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Bridging the research-practice gap in education: Initiatives from three OECD countries

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Acknowledgements

Abstract

Over the past two decades, the use of research in educational practice has emerged as a policy imperative in many OECD countries. However, concerns about the significant gap between research evidence and practice are persistent. This working paper delves into the role of research-practice partnerships in bridging this persistent divide. It critically evaluates common assumptions associated with such partnerships through an overview of research, insights from recent OECD data, and importantly, through three in-depth case studies. The case studies illustrate partnerships between education researchers and school practitioners in three contexts: Norway, the United States, and Germany. They examine the conditions under which these can achieve an impact on both research and practice and illuminate challenges and open questions associated with these collaborations. The paper aims to inform policy makers and researchers alike on the potential and limitations of research-practice partnerships.

Table of contents

Tables

Figures

Boxes

1. Introduction

Since the early 2000s the "evidence-based" movement has made huge inroads in shaping public discourse and expectations for education policy and practice. In most OECD countries, it is now expected that policy be informed by evidence, and the use of research evidence by teachers is increasingly built into teaching standards and certification. To implement this, a diverse array of funding mechanisms and initiatives exist to raise awareness, ensure accessibility and build capacity to get evidence into education (OECD, 2022[1]). However, significant challenges remain in making evidence-informed policy and practice a reality.

The divide between education research and practice has long been a cause for concern, primarily due to the lack of translation of research findings into tangible improvements in teaching and learning (Hartmann and Kunter, 2022[2]). A central challenge in education research has been to ensure that research not only meets rigorous standards but is also relevant to real-world classrooms. On numerous occasions, educators have critiqued research for failing to address the practical challenges in their teaching practices. This disconnect can be attributed to several factors, including research questions that do not align with classroom contexts, empirical results that lack specificity for practical application, and interventions that prove unfeasible or unrealistic to implement.

In addition to scientific evidence, there are other important forms of knowledge which are important for educational policy and practice. For instance, expert opinion, professional knowledge, experiential knowledge and common sense (Van Damme, 2022[3]). Quality research use is part of the integrative professional use of varied knowledge sources. Research rarely gives clear instructions for practice and teachers need to be active in interpreting and implementing evidence. Engaging with research can involve interaction with researchers but it can also mean that teachers collectively deliberate about the meaning of research, and effectively integrate aspects of the evidence within practice (Rickinson et al., 2022[4]).

Recognising the limitations of simply disseminating research findings and directly transferring them into classrooms, there is a growing need for more nuanced strategies to ensure the effective application and strengthening of evidence-informed practices. This need has resulted in a variety of initiatives to enhance reciprocal communication between researchers and practitioners. Examples include professional learning communities (PLCs), research-practice partnerships (RPPs), action research or practitioner research, and practice-oriented research dissemination through platforms such as Clearing House Unterricht[1] or the What Works Clearing House[2].

RPPs embrace the idea that practitioners' long-term participation in collaborative research is essential for bridging the gap between research and practice in an effective and sustainable way. They entail a fundamental shift in mindset, challenging the conventional concept of "research transfer", which posits a one-directional flow of knowledge from researchers to practitioners (Snow, 2016[5]). Instead, RPPs emphasise mutual communication between research and educational practice based on a long-term time frame.

There is a twofold rationale underlying RPPs. First, they aim to collaboratively formulate research questions fine-tuned to the needs and challenges educators are facing. Practitioners

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[1] https://www.clearinghouse.edu.tum.de/

[2] https://ies.ed.gov/ncee/wwc/

play an active role in the research process, ensuring that their insights and experiences significantly shape the design and execution of research studies. At the same time, researchers actively engage with the problems and needs encountered by educators. Researchers and educators collectively identify, adapt and implement research-informed interventions that align with the unique needs of their educational environments. This collaborative research process is more likely to lead to findings that are relevant and perhaps even actionable in real-world educational settings.

Second, RPPs aim to facilitate access to usable research findings. Trustful relationships between researchers and practitioners provide educators with direct access to research expertise and resources (Tseng, 2012[6]). Through these relationships, researchers also offer crucial support to practitioners in effectively implementing evidence-informed interventions. RPPs can equip educators with the knowledge and tools necessary to identify and apply research findings in their classrooms, enhance their teaching practices and ultimately improve student outcomes.

In sum, RPPs aim to better prepare practitioners for applying research findings in their classrooms, while at the same time research itself is continually informed by insights derived from practical experience. This dynamic feedback loop is expected to enrich both research and practice, leading to more effective, context-sensitive and sustainable improvements in education.

However, whether and under what conditions RPPs manage to achieve this mutual benefit and positively impact student learning remains a question. First, since their inception RPPs have been facing multiple systemic challenges:

- Funding structures rarely allow for building long-term interdisciplinary partnerships. RPPs rely heavily on third-party funding sources that are often short-term and favour short-term results and outcomes.

- The distinct governance systems of schools and research institutions impose a variety of bureaucratic barriers for collaboration.

- The research and school practice communities often operate with distinct languages and diverse epistemological perspectives.

Second, although there is a growing body of research on RPPs, robust empirical validation of their impact is still lacking.

While this working paper cannot address these issues comprehensively, it aims to further explore the potential of RPPs in different national contexts and the conditions under which they can fulfil their promises. Specifically, it focuses on two key questions that are fundamental to understanding how policy makers can support RPPs:

- **What do we know about the impact of RPPs and what makes them effective?**

- **Which organisational and systemic conditions support the implementation and scaling of RPPs?**

1.1. Methodology and the structure of the paper

This working paper provides a brief overview of key conceptual RPP literature, analyses recent OECD data and presents three new case studies.

The literature overview draws on the Participative Knowledge Transfer between University and School Practice (PaTH) project at the German Leibniz Institute for Research and Information in Education (DIPF). PaTH is currently conducting a systematic review of

literature on RPPs resulting in a theoretical model of RPP mechanisms (Schlicht-Schmälzle et al., in preparation[7]). PaTH also involves creating a comprehensive map of RPPs in Germany, and evaluations of individual RPPs based on the criteria developed. This working paper draws on a number of seminal papers and research that constitute state of the art literature. It focuses on identifying criteria to build sustainable RPPs based on preliminary work in the PaTH project.

Next, the paper analyses data collected in the OECD's *Strengthening the Impact of Education Research* project in 2021. The survey targeted ministries of education and focused on the actors, mechanisms and relationships that facilitate the use of research in policy making and in practice; drivers of and barriers to research use; and actors/mechanisms of research production. Overall, 37 education systems from 29 countries responded to the survey.

Then, three case studies are presented from the United States, Norway and Germany (Table 1). A wide variety of RPPs exist in each of these countries and these case studies do not represent a common or "typical" form of RPP. They should simply be regarded as one example from each country. The three cases represent a broad spectrum of partnership dynamics and approaches, shedding light on the challenges and underlying rationales in diverse contexts. Importantly, each of them addresses one of the three systemic challenges highlighted above.

The Norwegian case delves into two layers: the systemic mechanisms at the national and local levels facilitating RPPs in Norway and a specific RPP that illustrates how the interactions among partners were structured to catalyse changes in student motivation. The United States case highlights a sustainable, long-term infrastructure designed to foster collaboration between researchers and educators to support research-informed innovative educational practices. The German case presents a pioneering initiative to empower brokers to nurture productive relationships between research and practice.

Table 1. Three case studies

Case study	Short description of approach	Challenge addressed
Norway: **The Rogaland partnership and MOVE-P**	A national scheme for local competence development and the journey of an RPP working within it	Bureaucratic barriers of different governance systems of schools and research institutions
United States: **LATTICE**	A professional development network for teachers facilitating access to research and collaboration between teachers, researchers and other education stakeholders	Short-term funding schemes for RPPs
Germany: **Peers4Practice**	Equipping early career researchers and early career teachers with brokerage skills	Distinct languages and epistemological perspectives of research and practice communities

Finally, the paper then offers a synthesis of the three case studies as part of the discussion section, highlighting key messages for policy makers and education stakeholders seeking to make strategic and informed investments in research-practice collaboration.

To encourage the authors of the case studies to reflect deeply about the impact of the initiatives they describe, all case studies include a Theory of Change[3] that explains how their set of activities and outputs are expected to lead to a specific change. They consist of five elements:

- Issues and context: The problem the initiative is trying to address and what the state of play was before the initiative.

- Active ingredients: The principles that underpin the activities/outputs of the initiative. They answer the question "why is this activity/output going to work"?

- Activities/outputs: The activities and outputs (e.g. services, products, events) delivered by the initiative.

- Outcomes: The direct and specific short-term changes in knowledge, skills, attitudes or behaviours experienced by individuals or groups as a result of the activities and outputs.

- Impact: Long-term changes experienced by individuals, groups or organisations as a consequence of outcomes.

2. RPPs in education: What do we know about them?

The expectations from RPPs to improve research and education practice and create synergies between the two fields are high. However, there is little empirical evidence on how successful RPPs are in meeting these expectations, what their individually defined outcomes are and what exactly makes them successful (Farrell et al., 2022[8]; Schlicht-Schmälzle et al., in preparation[7]). Further knowledge on these questions is necessary to inform policy investment.

Over the past two decades, research on RPPs has experienced exponential growth (Cooper, MacGregor and Shewchuk, 2021[9]; Coburn, Penuel and Geil, 2013[10]; Farrell et al., 2021[11]; Denner et al., 2019[12]; Coburn, Penuel and Farrell, 2021[13]). This substantial growth serves as a testament to the mounting recognition of RPPs as a promising strategy for addressing the research-practice gap in education. This body of research focuses on various aspects of RPPs, including different types of partnerships [e.g. (Coburn, Penuel and Geil, 2013[10]; Donovan, Snow and Huyghe, 2021[14]; Fang, Paine and Chen, 2022[15])], their goals and measures of effectiveness (Henrick et al., 2017[16]), and criteria influencing their success [e.g. (Thomas, 2016[17]; Farley-Ripple et al., 2018[18]; Hartmann and Decristan, 2018[19]; Klein, 2022[20]; Farrell et al., 2022[8]; Fjørtoft and Sandvik, 2021[21]; Arce-Trigatti, Klein and Lee, 2023[22]), as well as (Yamashiro, Wentworth and Kim, 2023[23]; Rivera and Chun, 2023[24]; Gamoran, 2023[25]; Meyer et al., 2023[26]; Ishimaru et al., 2022[27]; Desimone, Wolford and Hill, 2016[28]; Farrell, Harrison and Coburn, 2019[29])]. There is emerging knowledge about how RPPs seek to achieve their goals and the conditions that influence the extent to which these are achieved.

However, little is known about the intricate functioning of RPPs, the ways in which multiple aspects and pathways shape their success in achieving their intended goals and how they contribute to improving student outcomes (Coburn and Penuel, 2016[30]; Farrell et al., 2022[8]; Penuel and Hill, 2019[31]; Welsh, 2021[32]). Existing frameworks, often

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[3] A Theory of Change is an evidence-based rationale that builds a causal analysis to explain how a set of activities and outputs are expected to lead to a specific change. It is focused on filling in the gaps between the activities of the initiative and how they lead to desired goals being achieved.

founded on individual RPP case studies, fall short in identifying and validating general dynamics and conditions that drive collaborative work to educational outcomes. Furthermore, research that critically addresses RPPs is particularly scarce. While various publications address the challenges RPPs face to become successful (Klein, 2022[20]; Welsh, 2021[32]; Sjölund et al., 2022[33]) research so far has not engaged critically with the core assumptions of RPPs. Key questions also remain with respect to the impact of RPPs on research itself, and on its relevance and accessibility for practice. RPPs thus need to be further investigated to understand what is required for their sustainability and effectiveness in terms of improving learning for all students.

