between research and teaching in higher education (Healey, 2003), teacher educators are expected to engage with research and to be research competent in their own work.

To help close this gap, we set present results from a pilot study on two teacher training institutions in England that aimed at gaining insights into:

- how research competent English teachers in training are,
- how research competency develops during teacher training and
- how well confident they are about engaging with data and evidence, and
- how supportive they feel about research-informed practice.

Workflow – what we did

The study was conducted online at Durham University (2020-5). 138 students in the first year of their undergraduate degree course in Primary Education with Qualified Teacher Status (QTS) and 43 students in the second year of their undergraduate degree course in Primary Education with QTS participated in the study.

The completion of two tests was based on their psychometric quality in the original validation studies (Schaffhauser & Lavonen, 2017). The first test was the Technological Literacy test, which is the digital literacy test. Each question was answered by the answers as the a maximum score of 10 points could be achieved. The processing time to take up to up to a maximum of 30 minutes.

In addition, research-related attitudes were surveyed via 12 statements (five point Likert scale). Six statements were on self-efficacy and six statements on value. Both scales were developed based on the Theory of Planned Behaviour (Ajzen, 1991). The Theory of Planned Behaviour is a well-established theoretical framework for explaining human behaviour. It is based on the assumption that behaviour is determined by the intention to perform the behaviour and that this intention is in turn determined by attitudes, subjective norms and perceived behavioural control. In other words, negative feelings towards research appear to go hand in hand with the belief that one is not able to do research, but also with the belief that one is not effective in dealing with them.

Table 1: Correlations Between Research Attitude Dimensions and Research Competency

	Self-Confidence in the Ability to Engage in Research Tasks	Negative Feelings Towards Research Tasks	Research Competency
Self-Confidence in the Ability to Engage in Research Tasks	1	**-.599**	**.199**
Negative Feelings Towards Research Tasks	**-.599**	1	**-.171**
Research Competency	**.199**	**-.171**	1

Note: $p < .05$ (two-tailed); $n = 181$; Pearson correlation coefficient; Research Competency = total test score (maximum of 100 points)

Results – what we found out

In the standardised assessment of research competency, the teacher training students achieved an average score of 50.4 points (SD = 14.1). Based on the results of the German standardisation sample (n = 1,135), this corresponds to a medium level. Educational science) comprehensive tests, as approximately only 10% of the same tasks could be solved correctly. Thus, the teacher training students in the present study have a medium level of competency in the area of Technological Literacy and Evidence-Based Reasoning (50.4%).

Both in the field of Information Literacy and Evidence-Based Reasoning, Both Type University students scored slightly lower than students from Durham (N, 59% vs. 62%, 59% vs. 66%), but these differences were not statistically significant.

Figure 2: Results in the Subscales of Technological Literacy and Evidence-Based Reasoning (Error bars: 95% confidence interval)

Regarding research-related attitudes, teacher training students in this study perceived research evidence as rather useful for their practice (e.g. 'Research evidence can support me in my work as a teacher'; mean = 3.8 out of 5). However, they generally felt confident in their ability to engage with evidence ('I feel confident to judge the quality of research evidence'), but reported no distinct negative feelings towards research. The idea of engaging with research makes me anxious').

Again, there were no significant differences between the two groups of teacher training students. Overall, the results show that the teacher training students in this study have a positive attitude towards engaging with research evidence – but due to the small sample size (n_{total} = 181), the finding cannot be generalised.

Figure 3: Results in the Subscales of Research-Related Attitudes (Error bars: 95% confidence interval)

Feeli analyses indicates here that the effective motivational characteristics contribute to the theoretical suppression of the level of research competency.[21] However, only the theorised influence of Evidence emerged as a meaningful (that is, significant) predictor of research competency. Thus, the students in the present study were convinced that research evidence is important for their practice and had no important students assume, the more research competent they turned out to be.

What next understanding on gained

From our study, it can be inferred that research competencies are already in place – at least to a certain extent – when students enter teacher training and that they participated in it the pilot study. Still, there appears to be room for improvement, especially in the area of Technological Literacy. This is unfortunate because it is in this area that it is difficult for teachers to acquire appropriate research competencies and to evaluate necessary information[22] this latter represents the ability to substantiate reasoning or critically evaluate given conclusions by means of evidence.[23] This is also reflected in the finding that which great general difficulties in dealing with research evidence (Schaffhauser et al., 2016).

Nevertheless, our findings about research-related attitudes are somewhat encouraging: In summary, as respondents found evidence useful, were confident in engaging with research and did not report negative feelings towards it. Nevertheless, it is important that the usefulness of evidence as perceived by teacher training students has also proven to be a meaningful predictor of research competency, which is in line with the current international research literature (e.g. Schaffhauser & Lavonen, 2017). In this study, it was clear that the more students engaged with research, the more positive the relation between the perceived usefulness of evidence and the actual research competency they showed in the standardised test.

In this respect, it is desirable to further research to record the research-related attitudes and research competencies investigated here based on larger student samples in order to be able to make more reliable statements about the relationships between the concepts. In part, in English student research in the context of a curricula as to which areas of competency should be better considered in the future, and how we can serve as a sound foundation for reforms of teacher training in England.