The following sections draw upon key literature to explore common outcomes of RPPs and to identify criteria that can make partnerships effective.

2.1. Conceptual clarifications

According to the most cited definition by Coburn & Penuel (2016, p. 48[30]):

> *"RPPs are long-term collaborations between practitioners and researchers that are organised to investigate problems of practice and solutions for improving schools and school districts."*

Five key criteria for RPPs that distinguish them from other types of collaboration are (Farrell et al., 2021[11]):

1. They are long-term collaborations.

2. They aim to improve education and/or reduce inequalities.

3. Research is a core activity.

4. They involve a variety of interdisciplinary actors in the research process.

5. They shift the research process to a more collaborative one.

Partnerships vary in their focuses and styles. Coburn, Penuel. et al (2013[10]) distinguish three types: research alliances, design research partnerships and networked improvement communities. Research alliances refer to collaborations taking place in a specific region or school district. Design research partnerships focus on developing and improving specific interventions in collaboration with schools independently of their geographic location. Networked improvement communities bring experts together to work on a specific education problem. However, many partnerships do not clearly fit into one of these categories.

2.2. Brokering: a key aspect of RPPs

Reducing the divide between education research and practice has often been described with the metaphor of *bridging the gap*. While the validity of this metaphor has been debated (Rycroft-Smith, 2022[34]), it does draw attention to the need to address the epistemological differences between the worlds of research and practice. Efforts of individual people or institutions to bridge the gap are often called *brokering*. Conceptually, brokering is something that happens in *in-between* or in *boundary* spaces [e.g. (Akkerman and Bakker, 2011[35]; Coburn and Stein, 2010[36]; Farley-Ripple et al., 2018[18])]. As such, it is often linked to the theoretical framework of *boundary crossing* within Cultural Historical Activity Theory (CHAT) (Engeström, 1987[37]).

Individuals or institutions can become permanent brokers if they have a stable structural position in a network that bridges two communities or groups. For instance, a research

coordinator in a school district, or an agency that translates and communicates research evidence to school leaders are permanent (formal) brokers. But brokering activities can also happen without a designated structural position, through temporal actions that people or institutions engage in to cross boundaries (Hartmann and Decristan, 2018[19]). Individual brokering activities that establish relations between different fields of practice or professional communities are especially important when a formal structure of brokering institutions is lacking (Akkerman and Bruining, 2016[38]).

Brokers are characterised by being in-between two worlds, not fully belonging to either one or the other (metaphorically speaking), but instead moving across spaces and creating new ones that integrate perspectives from both worlds. Given that RPPs bring together individuals from schools and universities, people that engage in brokering can provide the link by integrating perspectives, translating and transforming knowledge from one world to the other. In addition, systems theory (Luhmann and Schorr, 1979[39]) postulates that any new information will be adopted more easily if it comes from people or institutions that are perceived as belonging to the same community of practice as the recipient of the message. The unique advantage of brokers lies in their belonging to both worlds. Therefore, depending on the specific context they are operating in, they can be regarded as a member of more than one group, and thus may be perceived as a trustworthy source of information for both school practice and educational research communities.

As Akkerman and Bruining (2016[38]) show, brokering allows for mutual learning to occur. The authors identify four different learning mechanisms which can emerge during partnership work: identification, coordination, reflection, and transformation. In a study on individual brokering activities (Hartmann and Decristan, 2018[19]), these learning mechanisms were related to different settings of partnership work. Identification, coordination and reflection emerged in brokering activities in many different contexts at the intersection of research and school practice (participating in network activities, conducting professional development courses, conducting joint projects). Transformation was most likely to occur in joint projects between teachers and researchers. This setting is what most resembles the concept of RPP work, although the study included a broader range of intensities of collaborations and not all projects met the high standards of RPPs by Coburn and Penuel (2016[30]).

2.3. RPPs and their goals

By definition, RPPs are dedicated to enhancing education and mitigating disparities within the education system (Coburn, Penuel and Geil, 2013[10]; Farrell et al., 2021[11]; Coburn and Penuel, 2016[30]). Accordingly, partnerships pursue a diverse array of objectives, encompassing a wide spectrum of goals and performance indicators. Looking at various case studies, a large number of RPPs concentrate their efforts on either improving student learning outcomes [e.g. (Dutro et al., 2018[40]; Heinrich and Good, 2018[41])] or fostering teacher proficiency (Qi et al., 2022[42]).

Improving student learning spans the full spectrum of curricular and extracurricular areas, including core subjects such as mathematics and reading (Ko, 2022[43]), physical education [e.g. (Egan et al., 2018[44])], as well as the development of various skills such as social-emotional competencies [e.g. (Powers et al., 2013[45])], civic skills [e.g. (Ng-A-Fook et al., 2015[46])], or health-related behaviours [e.g. (Brown, Elliott and Leatherdale, 2018[47])]. A smaller number of RPPs specifically emphasise reducing disparities among students within these educational areas (Heinrich and Good, 2018[41]).

With respect to teacher professional development, RPPs often focus on professional growth and the individual development of educators across various facets of their roles

[e.g. (Hopkins et al., 2019[48]; Qi et al., 2022[42])]. They aim to identify and proactively address specific challenges related to teaching practices. Some partnerships explicitly focus on instilling a sense of RPP identity among educators. This involves appreciating the potential of research-practice collaboration and actively engaging in RPP work.

In addition to these RPP goals, a fair amount of RPPs extend their influence and impact across a broader spectrum of educational domains. These include developing curricula (Vetter et al., 2022[49]), improving school management [e.g. (Zala-Mezö et al., 2020[50])], processes at the classroom level (Thompson et al., 2019[51]), administrative procedures within school districts (Liou and Daly, 2021[52]), influencing education policy more broadly (Kaplan et al., 2019[53]), developments across the entire school community, or even achieving specific outcomes related to students' families.

Some RPPs focus primarily on transforming the character of educational research [e.g. (Lillejord and Børte, 2016[54])]. Typically, they aim to make the research process more collaborative and involve actors from various disciplines in all phases of the research. The ultimate goal is to produce more relevant research for practice. Other RPPs aim at making research results and innovations more accessible for practitioners by promoting publications that are more suited for this audience (Arce-Trigatti, Klein and Lee, 2023[22]). Both goals can ultimately enhance the use of research in schools and the effective application of innovative, evidence-based interventions.

RPPs often focus on more than one of the above-mentioned goals (Malin and Hackmann, 2019[55]). In sum, RPPs are hugely diverse in their pursuit of educational improvement, demonstrating multifarious approaches to bringing about positive change in the education sector. To date, literature lacks a systematic outline of the goals targeted by RPPs. Schlicht-Schmälzle and colleagues (Schlicht-Schmälzle et al., in preparation[7]) are currently finalising a systematic review that includes such an analysis of RPPs' outcome goals and provides detailed information on how existing RPPs target the improvement of education practice.

2.4. How to build effective and sustainable partnerships

The success of RPPs in achieving their goals hinges upon at least three main groups of factors: the partnership stakeholders and their relationships, the structure of the RPP, and the broader systemic environment.

2.4.1. A partnerships' capacity relies on the individual stakeholders and on their relationships

The contributions of individual people and their collaborative work are the essence of each RPP. The individual characteristics of people – knowledge, competences and attitudes – can advance or constrain partnership work [e.g. (Phelps, 2019[56])]. The success of partnerships hinges on aligning mutual goals (Ward Parsons et al., 2019[57]), recognising shared benefits and cultivating both formal and informal connections. However, challenges can arise from differences in expectations (Hopkins et al., 2019[48]), levels of skill and knowledge (Brown, 2021[58]), working cultures, norms (Sjölund, 2023[59]; Hartmann and Decristan, 2018[19]; Zala-Mezö et al., 2020[50]) and the complex dynamics of hierarchies and institutional power (Klein et al., 2023[60]). While RPP case studies predominantly focus on teachers and researchers as key participants, this perspective may inadvertently overlook other essential contributors such as principals, district leaders or faculty leadership in research institutions (Ward Parsons et al., 2019[57]).

Effective partnerships, for example, require teachers to embrace new roles that transcend traditional boundaries ("boundary-crossing roles") and to address the potential challenges of increased workload [e.g. (Phelps, 2019[56])]. Teachers also often hold negative perceptions of research which they must overcome to collaborate constructively with researchers. Essential attributes for teachers to be successfully involved in RPPs include a commitment to self-reflection (Klima Ronen, 2020[61]), a willingness to dedicate time to partnership activities, and having basic research skills and experience. Some scholars suggest that temporarily assigning teachers to research institutions (e.g. on secondment) could be a constructive approach to overcome barriers to collaboration (Diamond, Parr and Bulfin, 2017[62]).

Meanwhile, researchers may face their own set of challenges, such as the pressures of academic productivity and institutional obstacles. For meaningful engagement, researchers must be open to taking on new roles and prioritising the needs of practitioners (Phelps, 2019[56]). Recognising the importance and value of collaborating with practitioners in their scholarly work is crucial. Offering institutional rewards for both teachers and researchers engaged in RPPs can bolster their commitment to these partnerships.

The need to develop the competencies of researchers and teachers and foster mutual understanding between the two communities gave rise to a new role: professional brokers. To be able to effectively bridge the research-practice gap and facilitate meaningful interactions between researchers and practitioners, brokers must be familiar with both fields. They must also have special skills to mediate between the goals and needs of actors on both sides and work with their constraints.

Ultimately, partners' individual characteristics foster trust-based relationships that help make the partnership effective and sustainable.

2.4.2. The structure of the partnership can reduce the partnership's reliance on individuals

A structural set-up is a cornerstone of any thriving partnership (Klein et al., 2023[60]). This involves defining clear, shared objectives that meet the needs of all parties involved (Cooper, Shewchuk and MacGregor, 2020[63]), formulating a clear agenda and fairly distributing responsibilities among partners. A thoughtful consideration of roles and hierarchies is vital, including appointing skilled brokers and creating decision-making processes that ensure a balance of the power among all partners (Brown, 2021[58]). Changes in leadership of RPPs can harm their progress (Phelps, 2019[56]; Coburn, Bae and Turner, 2008[64]). A conscious partnership planning can mitigate the risk of partnerships becoming overly reliant on the contributions and engagement of individual leaders. Furthermore, the planning process should involve creating boundary-crossing infrastructure that bridges different arenas (Phelps, 2019[56]; Lillejord and Børte, 2016[54]; Penuel et al., 2020[65]). This involves implementing practices that foster collaboration and establishing dedicated spaces for partnership work. These "third spaces" facilitate productive interactions and problem-solving, thereby enhancing the partnership's overall success.

Stakeholders in RPPs can glean valuable insights from examining the strategic plans and processes of prior partnerships [e.g. (Brown, 2021[58]; Cooper, Shewchuk and MacGregor, 2020[63])]. This not only makes the process of building partnerships more streamlined but also increases their overall efficiency. To support this, resources and expert guidance for strategic planning should be systematically accessible to stakeholders, ideally through system-wide help desks or centralised databases. This ensures that the wealth of knowledge and experience accumulated by various partnerships is readily available to those embarking on similar collaborative journeys and can lead to formative learning. Funding opportunities

specifically targeted at the implementation and development of long-term partnerships can also reinforce systematic strategic planning in RPPs. Ideally, "long-term" refers to a time frame extending beyond a single research project and spanning a duration close to a decade or more. Examples of flagship RPPs such as the Chicago Consortium in School Research have been operating for more than three decades (University of Chicago, 2023[66]).