Research competencies and the research-informed teaching profession

In this section, the article opens the fascinating of the global policy movement towards accountability, evaluation and assessment in schools[24], where the feedback of information about pupil performance is used to inform practice and policy. Such a trend has also influenced and affected in education, in order to be able to assess and set up a little is well-known about the competent teachers – as recipients of data and evidence – and how they engage with it in practice. Although a number of tools and frameworks for assessing research literacy are already available, we can be used to assess and provide meaningful indications of how the targeted competencies can be promoted in teacher training.

Ultimately, engaging with data is only valuable to recipients if they can use it to clarify and solve problems of practice. This is why the ability to engage with research and to have at least basic informational criteria) is also important for teachers to experience that dealing with evidence is useful. This, however, presupposes that teachers are able to engage with research in a competent way. Therefore, we would also project the opportunity to discover that particularly relevant and evidence is a valuable to be found (see Evidence-Informed Practice). The results of this pilot study indicate that teacher training courses in England can be successful in promoting research competencies. However, there is still room for improvement in the context of curricula as to which areas of competency should be better considered in the future, and how we can serve as a sound foundation for reforms of teacher training in England.

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Abstract

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Author
Carl Hendrick
Author
Kimberley Hendrick
Author
Carl Hendrick

Training Teachers For Evidence-Based Practice

Will the right approach also be the best one to engage in research-informed practice, Kimberley Hendrick, Deborah Eyre and Layton Schreiber share what they observed from their communities of practice.

Ken joined our community of inquiry with the goal of fostering more inclusive classroom learning experiences for his students. Early on in our year of work together, he identified how poor interpersonal learning experiences had given rise to practices and principles she had found helpful, but that she had sometimes struggled to articulate. Ken wanted to learn how to do a better job of explaining this to his students. As the year progressed, Ken realized he also was interested in how to bring evidence-based resources to inform her learning and practice development and achieve her goals for students.

Professional development (PD) for educators is intended to support them in learning how to shift their practice to advance their goals for students. The challenge for educators like Ken is that they also need support to know how to interpret and apply research findings.[1] Research has long established that teachers who have been exposed to high-quality PD that empowers educators to engage in collaborative, inquiry-oriented learning, and in that context grapple with evidence-based research to inform their practice[2] can benefit from it.[3][4][5]

Evidence-based resources to teacher professional development

Research and practice both suggest that short-term PD organizations that position teachers as recipients of knowledge can be problematic. This is partly because teachers lack the opportunity to engage in a process of knowledge construction that considers their experience, understanding and contexts.[6] Furthermore, when teachers are positioned as passive recipients of knowledge, they may not develop the habits, decision making and learning to engage in evidence-based practice.[7] Knowledge-building approaches can limit educators' opportunities to make connections between learning and practice, which are needed to build a deeper understanding of teaching and learning.[8][9]

For instance, through a PD workshop, a teacher may encounter a principle that's helpful for their practice goals, but may then have difficulty generating principle-based ideas for implementation in their own classroom.[10] Without the opportunity to see examples of effective practice but may not have opportunities to build an in-depth understanding of the principles on which those examples were based to make decisions about how to apply the principle in their own practice. Without this kind of difficulty identifying how the practices they are already using can be reimagined in relation to the new ideas they're exploring.

It follows that more generative approaches to PD need to support educators in developing a deeper understanding of principles that can be applied to their own (and others') experience to make evidence-based decisions and achieve their goals for themselves and their students. To that end, current research on PD has identified four important qualities of professional learning opportunities.

First, research has shown the importance of providing supported opportunities for teachers to take an active role in constructing knowledge relevant to their learning and practice development goals.[11] Knowledge-building approaches can limit educators' opportunities to make connections between learning and practice, which are needed to build a deeper understanding of teaching and learning.[12][13]

Second, educators need agency – or opportunities to make decisions about how they take up PD opportunities – to learn in ways that address the specific challenges in their own and students' learning.[14]

Third, teachers' knowledge through PD processes is enhanced when teachers learn together, thereby becoming resources to one another.[15]

Finally, research has identified how situated (i.e. connected with teachers' practice and students' learning) PD can support teachers in applying what they learn to their practice.[16][17] More specifically, we have been studying how the intentional use of collaborative inquiry communities can be structured to support teachers in accessing and grappling with different kinds of evidence-based resources to advance the goals they have for their learning and practice development.

A model of collaborative, inquiry-oriented professional development

Over time, we have generated a model of PD as collaborative inquiry (see Figure 1). Building from past research, this model represents the reconstruction it also educators are bringing to learning to support their knowledge construction. It also reflects the importance of educators' agency in their learning, as they make choices about how to engage in cycles of inquiry that are responsive to their goals (see cycles in the centre). Finally, the model suggests how inquiry can be fuelled and informed by resources and evidence from research.

Consistent with other models of inquiry-oriented PD research[18][19][20], in our work we define inquiry as 'teachers identifying a problem of practice or student learning that they are not taking ownership over their learning.'[21] We've found that a good conception of inquiry to address an issue they're grappling with is:

Figure 1 Professional learning as collaborative inquiry

More specifically, cycles of inquiry include educators building from goals to plan and enact ways forward, monitoring how things are going, then iteratively adjusting goals and plans in response to what they are learning (see Figure 1). At the heart of this team of the cycle of inquiry shows how educators involved in collaborative inquiry communities typically focus on advancing their own professional learning. To further their learning, they create teacher learning goals and questions to focus on their own learning, monitor how their own learning is unfolding and adjust their approach as needed.

For example, to support student ownership, a teacher might choose to learn more about questioning practices. Or to support their ELL students' literacy learning, they might seek out a practical resource. As they move through their own learning cycle, they might reflect on what they have learned, recognize they need to learn more and so the help from a colleague.

Our model also includes an inner layer of practice-level inquiry. In practice-level inquiry, educators set a goal for practice (e.g. to implement an approach to formative assessment to foster student ownership). Then, their inquiry cycle might include learning more about the approach, trying it out in their practice, and then monitoring and adjusting their approaches as needed.

Finally, our model suggests that to support both teacher learning and advances in practice, the two layers of inquiry cycles should be dynamically related (i.e. inform one another). For example, if a teacher is focused on learning about formative assessment as part of their professional learning cycle, they might then draw from international research[22] and practical resources[23] to inform the practice-level inquiry they develop and enact in practice. At the same time, practice-level inquiry can support students' responses to approaches they try (e.g. perceptions, learning outcomes) creates a powerful evidence-based resource that can inform their ongoing learning and practice development.

In this way, our model highlights how different kinds of evidence-based resources, accessed while deliberately learning or engaging in reflective practice (e.g. collaborative inquiry), can support educators in making evidence-informed decisions to inform advances in ongoing learning. Our model highlights how educators' construction of knowledge through these interconnected inquiry cycles is informed by the various resources they engage with, and the professional knowledge and the agency they exercise in defining how their practice and learning should be informed by research.

Our research into teacher learning through collaborative, inquiry-oriented PD

To inform our understanding of the potential of collaborative inquiry-oriented PD processes, we started by studying a long-term initiative in a local school district where teachers had the opportunity to learn about supporting students to become active and strategic non-fiction readers.

Through our research on that initiative, we learned about the power of teachers using evidence-informed practices (e.g. student conferences) when they've developed benefits to underpin when their engagement in cycles of inquiry.[24] We also identified benefits to educators when they were engaging fully in processes of learning and practice-level inquiry[25][26][27] and the importance of them having opportunities to exercise agency to make decisions about how to engage in learning.[28]

Our most recent research was designed to look specifically at how structures of PD could be designed to support educators in accessing and grappling with evidence-based resources in the community of inquiry was born out of a partnership between a local school district and university and was focused on supporting teachers

with a common interest in learning more about improving practices to support students' ownership of learning[29][30] as self-regulated learning: see Butler et al, 2017).

The community of inquiry began with an intensive three-day summer institute, and then extended throughout the school year with five in-person evening sessions. It ended with an extension to collaborative inquiry the summer learning. All sessions were designed and led by university-based facilitators with expertise in supporting students' self-regulated learning. Each session included a mix of whole-group and small-group time, rooted to engage with foundational knowledge and resources about self-regulated learning and had opportunities to discuss and reflect on what they were seeing, hearing and reading.

Throughout the school year, the in-person sessions were designed with opportunities for teachers to reflect on, share what they were trying and learning in their classrooms, access and engage in new learning and resources and plan for further learning and practice. Facilitators were also responsive to the questions and challenges teachers were encountering in their practice. They were also encouraged to seek out and share resources based on their own and others' questions and deliberately reflect on what they were trying and seeing in practice.

To understand how teacher learning was supported and unfolded in light of the educators who participated in our community of inquiry, we used case study research methodology.[31][32] We collected a variety of evidence including documents, observations, interviews and traces of teacher learning and learning. We analysed using qualitative coding.[33]

What we have learned about fostering teachers' evidence-informed decision-making

Access and support

We learned that it is important for teachers to have both access to a variety of resources and support for them to take an active role in selecting and making how to engage with them. In the inquiry community, teachers were offered access to an array of evidence-based resources to support their learning. They had the choice to engage with a variety of resources, including those that were offered to everyone to engage with or reflect on readings, videos, presentations and practice examples. They also had focused discussions that were centred on their shared interest in supporting students' self-regulated learning.

In some cases, facilitators chose topics for discussions based on the communities' common learning goals. In many cases, facilitators offered evidence-based resources (e.g. readings, videos, tools for practice such as those for peer feedback or formative assessment). Importantly, teachers' access to resources was grounded in support for them to choose which forms of evidence to draw into all aspects of their inquiry based PD. This was important because it helped teachers to engage in ways that they were able to draw from research as they saw fit, to make decisions to try out, seek evidence of student learning to adjust their teaching and consider how they could leverage the power of learning with colleagues.

In one example, educators were invited to select and share an informational resource they thought would inform their own inquiry process, be of interest to their colleagues, and stimulate a generative small-group discussion. They brought the resource to a session and shared it with a small group of colleagues. Their choice of resource shows how teachers were positioned to take an active role in choosing how to engage with evidence-based resources that would support their own (and others') efforts at learning with knowledge-building resources and interactions.

Between meetings, teachers were invited to complete a short reflection to help them to make connections between knowledge-building resources and what they were experiencing and observing in their practice. This was also a one-reflective tool where educators to focus on a meaningful aspect and identify the goal they had at

the beginning of the year. Teachers' responses were then used to inform the practices they tried out. They were then asked to observe and record evidence of student learning and reflect on what they (as educators) learned. Finally, the teachers were invited to plan their next steps, including their reasoning for how they would move forward. These structures were integral to how teachers infused evidence-based resources into their learning processes and practice development.