2.4.3. Systemic environment of the RPPs

Policy makers play a crucial role in dismantling institutional barriers and creating conditions conducive to RPPs by implementing system-level incentives and mechanisms, such as reward and promotion systems [e.g. (Phelps, 2019[56]; Gamoran, 2023[25])]. Additionally, integrating research skills into teacher education and establishing research-practice collaboration as an integral component of teacher qualifications are essential steps in this direction [e.g. (Martin and Groff, 2011[67])]. Incentives and rewards as well as funding opportunities designed to encourage institutions to engage with school practices or research can significantly boost commitment. Examples of institutional incentives include the Land Grant Universities in the United States, which also provided the framework of the LATTICE case study and ensured its more than 30 year-long operation. Such initiatives not only motivate institutions and their leadership to forge lasting partnerships but also guide them towards achieving tangible and impactful outcomes. This involves initiating small-scale collaborative projects which lay the groundwork for more comprehensive and lasting partnerships. Furthermore, a system-wide reflection on institutional norms, hierarchies and routines is an essential step towards reducing the barriers to the development of strong and sustainable partnerships.

2.5. Bottom-line: Despite growing evidence, key research gaps remain

In conclusion, existing studies suggest a wide variety of aspects relevant for RPPs to achieve their goals. For example, characteristics of the involved stakeholders and their relationships, the structural set-up of a partnership and the systemic environment. However, other factors, such as the relationships and connections between institutions (e.g. universities, schools, school districts, community organisations) have so far been rather neglected. The current body of evidence lacks a systematic outline of the relevance of these wider influences and how they interact with the goals of RPPs. So far, literature often solely focuses on specific and individual factors of RPPs, neglecting the complex social dynamics within partnerships (Farrell et al., 2022[8]). To evaluate which RPP factors are important and how they contribute to their functioning, and for developing a theoretical model to analyse, predict and evaluate the success of RPPs, we need a comprehensive theoretical model of the functioning of RPPs. Schlicht-Schmälzle et al. (in preparation[7]) develop such a model reflecting the complexity of RPPs and examine how a wider array of influential factors interplay in driving RPPs and lead to the achievement of non-achievement of the outcomes based on a systematic review of RPP research.

Following the review of the literature, the next section examines the state of play of some of the factors outlined above, based on OECD data.

3. Bridging the Research-Practice gap in education, OECD data

Internationally comparative, comprehensive data on RPPs is unfortunately not available. This section presents data from an OECD survey that reflects perceptions of ministries of education (Box 1). It discusses ministries' perceptions of research production and mobilisation activities for two actors whose profiles often map on to RPP

principles: school-university partnerships and brokers. It also explores survey data on the drivers of RPP work suggested in literature: the culture, relationships and skills related to research production and use, and incentives for practitioners to be involved in research.

Box 1. The OECD *Strengthening the Impact of Education Research* policy survey

The OECD policy survey, conducted in 2021, asked ministries of education about their strategies and challenges in producing education research and facilitating its use in policy and practice. Overall, 37 education systems from 29 countries responded to the survey. The survey focused on the actors, mechanisms and relationships that facilitate the use of research in policy making and in practice; drivers of and barriers to research use; and actors/mechanisms of research production.

The survey targeted the highest level of decision making in education (ministry/department of education). Responses represent the perspective of ministries of education at the national or sub-national (state, province, canton, etc.) level. Naturally, this most likely hides a significant degree of individual heterogeneity within systems. Results and comparative conclusions therefore need to be interpreted with caution.

Source: (OECD, 2022[1])

3.1. School-university partnerships

School-university partnerships is a broad term that could involve a consulting relationship, a training programme or a traditional research project (Coburn, Penuel and Geil, 2013[10]). The OECD survey asked ministries about how active 17 different actors are in their systems, in terms of facilitating research use in practice as well as producing research. School-university partnerships were reported as active to some degree in 30 out of the 37 respondent systems, more active on average compared to teacher unions but less active compared to universities, faculties of education and teacher education institutions (Figure 1).

An RPP can be a specific type of school-university partnership, which has engagement with research as a leading activity intended to investigate problems of practice, improve education outcomes and connect research, policy and practice (Farrell et al., 2021[11]). Overall, 14 systems reported school-university partnerships as being active in facilitating research engagement in practice and 14 in producing research. Crucially, a diverse range of education systems (e.g. Colombia and Canada [Quebec]) report that these partnerships are not active in facilitating research use in practice, which is not quite in line with their supposed and reported function (Farrell et al., 2021[11]). Although some of these results may simply be a limitation of the survey data, the varying levels of activeness of such partnerships and networks may suggest that the understanding of this term is still inconsistent and/or that such partnerships are not yet consistently adopted as institutionalised forms of collaboration across OECD countries (OECD, 2022[1]).

Figure 1. Activeness of different types of organisations in facilitating research use in practice and in producing research

	Universities/Faculties of Education	Ministry of education	Teacher education institutions	Other public research organisation	Academic or research networks	Government funding agencies	University-school partnerships and networks	PD providers for practitioners	Other professional groups	Policy network	Education consulting firms	Teacher unions	Brokerage agencies	Think tanks	Media	School networks	Businesses
Practice	24	21	21	17	13	16	14	19	13	10	9	12	10	4	2	12	7
Research production	30	26	22	20	22	21	14	13	5	10	8	4	9	6	6	7	4
Presence of actor	35	35	33	31	34	33	30	31	33	29	29	34	16	30	32	28	28

Note: The heatmap shows the number of countries reporting that the given actor is very active or active in facilitating research use in practice and research production. The third row shows the number of countries reporting that the actor was present in their system. N=37.
Source: OECD *Strengthening the Impact of Education Research* policy survey data

3.2. Brokerage roles

Brokering requires adequate human resources in the form of individuals with the necessary skills, knowledge and attitude to promote the use of research knowledge through, for example, building and maintaining relationships between different actors. These individuals are not only found in formal brokerage agencies but are also often embedded in different organisations within education systems. They act as champions and opinion leaders who can support (and also thwart) evidence use, as highlighted in the evidence-to-practice literature (Boaz, Baeza and Fraser, 2016[68]). These include:

- Embedded researchers: an individual with research background to facilitate research use working in schools (e.g. teacher researcher)

- Research fellows: an individual with temporary assignment or on secondment in schools

- Research champions: an individual with a specific responsibility of facilitating research use working in schools

- Research advisors: an external researcher who acts as critical friend, advisor, mentor for schools.

The role of individual brokers is commonly to engage with the relevant research, synthesise it and relay it to other practitioners. There is stronger evidence the effectiveness of such brokerage roles compared to more passive knowledge mobilisation approaches (e.g. dissemination through websites) (Gorard, See and Siddiqui, 2020[69]). However, staff turnover and skillsets are a common challenge for schools.

The policy survey asked ministries of education which individual brokerage roles were present in their practice context (Figure 2). Over 70% reported having some kind of

individual brokerage role in a practice context in their system. This leaves a noticeable minority who report that no such role exists. Research advisor is the most frequently reported brokerage role in school practice.

Figure 2. Frequency of individual brokerage roles
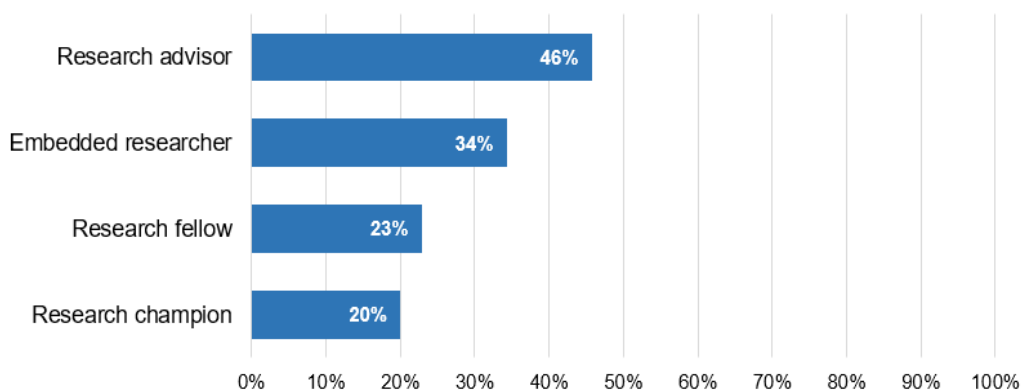
Note: Data show the percentage of systems reporting the given role is present in their system. N=34.
Source: OECD *Strengthening the Impact of Education Research* policy survey data.

Creating a culture of research use is often highlighted as a key ingredient for strengthening research impact. Culture refers to shared values, beliefs, attitudes, norms and standards, and language. It is both shaped by, and shapes, skills, mindsets and relationships (OECD, 2023[70]). The policy survey asked the extent to which ministries agreed with nine statements explicitly linked to the theme of research engagement culture, summarised in Figure 3. The survey measured these perceptions on a 1-5-point Likert scale, ranging from "Strongly disagree" to "Strongly agree".

The vast majority of systems perceive using research to be important for practitioners and around three quarters perceive an expectation to use it. However, elements of culture related to the quality of relationships are perceived by the Ministries as a challenge for practitioners. Only 40% of respondent systems perceive there is a high level of trust in research among practitioners or between them and researchers. Even fewer feel that practitioners and researchers have a shared understanding of education research and its use. Quality relationships characterised by shared understanding and trust between different actors can be improved by those performing a brokerage role, whether in the context of a research-practice partnership or in another form. Quality relationships are also a core requirement for initiatives to take root in the first place (as outlined in the literature review of brokerage in section 2.2).

Figure 3. The landscape of culture in respondent systems
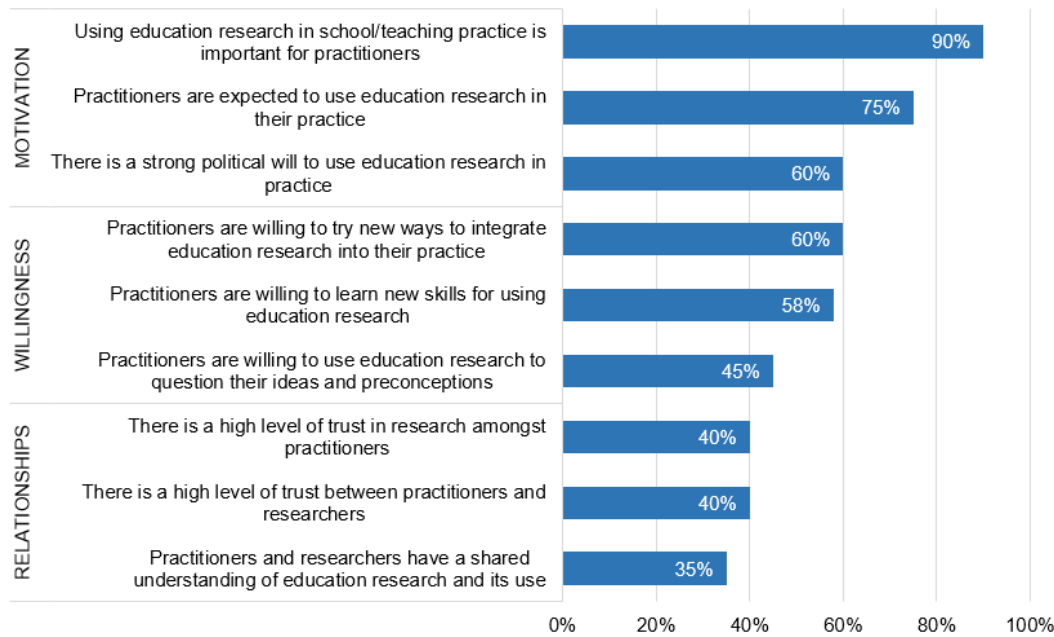
Note: Data show the percentage of respondent systems agreeing or strongly agreeing with the given statement. Statements are grouped based on the dimensions of research engagement culture: Motivation, Willingness and Relationships. Data collected at a national and sub-national level. N = 20.
Source: OECD *Strengthening the Impact of Education Research* policy survey data.