Empowering teachers to tackle challenges

What did we observe when teachers had up these combined supports for engaging with evidence-based resources and integrated them into collaborative and inquiry practices? We observed teachers engaging in cycles of inquiry that enabled practice through sustained efforts at learning through inquiry. These type of longitudinal learning and practice development can be difficult to achieve. Indeed, a theme in research on collaborative and inquiry-based PD is that teachers can struggle to engage in full cycles of inquiry, particularly when it comes to observing the impact on students' responses to their attempts to advance their practice.[34][35] [36][37]

In contrast, what we found was that when educators engaged back to identify and grapple with tensions they observed supported by reflective tools to use of research evidence based resources (with support to grapple with them), teachers were empowered to know how to move forward. Rather than get stuck in the face of challenges, they persevered and increased their opportunities to meet goals and connect knowledge about teaching and learning.

For instance, when Ken wanted all students to actively participate in cooperative learning structures, she noticed that some of her students were struggling to engage in inquiry and from her workshops to make space to support her goal. After drilling her teaching, she noticed that her students took more ownership of their learning, but some still struggled. She persisted through this challenge by drawing on evidence-based resources and inspirational examples which gave her ideas about how to work collaboratively with others and built her approach to further her goals for learning.

By continually reflecting on how students were learning (using reflective tools) and drawing on evidence-based resources, Ken was empowered to problem-solve about how to move forward in her efforts to address students' needs. Such sustained learning and practice-level cycles of inquiry provided ongoing opportunities for her to forge connections between resources and generate meaningful understanding about supporting students' self-regulated learning.

Making connections and strengthening decision-making

Through our work with teachers, we have learned about how evidence-based resources can be positioned to enable knowledge construction in a way that supports educators to make connections between useful ideas and their practice contexts. Our research suggests that when teachers engage in inquiry, they are positioned to develop practical opportunities for them to act with agency in decisions about when and how to draw from them. At the same time, we have learned how supporting processes (e.g. reflective tools, small-group discussions) can support teachers in making connections between what they are learning and what they notice and experience in their practice.

In the study described in more detail here, the result was a year-long research-practice partnership between researchers and teachers that was dedicated to supporting learning and practice development. Over time, our findings have suggested how researchers and PD facilitators can support teachers to develop their capacity to both make decisions about how to integrate classroom data in their decision-making and draw from research evidence to develop new understandings and practices.[38]

Dr Kimberley Hendrick is a Postdoctoral Fellow in research and teaching at the University of British Columbia's Department of Educational & Counselling Psychology, and Special Education. Deborah Eyre is a Research Associate in the Faculty of Education at the University of British Columbia, and Dr Layton Schreiber is an Associate Professor in The University of British Columbia's Department of Curriculum & Pedagogy and Director Pro-Professor of Rural Teacher Education.

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How To Use Teacher Dashboards To Support Learning

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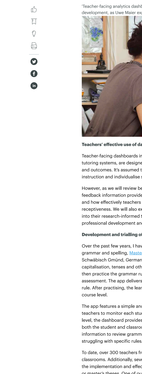
Uwe Maier
MAY 2024

How To Use Teacher Dashboards To Support Learning

Teacher-facing analytics dashboards' can be a powerful enabler of professional development, as Uwe Maier explains.



Teachers' effective use of dashboards

Teacher-facing dashboards in adaptive digital learning systems, such as intelligent tutoring systems, are designed to summarise and display student learning processes and outcomes. It's assumed that these learning analytics can help teachers adapt their instruction and individualise support.

However, as we will review below, there are cases where teachers largely ignore the feedback information provided by these dashboards, raising the question of how often and how effectively teachers use them and what factors might improve their receptiveness. We will also explore how teachers can develop their dashboard literacies into their research-informed teaching practices and discuss the implications for professional development and educational leadership.

Development and trialling of a new learning app

Over the past few years, I have developed a small-scale learning app for German grammar and spelling, MasteryX, together with students at the University of Education Schwäbisch Gmünd, Germany. The app provides micro-courses on punctuation, capitalisation, tenses and other topics. Students begin with a prior knowledge test and then practise the grammar rules that they have not correctly mastered in the assessment. The app delivers instructional videos and written rules for each grammar rule. After practising, the learners can retake the assessment and move on to the next course level.

The app features a simple and straightforward teacher-facing dashboard, enabling teachers to monitor each student's course progress in real time. On a more detailed level, the dashboard provides information about mastery of each grammar rule on both the student and classroom levels. We anticipate that teachers will use this information to review grammar rules in their lessons or to support individual students struggling with specific rules.

To date, over 300 teachers from our partner schools have used this app in their classrooms. Additionally, several of my teacher-candidate students have researched the implementation and effects of this digital learning environment for their bachelor's or master's theses. One of our primary findings was that the implementation varied significantly between schools and teachers. Some teachers were merely interested in experimenting with the digital learning material for independent practice during their lessons. They showed no interest in integrating the learning app with their ongoing German language lessons. Despite introducing them to all of its functionalities, most of these teachers did not access the dashboard.

On the other end of the implementation spectrum, we found schools where teachers collaborated and developed an implementation scheme. For instance, they used our app in all Grade 8 classrooms to review and reteach basic grammar topics during the second half of the school year for a three-week period. Notably, these teachers regularly accessed the teacher-facing dashboard.

A number of my teacher-candidate students have conducted in-depth investigations into teachers' dashboard usage or non-usage. They discovered a range of individual reasons for accessing or not accessing the app's dashboard. Most teachers who did not access the dashboard were uninterested in a diagnostic tool. They simply desired functional learning material for their classrooms. 'Functional' in this context meant that the students were motivated to learn independently with the digital learning system over an extended period.