The survey proposed a dozen mechanisms for, and barriers to, research use in participating systems. Several of these pertain directly to relationships between research and practice. For instance, the majority of systems have projects encouraging interactions to foster research mobilisation in practice (Figure 4). Such projects would have the potential to enhance the quality of relationships that can facilitate research use. When it comes to quality relationships, initiatives such as RPPs play a dual role in an education system as both an actor and a relational mechanism.

Figure 4. Relational mechanisms and barriers related to facilitating research use in practice
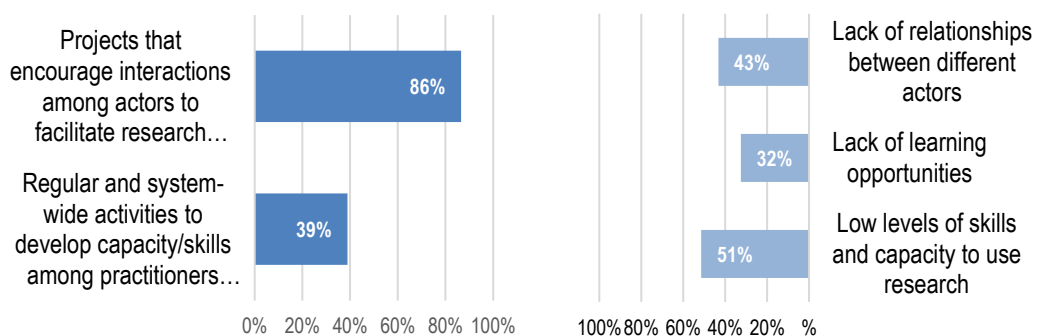
Note: Data shows the percentage of systems reporting a given mechanism and barrier, formed of two separate survey questions. N=37.
Source: OECD *Strengthening the Impact of Education Research* policy survey data.

Despite the majority of systems reporting projects encouraging interactions, almost half report that there is a lack of relationships between different actors in teaching practice. In fact, 13 systems reported both at the same time. This may indicate that, for these systems, the projects intended to foster interactions between actors are not resulting in quality relationships. Fostering quality relationships for research use requires adequate resources, including skills and capacity, to structure the interactions in a productive way.

Yet, in the majority of the systems, ministries perceive practitioners' research use skills as insufficient (Figure 5). While these skills should be developed in initial teacher education and continuous professional development, RPPs can also fulfil capacity-building functions. A capacity assessment and development should then be part of the strategic setup of partnerships with allocated resources.

Figure 5. Practitioners' research engagement skills

Practitioners have the skills and capacity to…
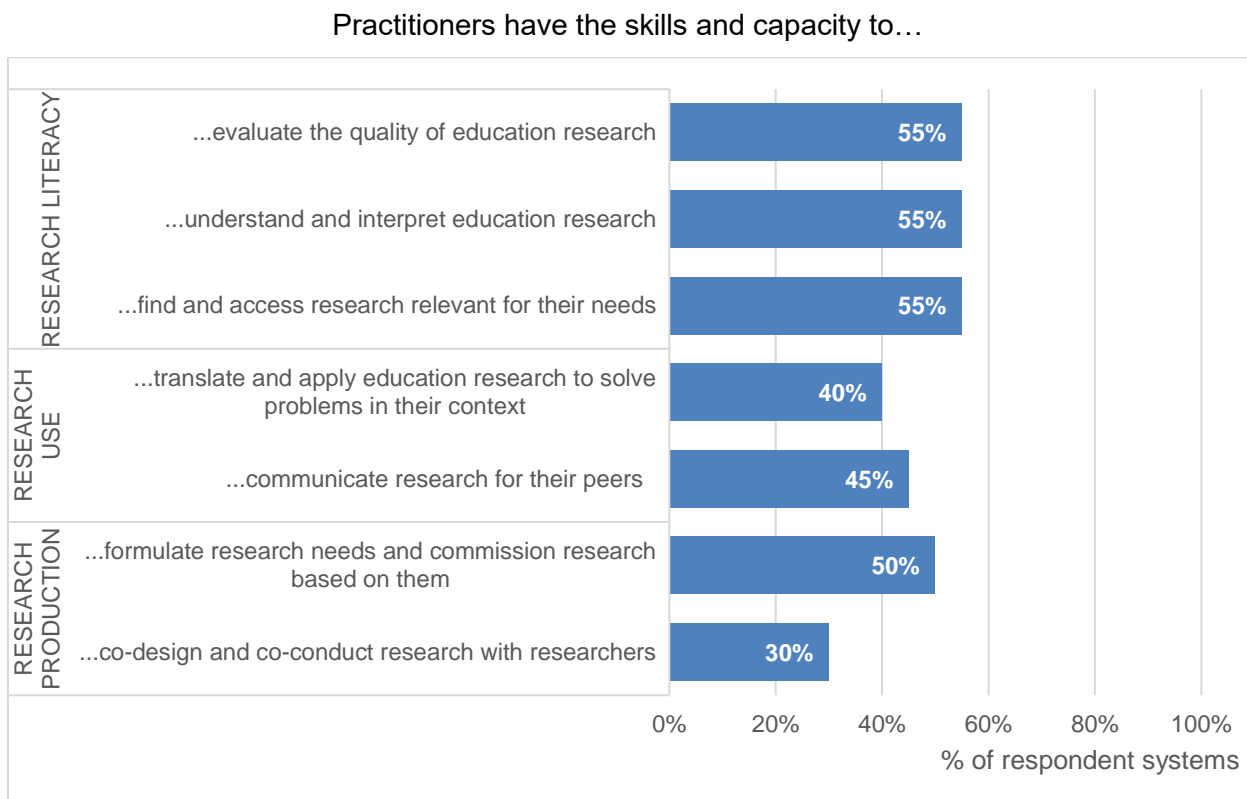
Note: Data show the percentage of systems agreeing or strongly agreeing with statements related to research engagement skills.
Source: OECD *Strengthening the Impact of Education Research* policy survey data (OECD, 2023[70])

3.3. Involvement in research production and incentives

While all teachers may not need to be involved in research production, the RPP literature in section 2 suggests that collaborative research could be beneficial for both practice and research. For instance, teacher involvement could ensure that research is more relevant for practice and their active engagement might also result in more frequent and better research use among teachers. OECD data from the policy survey revealed that, at present, practitioners are rarely involved in research production in respondent systems. When they are involved this most often takes the form of data collection or formulating research questions (OECD, 2022[1]; OECD, 2023[70]).

Figure 6. Incentives to be involved in research production
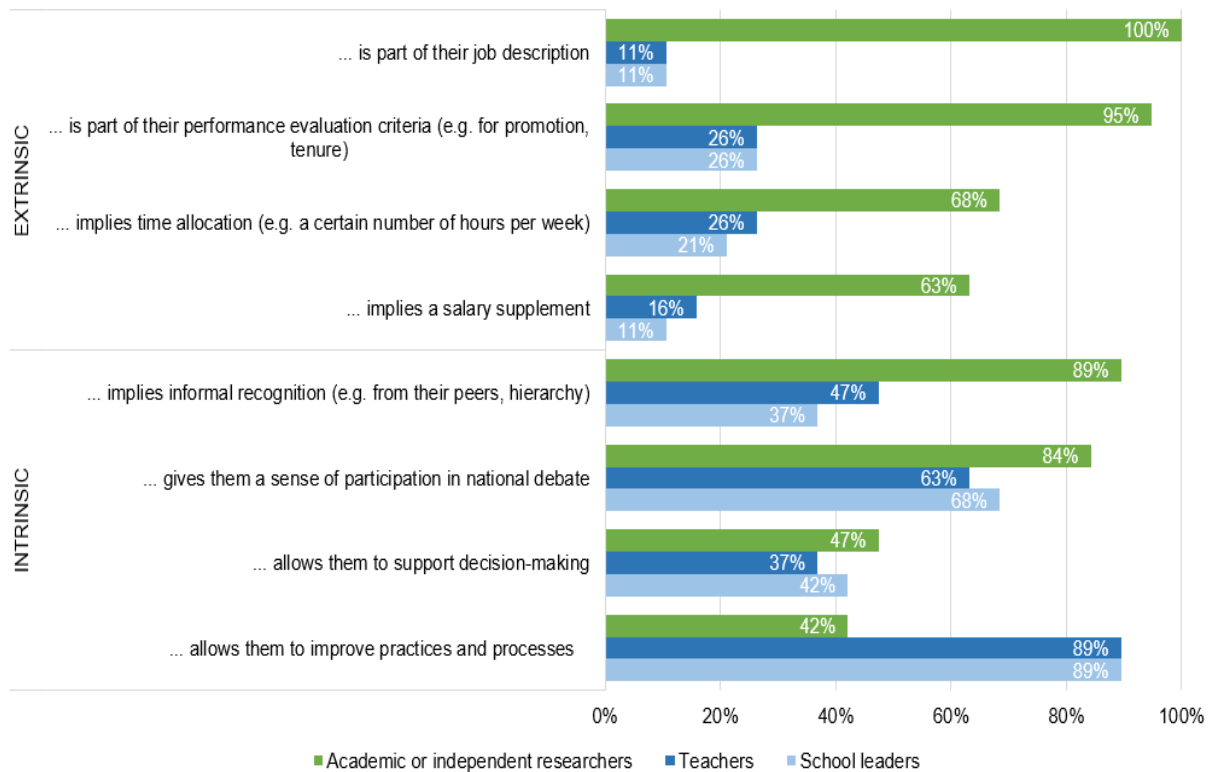
Note: Data show the percentage of systems reporting the presence of the given incentive for the given actor. Data collected at national and sub-national levels. N = 19.
Source: OECD *Strengthening the Impact of Education Research* policy survey data.

If teachers and school leaders are to be involved more systematically in research production, they need appropriate incentives. Although intrinsic incentives for practitioners are commonly reported by systems, extrinsic incentives, such as allocated time, salary supplement and formal appraisal, are rare (Figure 6). This is perhaps linked to the general lack of resources – including human and financial resources as well as supportive leadership – needed to facilitate research engagement in school practice (OECD, 2023[70]). Unsurprisingly, for researchers, extrinsic incentives are almost universal. By contrast, producing research which allows them to improve practices and policies is an intrinsic incentive that is only reported in a minority of systems. This incentive is important for researchers as it is directly connected to the relevance of research.