However, some teachers were disappointed as the motivation of struggling students declined, leading them to reject learning with the app. There was even one alarming case where a student consistently failed the Level 3 assessments. His father approached me, distressed by his son's difficulty with the app. Upon investigation, I found that the app was designed as independent homework and the teacher had failed to recognise the student's repeated failures, despite the dashboard clearly signalling struggling students with a red flag.

Finding out what support teachers need to use dashboards

A crucial lesson I've learned from these experiences is that the use of teacher-facing dashboards in adaptive learning systems cannot be assumed. Teachers need guidance from system developers or, better yet, collaboration with colleagues who also work with the system. This cooperation can help develop an effective implementation scheme, including how to access and learn from dashboard data.

This personal, anecdotal research experience motivated me to review and summarise research findings on how teachers use dashboard information for instructional decisions. I wanted to find answers from other researchers to questions, such as: What features of teacher-facing dashboards provide relevant insights for teachers? What do we know about the extent and quality of teacher dashboard usage in some of the widely used adaptive learning systems? How can we support teachers in deriving actionable knowledge from dashboard information?

Research evidence on teachers' usage of learning analytics dashboards

Teacher dashboards, also known as learning analytics dashboards, are digital platforms or tools designed to help educators monitor, analyse and personalise student learning experiences.[1] These dashboards typically provide real-time or near-real-time visualisations of student performance, engagement and progress, enabling teachers to make data-driven decisions for teaching, assessment and intervention.

By aggregating and synthesising data from various sources (such as learning management systems, student assessments and online learning activities), teacher dashboards aim to facilitate a better understanding of students' strengths, weaknesses and learning preferences, ultimately supporting differentiated instruction and improved learning outcomes.

Different dashboard functions include:

- **Mirroring: collecting and analysing student learning data**
- **Alerting: Warning teachers if a student deviates from a standard;**
- **Advising: Providing advice for the teacher on how to interpret a situation and what to do next;**
- **Intervening: Sending messages to teachers or students.**

Research reveals that teacher-facing learning analytics dashboards can play a crucial role in supporting and enhancing teaching and learning processes.[2,3] These dashboards can improve teachers' awareness of students' participation, learning progress and outcomes, as well as affect student achievement. Herodotou et al.[4], for example, found that the teachers' weekly usage of the Open University Analyse course dashboard in higher education online courses increased course passing rates and course completion rates. However, research also highlights major issues that hinder teachers to access and use information from dashboards.[5,6] These include:

1. Limited involvement of teachers in the design process: Many learning analytics tools lack teacher input in their design, which may hinder their adoption and effectiveness in practice. Involving teachers in the co-design of learning analytics tools can lead to more user-friendly and effective tools.

2. Insufficient training and support: Teachers often require additional training and ongoing support to effectively use learning analytics dashboards. Without proper training, teachers may struggle to interpret and apply the insights provided by the tools, limiting their impact on teaching and learning.

3. Inadequate consideration of theoretical foundations: Many learning analytics dashboards lack a solid theoretical foundation, which may result in a disconnect between the tools and educational practice. Considering the theoretical base in the design and evaluation of learning analytics dashboards can ensure their relevance and effectiveness in educational settings.

4. Diverse perceptions of usefulness: Teachers may have varied perceptions of the usefulness of learning analytics dashboards in their everyday work. This highlights the need for customisable dashboards that can cater to the specific needs and preferences of different teachers.

Lessons learnt for the professionalisation of teachers

One of the most instructive research findings for me is that we need professional development activities to inform teachers about how they can benefit from learning analytics dashboards. We need to motivate teachers to view the learning analytics dashboard from the perspective of a researcher. But what are the most crucial issues to address? Van Leeuwen et al.[7] proposed an integrated model for teacher dashboard usage which describes three common phases of dashboard information processing:

1. **Awareness of information**: Teachers know that the learning system provides data and how to access data. They look at data when the dashboard sends an alert or when they need more information about a student's learning.

2. **Interpretation of dashboard information**: Teachers ask questions after reviewing the dashboard data. 'What does the data mean for my questions? Does the dashboard data make sense to me?'

3. **Enactment**. Teachers translate the interpretation into pedagogical actions in their classrooms, e.g. supporting students, planning whole-classroom activities, or reflecting upon the instructional approach.

This process is mediated by complex teacher characteristics (pedagogical knowledge, professional routines, data literacy), the characteristics of the digital learning system itself and classroom context factors.

I think that these three analytic phases of dashboard usage should be enriched with the more general concept of 'teachers as researchers of their own practice'. Do the teachers only react when the dashboard displays an alert, e.g. one student succinctly falled an assessment? Or does the teacher have a proactive attitude towards the dashboard and the adaptive learning system? Does she/he pose her/his own 'research' questions the dashboard data might help to answer or not? Applying the more general model of 'research-informed educational practice'[8] to the three phases of dashboard usage has guided me to suggest pertinent questions that must be answered during the implementation of adaptive learning systems:

1. **Clarifying Goals**: What specific questions am I aiming to answer using the digital learning app? Why have I chosen to incorporate this learning app into my classroom? What are my specific goals for using this app?
2. **Understanding and Critically Evaluating Data**: Does the learning system provide reliable and valid data about relevant learning processes and outcomes of my students?
3. **Analysing Dashboard Data**: How can I analyse the data provided by the dashboard? Does the dashboard offer any form of meaningful and interpretable aggregation or visualisation, such as classroom analytics, identification of missing prior knowledge, learning trajectories, or mastery of learning goals?
4. **Interpretation and Integrating Multiple Data Sources**: How can I interpret dashboard information in conjunction with other data sources, such as in-class observations or student grades?
5. **Drawing Insights and Planning Actions**: Have I gained any knowledge that answers my specific questions and motivates me to take further instructional actions to pursue my classroom goals?
6. **Evaluating Instructional Decisions**: Does the learning analytics dashboard assist me in evaluating these instructional decisions?