Both the literature and recent OECD data suggest that while there is a growing number of RPPs and an increasing interest in their potential, these structures still face several systemic challenges and their success in bridging the research-practice gap has numerous conditions. The following three case studies demonstrate how some of these conditions can be put in place and how RPPs can overcome challenges.

4. Conducting RPPs in Norway through the Scheme for Local Competence Development: The MOVE-P case

4.1. The Practice and Policy context of RPPs in Norway

Collaborations between universities, schools and kindergartens in Norway have a longstanding history. However, research literature and government reports have both identified that there is still a need for more collaboration between universities and the education sector to ensure continuous development and adaptation of practices (Government of Norway, 2017[71]; Dahl et al., 2016[72]). Furthermore, engagement with the experience of practitioners is essential for universities to be able to increase the quality of their research. These principles are echoed in various policies, and national strategic documents continue to emphasise the need for enhanced and more equitable collaboration between education actors in Norway. For instance, White Paper no. 21 entitled "Desire to Learn – early intervention and quality in schools" (Government of Norway, 2017[71]) reflects an ambition to establish mutually beneficial partnerships between universities and schools for improving quality in both kindergartens and schools. A second example is the national strategy for quality and collaboration in teacher education in Norway (Government of Norway, 2018[73]). This strategy does not refer to RPPs *per se* but refers to the need for extended collaborations in the education sector and points out that the experience gained through the implementation of national white papers and curricula must be used in teacher education. Furthermore, in a Norwegian Official Report (Government of Norway, 2022, p. 79[74]) the term research-practice partnership is mentioned, although with indications that this is a term used internationally. The report mainly discusses partnerships and collaborations that do not include research on a systematic level.

The Norwegian government has for many years allocated funding in the national budget to higher education institutions to support the development of partnerships between school owners, schools and kindergartens and teacher education in higher education. These financial arrangements have, to various degrees, been successful in connecting research and the educational sector through collaborative partnerships of high quality that can conceivably be labelled as RPPs.

One example of a funding programme that has successfully connected education research and practice environments is the Scheme for Local Competence Development in Kindergartens and Schools (Government of Norway, 2017[71]; Government of Norway, 2020[75]). The Scheme was formally launched in 2021, although it implements policies that go back as far as 2015. The Scheme links kindergartens, schools and universities in Norway more closely together by funding long-term collaborations. It can be seen as a government strategy to ensure holistic and long-term development in schools and kindergartens that benefits children and students. It works by bringing together participants from different knowledge bases who can collaboratively develop fresh insights. This requires long-term and predictable funding and the criteria for receiving funding under the scheme are described in Box 2 below. The concrete funding instruments provided by the Scheme target the need to develop capacity in the education system for continuous and sustainable learning (Flaspohler et al., 2008[76]).

Box 2. Funding criteria linked to evaluation of project impact

Key criteria for a partnership to receive funding are:

- The measures are rooted in the needs of the kindergarten and schools, identified through local processes involving employees in the organisation.

- Kindergartens and schools have already carried out kindergarten- and school-based development initiatives that promote collective development.

- The measures are planned and carried out in partnership between kindergarten- and school-owners and universities.

- Universities use experiences and learning from partner collaboration to enrich and develop teacher education.

In addition to an initial funding proposal, there is an annual application and reporting requirement that needs to show how the project responds to funding criteria for the Scheme. Each participating county (regional authority) in Norway hosts a "collaboration forum" that is responsible for the annual application and reporting requirement. The funding is calculated based on the number of teachers in the participating municipalities. Half of the amount is distributed to the participating universities. In 2024 about NOK 64 million will be evenly distributed among the education municipalities in Rogaland County and the universities.

Source: (Ministry of Education and Research, 2021[77])

4.1.1. Understanding RPPs in a Norwegian context

The Scheme for Local Competence Development represents a shift in terms of how universities in Norway can collaborate with schools and kindergartens on knowledge development. The shift has been away from asymmetrical and top-down interactions with practitioners towards an approach where universities and schools/kindergartens, through partnerships, can co-develop sustainable solutions to relevant challenges in practice. Importantly, this Scheme does not directly finance research outputs. It does, however, finance long-term mutual partnerships between researchers and teachers who together can identify and tackle relevant challenges to develop quality in practice (Coburn, Penuel and Geil, 2013[10]; Farrell et al., 2021[11]). In other words, the Scheme provides time, space and opportunity for an equitable and mutually beneficial exchange of skills, knowledge and attitudes.

The potential of this environment for fostering research-informed practice in Norway means that, in recent years, there has been an increase in research initiatives borne out of the Scheme. Although the Scheme does not fund RPP's *per se*, it provides an important route to fund initiatives that adhere to many RPP principles. For instance, the Scheme can be used to fund long-term initiatives. This is a key RPP principle because time acts as a vehicle for practice development and research development to become an integrated process through the co-development of research opportunities. In these opportunities lies the potential for research to become more relevant and meaningful for practitioners in kindergartens and schools. At the same time, these opportunities are of academic importance to researchers' own professional development. They provide a relatively flexible entry-point for RPP work, which offers a wide spectrum of positive experiences

that could help to incentivise similar partner collaborations through more targeted RPP funding later on. Organisational incentives (e.g. Box 3) can further facilitate this process.

Box 3. Organisational incentives to carry out RPPs at the University of Stavanger

In addition to the benefits for research and practice, RPPs can provide an effective vehicle for achieving the organisational goals of research institutions and teacher education faculties. The authors of this case study are based at the University of Stavanger (UiS). As such, there is an expectation that their professional activities align to the overall strategy of the university (University of Stavanger, 2021[78]), as well as the strategy of their specific faculty (the Faculty of Arts and Education).

The UiS' strategy emphasises high quality of education, research and artistic work, with a common direction guided by the responsibility for a sustainable transition. Areas of priority are energy, health and welfare, and learning for life. The latter is highly evident at the Faculty of Arts and Education, as this specific priority involves equipping children, adolescents and all students for life both in terms of professional work and as citizens of a changing society. For the Faculty of Arts and Education, this priority means making good and strong connections between education research and teachers.

The UiS' strategy also contributes to a strong strategic focus on bringing more research into existing partnerships between the university and the practice field. Today, there are over 100 academics in the faculty who have long-term partnerships with schools and kindergartens in Norway as an explicit part of their job role. Not all of them work in RPPs, but several see the Scheme for Local Competence Development as a point of departure for partnerships based on research. The Scheme is therefore a fruitful measure to reach the overall strategic aim of bringing research, practice and the University's strategic responsibilities in line.

Source: Authors' elaboration

4.2. MOVE-P

Originally established under the Scheme for Local Competence Development, the MOVE-P partnership evolved into an RPP as the collaboration progressed. It is based on a pre-existing long-term collaboration between the University of Stavanger and the local authority responsible for upper secondary schools in the county of Rogaland. The specific partnership between the University and the school was established in August 2020, was funded through the Scheme and lasted about 2.5 years. After initial explorations of how to best increase quality in practice, partners agreed that an RPP would be the most fruitful approach. The following sections analyse the MOVE-P project and draw tentative conclusions to grow the knowledge base on RPPs, specifically regarding the conditions that may contribute to their effectiveness. This includes organisational and systemic conditions that may support the implementation of and the potential scaling of RPPs. Understanding the local conditions for the MOVE-P project (Box 4) is of great importance, as these contextual factors influence the scope, structure and scale of an RPP.

Box 4. Local conditions of MOVE-P

- The University of Stavanger is located in south-west Norway in the county of Rogaland. It has approximately 12,500 students and 2,000 employees.

- Rogaland has a population of more than half a million people and consists of 23 municipalities of very different sizes.

- Through the Scheme for Local Competence Development, the Faculty of Arts and Education collaborates with 15 municipalities in Rogaland.

- The university is involved, at various levels, in collaborations with around 160 primary schools, 350 kindergartens and 38 upper secondary schools.

- Approximately 100 academic employees are involved in partner collaboration through the Scheme.

- Schools and kindergartens are divided into different educational regions based on geography, which makes it possible for the University to participate at different levels of the organisation.

- There are pre-existing local structures for professional development in Rogaland in the form of learning networks, and the collaboration between the university and education partners works through these to promote long-term partnership, participation, involvement, and co-creation of topics based on local needs.

Source: Authors' elaboration

The MOVE-P project was developed to meet the UiS strategic objective of bringing more research into existing partnerships with the field of education practice. More precisely, two researchers wanted to bring an increased research focus into an existing partnership with a specific upper secondary school. The overall topic for the partnership, as formulated by the municipality, was "learning-promoting relationships, student participation and assessment". The school was a vocational school in southwestern Norway, with approximately 750 students and 200 employees. The rationale behind the MOVE-P project is illustrated through the theory of change (Figure 7).

Figure 7. The Move-P project illustrated through a Theory of Change

Issues & Context	Active Ingredients	Activities/ Outputs	Outcomes	Impacts
Issues: • Students' academic motivation is low and decreasing. • Participation in learning activities among upper secondary school students is low. **Context:** • Scheme for long-term partnership through Local competence development	Co-design with teachers and researchers. Developing strategies to tackle the issues both • deductively (based on existing research) and • inductively (based on teachers' experiences and professional knowledge).	**Activities:** • Initial meetings between the university and school staff • Lectures on relevant topics • Preparation for and carrying out data collection **Inductively developed strategies:** • Teaching structure • Student collaboration and relations • Learning process and relevance **Deductively developed strategies:** • Utility log • Path model • Evaluation plan **Dissemination:** • Joint publication on the scheme by university staff, school coordinators and school management in an anthology • Joint conference involving the university staff and some school coordinators	**Teachers:** • appreciate the value of working with academic motivation. • have increased experience with strategies for stimulating academic motivation. • perceive RPPs as relevant for their practice and value the co-creation-focused partnership with university staff. **New and more robust knowledge base on:** • Academic motivation • Student engagement • RPPs	All teachers in the school stimulate students' academic motivation effectively. There is a culture of sharing between the teachers and between teams at the school. The strategies are used in teacher education at the university and in other partnerships based on the scheme. There is a stronger bridge between research and practice in education. RPPs in Norway function more effectively using the new knowledge generated.

Note: The Theory of Change is not exhaustive but does allow visualisation of the core elements that are important for the purpose of analysis.
Source: Authors' elaboration.

4.2.1. Co-design with teachers and researchers

The partnership was initiated to develop strategies for increasing academic motivation among students in upper secondary school. In the first stages of the project, initial meetings between the school's management and the university staff were held. The meetings were led by the school's principal. The purpose of these initial meetings was to anchor the project in existing practices and operationalise project partners' understanding of the overall topic. The meetings also aimed to create a common understanding of the partnership itself. Significant time was dedicated to the clarification of roles and responsibilities as well as more detailed planning for the continued work.

The focus during these initial meetings was on what the theme should be, who should be involved, how often partners should meet and what activities the partnership should organise (e.g. seminars, group work, lectures). A time schedule was made, along with discussions on how to research within the partnership and finally an overall plan for the RPP was developed. Central roles and responsibilities in the project were identified and clarified between the university staff and the school staff, respectively. For example, the coordinators organised group work and data collection that was part of the planned RPP work. The school management applied for some extra funding at the local authority on their own initiative to be able to compensate teachers who volunteered for driving forward the work of the RPP at the school and in collaboration with the university staff. (Ministry of Education and Research, 2021[77])

This co-design process resulted in the formulation of two concrete themes for the project: 1) Ensuring good learning environments that stimulate academic motivation and; 2) student participation in learning activities. This focus is also reason for the name MOVE-P. The terms 'motivation' and 'emotions' are derived from the Latin word *movere* which means "to move". Since emotions may have a strong influence on human behaviour

(Lazarus, 1991[79]) and are related to both form and strength of motivation (Pekrun, 2016[80]), MOVE indicates that the focus is on both motivations and emotions. The P indicates that this is a pilot, as there have been very few RPPs in the context of the Scheme thus far and it is a small-scale project. Although building on an existing long-term partnership, the time plan for the MOVE-P project was initially set to 3 semesters (1.5 years).

4.2.2. Developing strategies to tackle the issues

During the first semester, the partners, e.g. university staff and school staff, worked with the topics through a co-creation approach. In this phase, the university staff were responsible for bringing theoretical and empirical perspectives to workshops with partners, as well as designing tasks for school staff to work on between the workshops. During the workshops, university staff presented central motivational theories, such as self-determination theory (Deci et al., 1981[81]; Niemiec and Ryan, 2009[82]), achievement goal theory and self-regulated learning (Zumbrunn, Tadlock and Roberts, 2011[83]; Schunk and Zimmerman, 2012[84]; Zimmerman, 2002[85]), followed by individual and group work sessions.

The researchers developed three motivational strategies deductively (i.e. using the research literature) for the school staff to work with during the first semester. At this point, the school staff worked in their respective regular teams based on courses and classes they belonged to. The main goal of developing these strategies was to ensure that school staff had a theoretical foundation for working with motivation as well as to initiate a reflection about how to stimulate students' academic motivation among the staff. During this phase the school staff identified a need for more concrete interventions that can stimulate students' academic motivation. Thus, it was necessary for the partnership to go deeper into the knowledge base to meet this need.

Working with the three motivational strategies developed by the researchers, the school staff used their professional knowledge and experience in the practice field to inductively develop three additional strategies, which were tested with students. The teachers who participated in this inductive process were divided into four categories: *regular teachers* (n = 100), *primary teachers* (n = 33), *teacher champions* (n = 17), and *teacher coordinators* (n = 11). Each category had a specific work assignment. For instance, the teacher champions were all leaders for each of the school's educational teams, with the assignment of interviewing their respective teachers. The teacher coordinators were, as previously mentioned, responsible for following up the school's work on motivation and follow up data collection procedures. Both teacher champions and coordinators were informants in interviews. Thus, the assignments of the teacher champions and teacher coordinators were twofold; after an initial role as research assistants, they were informants in focus group interviews. Data collection was carried out in this phase by both teacher champions and by the researchers. The most relevant elements of the data collection and procedures were as follows:

- The teacher champions collected data from the primary teachers.

- Focus groups were held with the teacher champions who reflected on behalf of the primary teachers and themselves.

- Based on findings from the teacher champion focus groups, another focus group with the teacher coordinators was carried out.

Finally, after the developed motivational strategies were piloted with the students and the collected data was analysed, the researchers and the coordinators worked together on a joint

presentation of the RPP delivered at a whole-school conference. Building on the university staff's presentation of the research in the RPP that resulted in the six motivational strategies, the coordinators presented concrete examples of perceptions of and experiences with working with the strategies. An overview of the work process of the RPP is provided in Figure 8.

The joint presentation at the school's conference also set the stage for continued work after the RPP was formally concluded. Hence, the university staff, a representative from the school's management as well as some coordinators co-authored a chapter on perceptions of and experiences with MOVE-P as a contribution in an anthology about the Scheme in Norway (Vestad et al., 2024[86]). Finally, the RPP also contributed to a first scientific publication (Tharaldsen, 2022[87]).

Figure 8. An overview of the overall work process of the RPP
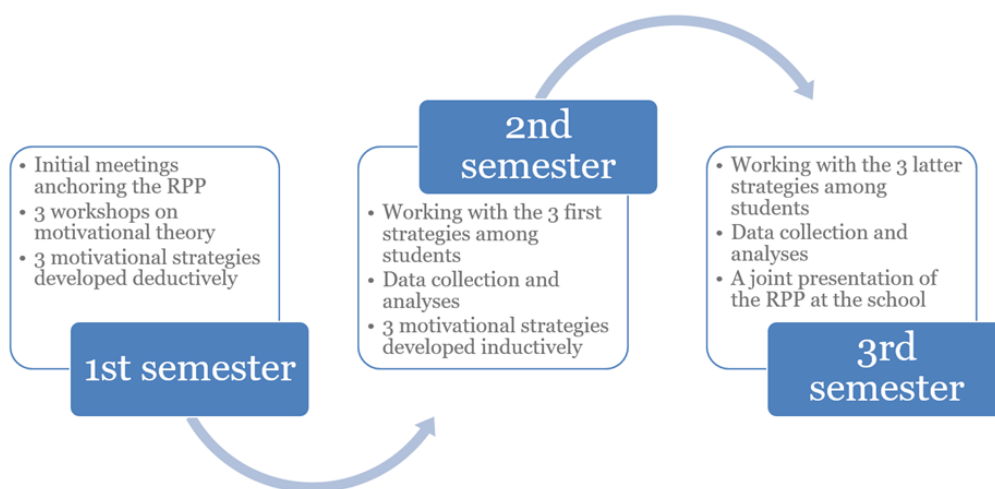
Source: Authors' elaboration

4.3. Impact: Some reflections

Based on arrangements under the Scheme for Local Competence Development, researchers at Norwegian universities have established long-term collaborations with kindergartens and schools over the past six years. This work contributes to developing the capacity of schools and kindergartens to learn continuously and develop their professional practice through school-and kindergarten-based development processes. Theories from relevant research, combined with practice-based knowledge, are natural components in such a development process. Consequently, as partnerships between universities and the field of practice take shape, various research initiatives are being developed between researchers and practitioners. This is illustrated by the MOVE-P project.

The aim of MOVE-P was that researchers and practitioners mutually enhanced each other's knowledge bases. Co-creation was stimulated through the deductive (research-based) strategies and the inductive (practice-based) strategies. In addition, new data and analysis has been generated through testing the strategies. This was possible even though the Scheme for Local Competence Development in Norway does not directly finance research. The experiences from the MOVE-P project have been used both locally, regionally and nationally as an example of how research and practice development can be seen in context and how the Scheme can be developed as an RPP. The following sections will introduce various prerequisites and critical factors for establishing and organising effective RPPs,

based on relevant research and experiences from the work. This is not an exhaustive list but pinpoints some crucial aspects of RPPs.

4.3.1. What defines a partnership?

The need for RPPs derive from a tradition in Norway where researchers provide solutions to local problems. It is through a partnership that true and actual collaboration evolves. However, it is not immediately evident what a partnership is. Thus, it is important that the partners are aware of what defines a partnership and having a process based on equality is key to this. It seems crucial that equality between partners should be a foundation in terms of deciding *what* the partnership should entail, *how* it might be carried out, and *who* will be responsible for which parts. These questions should be discussed during the initial meetings, thus anchoring the partnership by setting a common point of departure. In the case of the MOVE-P project this process was carried out adequately in the initial phase as themes for the partnership and roles with specific responsibilities were defined. This is not an easy task, and something that was a challenge in the initial phase of the project. Data from the project indicates that there was some dissatisfaction regarding how the initial phase (i.e. the anchoring of the project) was carried out. Partner school staff perceived the initial process as more of a traditional, top-down, one. After some time, and especially as the process regarding role clarification and the division of responsibilities and concrete actions were decided upon, the partnership became a whole school approach that most of the staff supported.

4.3.2. Topics based on local needs

Another means the project used to anchor it as a partnership for all participants is through a common vision about overall objectives, as well as specific goals to reach these (or some of the) objectives. Something that poses both a challenge and an opportunity for partnerships is the importance of deciding on a topic that is meaningful for all participants. This is incentivised by the Norwegian policy context, since the ambition is described as a central criterion for the Scheme for Local Competence Development. National governing documents describe this as a prerequisite:

"In order to succeed with the decentralised scheme for competence development, it is a prerequisite that the teaching profession has ownership of the measures" (Government of Norway, 2017, p. 92[71]).

In the context of MOVE-P, this means the research questions needed to include something that schools and kindergartens felt was meaningful to explore. However, the questions also have to align with areas of research interest at the partner university. Thus, the process of defining local needs is dynamic and it is important that partners from the university are included in it (Folkvord and Midthassel, 2021[88]).

The importance of building a partnership on equality and local needs is supported by research, which points out that if a change in schools and kindergartens is to be sustainable in terms of continuous professional development, the initiatives and topics must be translated into a local context and be related to one's own practice (Røvik, 2014[89]). In the MOVE-P project this was the case, and both partners were conscious about the importance of this process and decided upon a local based theme that was meaningful for all teachers at the school. The process of deciding themes for the partner collaboration, i.e. 'academic motivation' and 'student participation' was described earlier.

However, through partner collaborations with schools and kindergartens over the past five years, researchers at the partner university have found that local anchoring can be difficult to achieve in practice. In general, teachers in schools and kindergartens report that the

topics being worked on are not anchored in problems they face in their practice. These perspectives are supported in national research (Fossestøl et al., 2021[90]). Even though it may be a challenge, bringing the partnership together on a locally based theme is another key criterion for building effective partnerships.

4.3.3. Developing a mindset of co-creation

A central factor for long-term partnership is the importance of developing a common understanding of what partner collaboration entails in terms of knowledge development. RPP's represent more than just a way of organising an extended collaboration. They also represent a way of thinking or a mindset about how knowledge is developed. Local policy documents in our partner municipalities show that the understanding of the concept of partnership has largely been developed over several years (Folkvord and Midthassel, 2021[88]).

Partnership is expressed in these documents as a common arena for learning, where influence and co-creation can take place. Good and appreciative relationships, equal collaboration, a common core in collaboration and leadership are highlighted as important prerequisites for success in the partnership. Both national and local research highlights the potential that partner collaboration represents (Fossestøl et al., 2021[90]; Lyng et al., 2021[91]; Folkvord and Midthassel, 2021[88]). The same research also points out that this type of collaboration is demanding in terms of finding the roles in the collaboration. Furthermore, experiences indicate that long-term partnerships through RPP's may give rise to further relevant questions since the mutual knowledge development through the partnership increases awareness about not only lessons learned but also lack of knowledge needed to solve the same and perhaps new challenges and problems. It is therefore important that the partnerships are allowed to develop over time and that researchers and practitioners can base the collaboration on respect and trust.

As seen in the MOVE-P case, developing a common understanding of what partner collaboration entails in terms of knowledge development meant it was of great importance to clearly define the different roles and areas of responsibility between the partners. As MOVE-P was a collaboration between researchers and practitioners, doors were opened to research on the work carried out in collaboration. This provides an interesting perspective on the role of RPPs in capacity building. Furthermore, the partnership was long-term, compared to previous and parallel research collaborations between education research and practice in Norway.

4.3.4. Institutional support

If a partnership between schools and universities is to function well, achieve its goals and be sustainable, both sides need to provide adequate institutional support. The whole school must be committed to the work and the same applies to the university. One way of facilitating this is through clear and sustained support from leadership. Leaders representing both kindergartens and schools have been included in the different processes at different levels to develop their competence. For instance, they have supported staff to participate in learning networks and steering groups for partnerships. This can ensure direction and clarity for the development work in schools and kindergartens. For the university this may specifically imply that the leaders incentivise the creation of internal structures to ensure predictability and transparency. For example, leaders could create documents suggesting how time resources are allocated and how responsibilities are split between colleagues.