Figure 1 Process of dashboard reception and usage

Figure 1 presents a flowchart detailing this idealistic process of dashboard usage in digital learning systems. It's worth noting that this process is highly error-prone, and a teacher's motivation to make sense of dashboard data can falter at each phase. The flowchart in Figure 1 also visualises how the process of dashboard sensemaking depends largely on teacher characteristics and features of the digital learning system and its dashboard. For instance, teachers need critical data literacy to assess the quality and reliability of information in dashboard graphs or tables.

Conversely, flawed or overly simplified dashboards can hinder teachers from finding relevant answers to their initial questions. An example of this would be when dashboards do not display student mastery on a detailed level of learning goals, but only report summary scores, preventing them from informing meaningful instructional decisions.

Example of research-informed integration of learning analytics dashboards

The six questions above can critically guide the implementation of an adaptive, digital learning system into teachers' professional practice. Does the dashboard provide any relevant information and are teachers capable of analysing and interpreting the information? If teachers can answer their questions with the data provided by learning analytics dashboards, they are less likely to ignore them in future. The following scenario is an example of how teachers can apply the model of research-informed educational practice to evaluate the practicability and usefulness of teacher-facing dashboards.

The teacher in this scenario wants to get an overview of the Grade 8 students' prior knowledge of punctuation before planning a series of lessons on this topic. The teacher knows that the MasteryX app diagnoses prior knowledge of this topic with short, consecutive formative assessments that provide a reliable and valid diagnostic of student knowledge on the level of specific punctuation rules. However, the teacher also knows that the difficulty of the tests increases from Level 2 to 3 due to longer test passages and longer sentences. This will probably negatively influence students' ability to correctly apply the punctuation rules (critical data literacy).

After a test administration, the teacher accesses the app's dashboard and analyses the classroom overview site and the course overview site. The classroom overview site displays the course level that each student achieved on the first attempt. This information is the distribution of prior knowledge in the classroom. For each punctuation rule, the course overview site shows how many students were able to apply this rule in the assessments (data analysis). The next step is data interpretation and integration with other data sources (classroom observations, curriculum knowledge etc.). The teacher, for example, finds out that many students still struggle with commas that separate inserted relative clauses.

However, the dashboard does not tell the teacher why these students do not apply the rule. Are they not knowledgeable of the rule or are they not able to discover relative sentences? The teacher needs to interview students to get deeper insights (interpretation and integration of dashboard information with other data sources). The teacher uses the knowledge gained from the dashboard to plan two lessons that aim at clarifying and practising the respective punctuation rules (taking actions in response to the dashboard information). Eventually, after the second grammar lesson, the classroom goes back to the learning app and all students repeat the Level 2 assignment to check if the lessons improved the application of the grammar rules (evaluation).

Although this scenario is highly idealistic, we will use the example to inform teachers about how to use the MasteryX learning app's teacher dashboard.

Implications for education leaders

Interpreting data from teacher-facing dashboards is not a task reserved solely for teachers. Other stakeholders, such as EdTech designers, school leaders and individuals involved in professional development programmes should also contribute to this process. Scholars in the field, such as Kallisa et al.[9], strongly advocate for close collaboration between EdTech designers and school teachers in the design and evaluation of teacher-facing dashboards.

However, this cooperative effort should go beyond mere prototyping and usability studies. It's important for EdTech researchers and developers to gauge the true impact of dashboard usage on a teacher's comprehension of students and their teaching activities. School leaders have a pivotal role in this evaluation process and can provide valuable assistance in addressing issues related to data privacy.

Teachers require data literacy and time to analyse learning analytics data. Therefore, professional development programs should not solely focus on the implementation of the digital learning system or the student-facing part of the system. While these aspects are crucial and likely the primary focus for teachers before using a learning app, it's equally important to address the diagnostic or learning analytics components of a digital learning environment. Teachers should develop the skills to analyse and interpret digital learning traces and foster a sense of becoming data analysts and practitioner researchers of their own classes.

School leaders can initiate and support teacher collaboration in this area of professional development. In my experience, the implementation of the learning app was most effective in schools where more than two teachers used the app and shared their experiences. Some teachers may hesitate to share their own teaching or dashboard with colleagues due to the highly personal insights it provides into students' working habits and classroom learning outcomes. However, it's possible to organise school-level workshops where teachers discuss their strategies for reading dashboard data and making sense of it.

Uwe Maier is a professor of education at the University of Education Schwäbisch Gmünd, Germany (uwe.maier@ph-gmuend.de).

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Journal Clubs: The Power And Possibilities

Journal clubs represent a significant resource for teacher professional development. Katherine Lee explores the benefits and challenges of implementing journal clubs in practice.

Research, adult literacies and putting the boundaries of what is known

Have you ever read a 10-page paper without understanding what it says? If you answered yes, you may be close to what it's like to read a scientific paper. Reading research papers is a necessary evil for teachers wanting [research-based classroom practice](#) and practice guidance.

As our native English speakers and researcher in the field of education, I find the reading research papers a daily task that requires constant focus and a high level of skill. Even with my background knowledge and experience, reading research papers is also an either new to the discipline or new to the topic of literacies, and is perhaps even more difficult for non-native speakers of the language in which the material is written. Yet, for those of us who are dedicated to the practice of evidence-based teaching and literacies, we would be underestimating the scope of the task.

The word 'research' is derived from the French word 'recherche', which means 'to search out'. It is a systematic way of seeking for others to always seeking something. Research is a process of collecting, analysing and interpreting data to answer questions. It entails not only studying what is known, but also pushing boundaries to discover what is unknown. Research is a way of thinking, examining critically the various aspects of thinking, including the ability to question authority as well as complicated, interpret, and analyse written texts.

In 1991, Alvermann and Guthrie[1] conducted a comprehensive study using The National Adult Literacy Survey, which assessed three categories of literacy from Level 1 (lowest) to Level 5 (highest). Their findings revealed that the ability to read Level 3 literacy is associated with tasks requiring readers to integrate more information, complex visuals and perform multiple numeric operations, frequently with distractors. Level 3 literacy also requires readers to construct meaning by drawing on their background knowledge, similar to what students experience in secondary school. Only 4% of adults in the United States reached Level 5 literacy (or 'research literacy') in 1992, the year of the survey.

The benefits of research reading for teachers and teachers

Educational research nowadays around four core tasks: systematically observing and documenting educational phenomena; analysing and processing data; theorising and disseminating findings; and enhancing educational processes and outcomes.[2] Therefore, research reading is a necessary skill for teachers to develop a comprehensive understanding of educational theories, allowing them to do so to align with their classroom best practices, enable evidence-based teaching, build trust and collaboration with students, and improve their practice. Below, I will provide further elaboration on each of these five aspects.

Research publications often delve into theories of learning, such as constructivism, behaviorism and socio-cultural theory. By studying these theories, teachers and leaders gain insights into how students acquire knowledge, develop skills and engage with content. This understanding helps them design instructional strategies and activities that align with these theoretical frameworks, leading to more effective and engaging teaching practices.

By reading research publications, teachers and leaders can cultivate a heightened sense of awareness regarding various educational challenges. These challenges may include promoting educational equality, fostering inclusive education practices and addressing issues related to diversity and cultural sensitivity. Research studies can provide valuable insights into the experiences, needs and barriers faced by students with varying abilities, socio-economic backgrounds and cultural contexts. This awareness helps teachers and leaders develop empathy, cultural competence and a deeper understanding of the disparities and inequities that exist within the education system.

Research reading can engage both teachers and school leaders in evidence-based education, resulting in informed decisions that are grounded in empirical evidence rather than relying solely on personal opinions or anecdotal experiences. By examining curriculum, instructional materials, assessment methods and intervention strategies that have been rigorously studied and proven effective, teachers can identify practices and approaches that are effective, thereby maximising resources and student outcomes.

When education providers base decisions on research and evidence, it demonstrates a commitment to continuous improvement and ensures that students receive the best possible education. This transparency and accountability creates a sense of trust among stakeholders, including parents, students, and the community.

Reading research publications can also help teachers and leaders to stay updated with the research community and promotes collaboration between researchers and practitioners. This collaboration can be facilitated by attendance at conferences, participation in research teams and fostering the creation of professional learning communities.[3]

Revolutionise 'research literacy' from sources of literacy

In the adult literacy framework of Kirsch et al., there are three categories of literacy skills: Prose literacy, Document literacy and Quantitative literacy, which encompass all other other information. Document Literacy refers to the knowledge and skills necessary to locate and utilise information contained in materials such as charts, graphs, and tables. Prose literacy refers to the ability to read and understand texts and literature in real-world situations. Quantitative literacy refers to the knowledge and skills required to comprehend and utilise numerical information.

Fig 1. Kirsch et al.'s framework of literacy

Recently and Wilkin[4] defined research literacy as the ability to locate, understand, discuss and evaluate different types of research, to communicate accurately about research and to apply it in their academic and professional practice. He reviews the literature and identifies four core elements:

The first aspect is informational technological literacy, which involves the ability to use resources such as electronic media and databases to locate and retrieve research articles. There are many techniques and strategies for locating relevant and high-quality research articles, and we need to comprehend and use them effectively for using different sources.

The second aspect is verbal literacy, which involves the ability to understand, discuss and critique written texts and to communicate about them in both oral and written forms.

The fourth aspect is visual literacy, which involves the ability to understand how to read and construct non-verbal texts such as charts, graphs and diagrams.

Fig 2. Wilkin's framework of research literacy

Considering that systematic empirical knowledge on the structure of educational research literacy or its development in higher education still remains a fragmented area with ups and disadvantages, a group of German scholars developed a theoretically and empirically based model of research literacy competencies in teacher education.[5] Those proposed three literacy aspects of educational research that focus on the four research processes (Fig. 3).

The first aspect is the ability to search for complex appropriate research questions and to search and evaluate necessary information to research processes (research 'ask' and 'search'). Statistical literacy is the ability to search and evaluate, especially numerical information (research 'find'). The second aspect is methodological competence, which is the ability to analyse available evidence in appropriate ways and to draw conclusions. The conclusions must be substantiated in critically evaluated with respect to scientific quality criteria (research'explanation' and 'synthesis').