Leaders may also stimulate participation in internal networks for professional development as well as encourage and support the staff working with the practice field on a general level. In the case of MOVE-P, participation in internal networks helped mobilise knowledge and build capacity among university staff who were not part of the project. For example, colleagues involved in the MOVE-P project suggested to other colleagues who were interested in launching their own partnerships that they could assign coordinators at the schools to ensure professional anchoring of the work that sustains also after the partnership is ended. Thus, the RPP had an impact on the internal processes among the academics through internal professional learning communities. This allowed for the exchange of perceptions and experiences of partner collaborations as well as a space to explore possible research initiatives.

Building on what already exists within an institution is also key to achieving impact. In terms of the MOVE-P project, the partner university staff used previously made plans and structures from the faculty level regarding how to anchor a partnership as well as spend the prefigured time and resources allocated to the work. As described above, this strengthened the initial phase of the partner collaboration and thus eased the process of defining the partnership. Furthermore, building a collaboration through RPP's or other partnerships necessitates the use of various knowledge sources, e.g. from research, education and partnerships between university staff and representatives from the practice field, that will stimulate adequate knowledge development through co-creation to reach the overall goals of the collaboration. This is tentatively shown in Figure 9 below. The stool's three legs represent the respective knowledge sources. Through partnerships between representatives from these knowledge bases, knowledge is co-created. Such integrated knowledge is crucial in reaching the ambition for the Scheme for Local Competence Development, which aims to link the education sector and universities in Norway together more closely through long-term partner collaborations to improve education outcomes.

Figure 9. Knowledge development requires co-creation between different knowledge bases

Source: (Folkvord and Tharaldsen, in preparation[92])

4.3.5. Long-term collaboration

Although RPP as a term has not been used to a large extent in the Norwegian context, one of the core intentions behind RPPs is in line with one of the core intentions behind the Norwegian tradition of partner collaboration; it must be long-term. One main reason is to be able to sufficiently anchor the RPP by using some time initially to develop a shared

definition of the partnership and ensure that it is based on local needs, clear roles and responsibilities, as well as ensure it receives the necessary institutional support. This was also evident in the MOVE-P project.

Initially, the partners in MOVE-P were told that the time period for the partnership was uncertain. However, after working together for a little while, it became clear that both the university staff and the school staff wanted the partnership to continue. The reason was that there was a mutual understanding that it is necessary to first spend some time on anchoring the project in local needs. After this initial stage, the steps that follow must do so in the spirit of co-creation. However, both the funding scheme and participating organisations must be flexible enough to extend partnerships if it is gaining momentum and showing impact.

4.3.6. *Concluding remarks*

Analysis of the MOVE-P project has drawn out several criteria for building and organising effective RPPs. In the Norwegian context, the pilot project represents an initial step to turn from traditional top-down collaborations to a partnership based on equality, where new knowledge and research can be co-developed for the benefit of practitioners in their work. Devoting sufficient time in the initial stages to define the RPP and base the partnership on local needs and themes is crucial for trust and mutual understanding between university and school partners. Receiving substantial institutional support, as well as ensuring that the partnership is long-term, are both crucial factors.

Taken together, these aspects provide fertile ground for stimulating a shift in mindset through co-creation. Supportive leadership can take different forms. For instance, system leadership at the local level can help align the goals of the partnership with local development plans in municipalities (OECD, 2020[93]). At the organisational level, in the case of MOVE-P, the UiS/Faculty strategy meant that the capacity building to link research, education, and partner collaboration to integrate objectives and working methods had a strong incentive. This organisational leadership layer may maintain focus and ensure clarity in the work of the partner organisations.

Additionally, and within a national context, the Scheme for Local Competence Development may be seen as an overarching strategy for bridging the gap between research and practice. As such, The Scheme provides a fruitful point of departure for future partner collaborations that may inform both research, practice, and education policy not only locally, but also on a national level.

5. Bridging higher education and K-12 education through an international, cross-cultural education network in Michigan, United States

5.1. Context of RPPs in the United States

The policy context in the United States (US) means the landscape of partnership initiatives between research and practice is diverse. The US is a federal system, in which education is primarily a state-level competence. Although there are no federal policies that provide directives to implement partnerships between research and school practice, the federal government does have multiple offices which provide guidance and/or grant funding opportunities to organisations that support partnerships. For instance, the Strategic Education Research Partnership (SERP) "was incubated at the National Academy of Sciences and founded as an independent nonprofit organisation in 2003 to bridge the worlds of education research, practice, and design" (SERP, n.d.[94]). SERP receives funding from

many private and public sources, including the Institute of Education Sciences and the Office of Innovation and Improvement, both from the US Department of Education (SERP, n.d.[95]).

Many state-level departments of education also have their own research-oriented offices that provide incentives for local school districts to collaborate in a structured way while many others contract various non-profit organisations, universities, and think tanks for key partnership support services. For example, the Michigan Department of Education contracts the Education Policy Innovation Collaborative (EPIC) to monitor and evaluate Michigan's Partnership Model of school reform, which was established in 2017 (Michigan Department of Education, n.d.[96]). The Michigan Partnership Model implements RPPs with multiple partners to address the needs of some of the state's lowest performing school districts.

Because of the model of decentralisation of educational policy at both the federal and the state levels, the partnership practices in the US vary greatly from state to state, and school district to school district. Although this presents a challenge in terms of analysing the complex landscape, it also provides an opportunity to highlight noteworthy local initiatives and draw out lessons they may have for international education policy and practice. This case study aims to do so by analysing the 30-year-old initiative in the state of Michigan: "Linking all Types of Teachers to International Cross-cultural Education" (LATTICE, n.d.[97]).

5.2. LATTICE

LATTICE is a non-profit organisation working to cultivate and support Global Education in mid-Michigan K-12 classrooms. Global Education is a learner-centred pedagogical approach that aims to expose students to diverse systems, perspectives and cultures to help them understand the connections between the lives of individuals across the world and how economic, cultural, political and environmental changes influence one another. It aims to deconstruct stereotypes, foster critical awareness of global challenges and promote the engagement of citizens in sustainable lifestyles (Council of Europe, n.d.[98]).

LATTICE activities centre on creating professional development (PD) opportunities and intentionally bridging teachers, graduate students, and researchers via a network of international educators. LATTICE was founded in the early 1990s by a local K-12 educator as a partnership between Michigan State University's (MSU) College of Education, International Studies and Programs (ISP), and local school districts. Although still a challenge for teachers in Michigan, LATTICE has helped many of them to incorporate global and cross-cultural perspectives into their teaching using best practices.

> **Box 5. Integrating global perspectives into the curriculum using LATTICE**
>
> In Michigan, the English-Language Arts (ELA) standards guide curriculum development for ages 11-18. However, these standards solely focus on skills (reading, writing, etc.) and do not provide a framework for ELA teachers to incorporate global literature into their lessons.
>
> On the one hand, this gives teachers the flexibility to select their own texts (if their district allows it). On the other hand, it often leaves teachers reliant on familiar sources. Secondary English teachers almost always inherit lessons from previous teachers, and it is easiest to use the books, stories, and rhetorical pieces that have been taught for decades at a particular school. One teacher in the LATTICE network commented that when she began teaching upper secondary British Literature courses, the curriculum was almost solely focused on literature produced by white, male authors solidly in the "British Literature canon". She wanted to challenge her students to rethink how the canon is defined.
>
> Although this teacher worked before and after school hours to diversify the books and stories taught, she struggled to find resources to illustrate the diversity of writers and themes that connect the United Kingdom to the world not only today, but over the centuries. By accessing the LATTICE network, she was able to connect with many international graduate students and researchers focusing on multicultural literature at MSU's College of Education.

5.2.1. Governance and funding

As a non-profit organisation, LATTICE is governed by a voluntary Board of Directors. This includes a President, Secretary, Treasurer, and other Directors. The Board ranges from 8-12 Directors and meets monthly during the academic year to discuss, plan, and evaluate LATTICE activities and outcomes. In addition to the voluntary Board of Directors, LATTICE employs a Session Director (almost always a practising teacher) to organise and run PD sessions. The Session Director receives an annual stipend for their service. Finally, MSU provides a graduate assistant for 5-10 hours a week; the graduate assistant is almost always an international student in the College of Education.

While LATTICE does engage in some fundraising, private donor support is minimal (usually less than $500 USD per year). Most of the financial support for LATTICE comes from various colleges and units at MSU. Currently, LATTICE receives financial support from MSU's Graduate School, College of Education, and ISP.

The MSU Graduate School provides $8,000 USD per year for LATTICE graduate student members. This money supports graduate students in the form of stipends for attending sessions and fellowships for research projects with local educators. The costs for the graduate assistant provided by MSU are shared between the College of Education and ISP, who each provide half of the financial support needed. ISP is a unique college at MSU, composed of more than 15 centres and units that either directly support international students or that support international education at MSU and in the local community. In addition to covering half the cost of the graduate assistant, ISP provides financial support to LATTICE as direct support from individual centres (outlined in Table 1). At the moment, this direct funding is used to support teacher stipends and the teacher-side of the teacher-graduate student research fellowships. Three of these centres are currently Title VI

funded National Resource Centers (NRCs)[4] and provide 90% of the funds used to directly support LATTICE activities.

Table 1. ISP centres that fund LATTICE

Center Title	Most Recent Annual Support Provided to LATTICE (2022-23)	Title VI National Resource Center
African Studies Center	$5,000	YES
Asian Studies Center	$3,000	YES
Center for Latin American and Caribbean Studies	$5,000	YES
Center for European, Russian, and Eurasian Studies	$500	no
ISP Deans' Office	$2,000	no
Muslim Studies Programs	$250	no
Office of China Programs	$500	no
Office for International Students and Scholars	$500	no
Total	$16,750	3

Source: Author's elaboration

5.2.2. Activities and outputs

LATTICE membership is diverse and includes school districts, international educators, MSU faculty, and MSU international graduate students. As outlined in the Theory of Change (Figure 10), LATTICE targets the need for global perspectives of education topics in K-12 classrooms. It does this by fostering international connections, mainly through the researchers and international graduate students at the College of Education. In doing so, LATTICE increases educator awareness of relevant knowledge and access to resources at MSU that can be useful for practitioners.

Figure 10. LATTICE Theory of Change Model
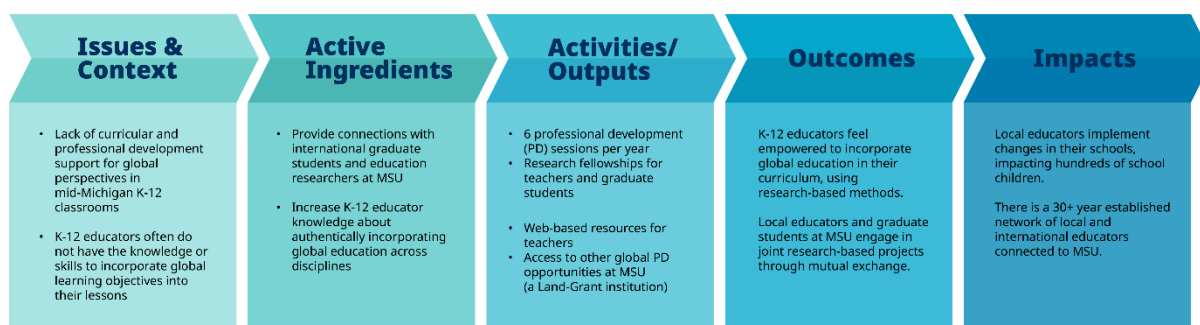
Source: Authors' elaboration

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[4] Title VI NRC is a federal programme administered by the International and Foreign Language Education office through the US Department of Education (US Department of Education, 2021[114]). Through competitive grants awarded to universities across the US, it aims to establish, strengthen, and operate national centres of excellence for teaching modern foreign languages. Title VI NRC funds are not guaranteed, grants are awarded for four years and subject to re-application.