Fig 3. Gabriel-Kaufmann et al.'s framework of research literacy

Gabriel-Kaufmann et al.'s framework of research literacy

Scientific 'research literacy' through cognitive schema

After understanding the anatomy of 'research literacy', the next step is to learn how to read systematically. For example, Sackett et al.[6] suggested that the first step in reading research is to develop a 'habit' of reading research. Once a habit is established, the words encountered in the text' processes readers with comprehension, and the ability to read research articles becomes more automatic and effortless. Although scientific research articles is written in a style that can be challenging for the non-academic audience without regular background knowledge, it is undeniable that university students and teachers are required to read a large number of research articles to provide a certain level of background knowledge.

In Piaget's theory of cognitive development, schema refers to background information or experience. It is an individual's mental framework or organisation of knowledge used to comprehend and interpret new information. Through the process of assimilation and accommodation, individuals modify their existing schema in response of an existing schemata to interpret new information or experiences.[7] Schema helps people to identify shapes and colours. It was much simpler to first group the cage pieces by colour and shape before trying to assemble them into the cage. Schema theory[8] although sometimes equate schema to some in a style that can be challenging for non-academic audience without regular background knowledge, it is undeniable that university students and teachers are required to read a large number of research articles to provide a certain level of background knowledge.

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Fig 4. Piaget's theory of cognitive development

When a robust cognitive schema is in place, a reader can read independently without the need for additional support or guidance. Take the game of Jenga as an example, people, however, when such schema are in their infancy, novice readers require appropriate guidance from more experienced readers to set proper examples or models. Scaffolding is a teaching technique that involves breaking down complex learning processes requires the students acquisition of both schema cognitive and sociocultural perspectives in cognitive psychology.

Better research reading experiences through online journal clubs

Flower presentations[11], dynamic learning and experimental workshops[12], annotated bibliographies[13], and journal clubs[14] are some of the ways that have been used to help beginner/preservice learners to develop literature reading skills. However, the use of journal clubs as a legitimate pedagogy has not been studied in the research literacy context. Journal clubs are typically defined as a group of individuals who meet regularly to discuss the latest developments in a field related to them. The [Kaupapa2021](#) research project is dedicated to fostering the research literacy of novice readers including research students and school practitioners by offering [Kaupapa2021](#) online journal clubs. Kaupapa2021 online journal clubs are designed to help learners to comprehend academic texts in journal articles. It provides the full open access platform to serve such purposes. Its directly involving educational researchers and practitioners in the discussion of research articles. Kaupapa2021 online journal clubs can supplement the training of university-based research students and pre-service teachers and in-school practitioners.

Between 2020 and 2026, 100 OJCs are anticipated to be made accessible to the public via the project's [website](#). Currently, 17 researchers have joined the initiative, and 9 of them have already hosted their OJCs.

Fig 5. A screenshot of the Kaupapa2021 website

Fig 6. A screenshot of the Kaupapa2021 website

Second, each OJC has a series of activities and learning activities designed to guide participants in developing different aspects of research literacy through the use of a research article (see Figure 7). Each OJC is hosted by a host who is responsible for the encompasses not only verbal, visual and academic aspects, but also supervises and evaluate the contextual position of the article (contextual) and encourages readers to proactively engage in scientific dialogue (social).

Fig 7. Different activities in an OJC

Fig 7. Different activities in an OJC

Third, each OJC is an event, but within them there exist system-level activities that allow readers to acquire knowledge from collective databases and simultaneously contribute knowledge back to these databases. One example is Researchers hub, a platform that allows participants to share their research interests, find collaborators, maintain user-owned CV archives, and if so wants, easily. One can add new entries. Participants can view and comment on each entry in every collective database. Researchers hub is a free service provided by Kaupapa2021 and does not have any fees or ownership fee to users.

Fig 8. A screenshot of the Kaupapa2021 website

Fourth, various AI tools are being introduced or integrated into the research reading training flow. For instance, the ChatGPT chat window has been integrated into the platform's sidebar. It can serve as a personal research tutor by providing dialogue responses to questions raised by readers. Also, the Kaupapa2021 platform's Research Hub is a free service provided by Kaupapa2021 and does not have any fees or ownership acquired by ChatGPT. users can be quickly added to the collective glossary database.

Glossary learning activities also introduce artificial intelligence (AI) literacy and discuss for enhancing research reading. For instance, in the contextual sensing activity, which [Kaupapa2021](#) has developed, participants are asked to [Kaupapa2021](#) as well as AI powered research tool for scientific literature to automatically find relevance.

Fig 9. A screenshot of the Kaupapa2021 website

Finally, forums are intended to engage asynchronously remote readers throughout each OJC. Utilising the hosting Research Lab, readers can also continue the conversation on Twitter.

Fig 10. A screenshot of the Kaupapa2021 website

Conclusion - the imperative for educators to develop research literacy

Research literacy plays a crucial role in equipping teachers with the knowledge and skills to engage with research effectively. It enables them to critically evaluate research, to implement evidence-based practices. Professors in reading research literacies, such as Gabriel-Kaufmann et al., have identified various dimensions and aspects of research literacy, encompassing information literacy, verbal literacy, visual literacy and critical literacy. These dimensions highlight the multifaceted nature of research literacy and its importance in different contexts. Educators can enhance their research literacy by effectively comprehend research literacies and achieve optimal teaching outcomes.

Throughout the process, a cognitive schema is established, facilitating the assimilation of new information and experiences and the ability to adapt to changed circumstances.

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