As outlined above, connections between network members are made through four main activities/outputs: PD sessions; research fellowships, which pair graduate students and teachers; web-based resources curated by LATTICE; and newsletters which provide access to other globally-focused PD opportunities at MSU. These outputs are designed to empower teachers to incorporate knowledge from international research and professional practice into their curriculum. At the same time, international graduate students gain access to K-12 schools in the US for their own research projects.

The PD sessions take place monthly and are co-designed with MSU faculty, often those working internationally or on relevant cross-cultural issues. COVID-19 meant PD moved online, and since 2022 LATTICE implements a hybrid model to increase access to sessions. For 2023-24, LATTICE planned eight PD sessions for teachers and international graduate students and two social activities to increase rapport and trust between the MSU participants and the local educators. The PD sessions are designed by the Session Director and an international graduate student assistant to address the needs of local educators and bring speakers with strong research backgrounds. For example, during the 2023-24 academic year, LATTICE sessions focused on how to incorporate the United Nations' Sustainable Development Goals (SDGs) into Michigan classrooms. Researchers and community experts were brought in to lead the sessions. One session included relevant information about how other countries incorporate SDGs into K12 education.

The LATTICE fellowships are another way in which LATTICE aims to bridge the research-practice gap. Although LATTICE has implemented graduate student fellowships for many years using the funds from the MSU Graduate School, these fellowships were awarded to graduate students to support projects that fit their studies. Sometimes the students would use the LATTICE network of educators to gain access to a K12 classroom. Other times, however, the students would just use the funds to support whatever research projects they were working on, not necessarily in connection with local classrooms. Graduate students were required to do poster presentations at the end of their fellowships, and teachers were invited to attend – but there was little connection to be made for practitioners at these poster sessions. In recent years, the fellowships have been updated to focus squarely on bridging the research-practice gap (Box 6).

Box 6. Updating LATTICE research fellowships

Around 2015, the LATTICE Board decided that fellowship funds would be more effective in bridging the research-practice gap around global education if they were only awarded to graduate students who would be working directly with local teachers on co-designed projects. The award criteria of the fellowships were subsequently updated. To better connect local teachers and graduate students on practically relevant projects, applicants need to show how the project will be beneficial to the teachers engaged in the project. In other words, projects that only provide an entry point for data collection for research projects would no longer be funded. Rather, projects need to demonstrate the impact of their research in local classrooms.

In 2020, the LATTICE board – at the encouragement from a visiting US Department of Education grant officer –decided to further modernise the fellowship by providing small financial incentives for the teachers participating in these projects. The fellowships now provide financial support to both graduate students and local K-12 educators, and only co-designed projects are funded.

Since they are grounded in practitioner needs, the topics and outputs of these fellowships are diverse. In 2022, one such fellowship focused on developing an evidence-informed framework for selecting and using graphic novels to teach cross-cultural identity. The project output was a research-based toolkit on pedagogy, resources, lesson plans, and global representation in the world of graphic novels. This toolkit can be found on the LATTICE website for other educators to access. In addition to resources, sometimes fellowships lead to collaboratively designed PD sessions. For instance, in 2023, a co-designed project between local art teachers and graduate students led to the development of a MSU Global Art Professional Development unit that focuses on a very specific international art movement not often covered in US art curriculum.

LATTICE also seeks to bridge the research-practice gap in global education by partnering with local school districts, especially rural districts with a need for sustained and systematic professional development opportunities. LATTICE spent one year before the pandemic working directly with a predominately white, rural school district (Ovid-Elsie). Sessions were held at the school and the district superintendent assigned teachers from various departments to represent the district at all sessions throughout the year. These teachers brought what they learned back to their departments and classrooms, becoming teacher-leaders. One teacher even ended up joining the LATTICE Board of Directors after this year. In addition, further projects developed with MSU's College of Education because of this connection and the trust that was built throughout the year.

5.2.3. Effectiveness

For the past 30 years, LATTICE has sought to bring together researchers and practitioners in Michigan. It provides a sustainable access point for mid-Michigan teachers to bridge the research-practice gap by working with researchers to integrate cross-cultural perspectives into their subject areas. However, LATTICE faces many challenges. Graduate student, fellowship-awardee, and Board Member Marisol Massó conducted in depth qualitative research in 2021 to evaluate their experiences in LATTICE. This work took the form of eight detailed interviews with LATTICE educators. This section draws on the outcomes of this evaluation, updating the information where appropriate.

Impact

LATTICE provides a space where high-quality relationships based on trust and mutual understanding can develop between different parts of the education system. These relationships are a crucial piece for bridging the research-practice gap in education if research engagement is also incentivised. With this in mind, the impact of LATTICE can be summarised at three levels.

Firstly, the content and networking provided by the activities themselves reinforces a sense of community across education actors. In her Final Report (2021[99]), Massó concludes:

> *"Most teachers agreed that they find LATTICE useful/valuable because of the guest speakers lecturing about relevant topics and the new perspectives they get when they meet with people from other parts of the world. Teachers also said that LATTICE was valuable to them because they could participate in conversations with other colleagues and being part of a community of teachers interested in the global and diversity" (p.1).*

The sense of community is reinforced through partnerships with local organisations that regularly provide spaces for LATTICE sessions and professional development. Over the years, LATTICE has built strong and sustainable partnerships with local community organisations that regularly provide spaces for LATTICE sessions and professional development (ranging from multi-denominational religious organisations and churches, over a credit union, long-term partner schools, a refugee development centre, and other units at MSU, such as the central library). Massó reports that the LATTICE educators:

> *"mentioned that LATTICE has created the space to connect their classes with other cultures from other parts of the world, with other organisations (e.g. the Refugee Development Center), and the community members (e.g., graduate students visiting their classes as guest speakers). Furthermore, they mentioned that the fellowship was helpful to get global perspectives in their classes with the help of graduate students" (p.1-2).*

Secondly, LATTICE provides a collaboration point for schools to participate in research. In addition to impacts on local educators and school districts, LATTICE provides opportunities to international graduate students at MSU to find a warm, welcoming professional network of educators willing to welcome them into their US classrooms. This has provided opportunities for observation and research to these graduate students.

Finally, perhaps the most obvious impact of LATTICE over the years has been that the educators who are involved in LATTICE do take what they are learning back to their classrooms. Massó reports that

> *"all teachers claimed that LATTICE has impacted their teaching or work as an educator. Teachers described the conversations held in LATTICE sessions as timely and relevant, helping them implement research-based pedagogy and content into their classrooms. They agreed that the LATTICE meetings supported the planning of new activities for their classes. They explained they learn about important topics from the guest speakers, which they would not learn in their own schools. They have adapted their own curriculum to include global perspectives" (p.1).*

Challenges

Looking at LATTICE through Coburn and Penuel's five core principles of RPPs (Coburn, Penuel and Geil, 2013[10]) (Farrell et al., 2021[11]), the initiative covers three of them.

Firstly, with aim of bringing in global perspectives, it focuses on the improvement of education and reduction of inequities. Secondly, through activities such as the co-designed research projects, it seeks to transform hierarchies in the research process. Thirdly, the network approach brings together multiple, relevant professions in partnership.

However, LATTICE does not fully address two of the principles. The first is that long-term partnerships, beyond a single research project, are thought to be a defining characteristic of RPPs. While LATTICE itself is long-term and has been a sustainable resource for educators in the mid-Michigan area, the individual research projects tend to be based on the annual fellowship awards, which last usually only one academic year (and sometimes less). With that being said, many LATTICE educators continue to engage in LATTICE activities for many years. In Massó's study (2021[99]), the educators interviewed had been attending LATTICE sessions for an average of four years.

In addition, LATTICE does not fully meet the principle that research is a core activity of the partnership. LATTICE encourages co-designed research projects (e.g. through the fellowships) and helps to connect MSU researchers with local educators. However, it could be more intentional about this process and gather more information on the impact of research on its activities. The Ovid-Elsie example above is one of countless instances where LATTICE has connected various faculty in the College of Education with local teachers or schools or where LATTICE has connected local educators with resources at MSU. Still, LATTICE could work to improve its understanding of the impact of these exchanges on research and teaching practices. It could also be more intentional in fostering direct connections with specific school districts rather than passively waiting for interested educators to join.

Outside of the lens of these core principles of RPPs, LATTICE faces other financial and structural challenges. As outlined above, LATTICE funding is far from secure. In addition, recent teacher shortages (including substitute teachers) make it difficult for teachers to find time to actively engage in LATTICE sessions, which are integral to the LATTICE design for networking and professional development.

6. Equipping brokers with the skills to bridge the research-practice gap: The Peers4Practice project in Germany

6.1. Introduction

This section describes a project which aims to equip individuals with the skills to become brokers who are able to build bridges between research and practice settings and foster and sustain joint work to improve education. After a short introduction to the German context, the authors provide a theoretical background on brokers as individuals that need to be qualified to act competently at the boundaries of research and school practice. The case study then presents the Peers4Practice project, currently underway at the Deutsches Institut für Internationale Pädagogische Forschung (German Institute for International Pedagogical Research – DIPF). The project aims to equip early career researchers and teachers with the skills to become brokers and engage in collaborations between educational research and school practice. The case study ends with open questions and policy implications to support individual and institutional brokering strategies.

6.2. Research-practice collaboration in Germany: The context

The German education system with its federal structure has implications for how RPPs are initiated, organised and investigated.

First, RPP work includes a mixture of top down and bottom-up approaches. Top-down approaches have gained momentum in recent years with larger funding envelopes by the Ministry of Education (BMBF). These funds aim at installing research-practice collaborations on topics like digitalisation, inclusion and supporting schools with diverse student populations and in challenging socio-economic environments. Funding lines become regularly accompanied by so-called *meta projects*, which aim at integrating knowledge from all funded research projects and supporting their transfer into school practice by implementing structures for research-practice collaborations.

Most German RPPs during the last decades have been bottom-up approaches, resulting from collaborations between specific departments from universities or research institutions and local schools. These collaborations vary in size, duration and liabilities, and a systematic overview has been missing to date[5]. The estimated range varies from individual project collaborations, e.g. between one researcher and one school teacher, to institutionalised collaborative work that comprises research institutions, one or several schools, and state or district administration agencies from the education policy context [for some examples from Germany, see (Hartmann and Kunter, 2022[2])].

Second, RPP work in the federal education system in Germany is characterised by a large array of possible actors and their respective institutions [e.g. (Manitius, Bieber and Bremm, 2021[100])]. In addition to universities, research institutes and schools, RPPs may be set up and supported through public and private organisations, on a national, state or local level. To our knowledge, there is no explicit consensus or a clear strategy for assigning roles for actors to support, install, develop, investigate and sustain RPP work. For example, the extent to which researchers are encouraged to engage in partnership work with individual schools depends on the management of a university or research institution. Likewise, engagement in evidence-oriented school development depends on federal education governments. Similarly, whether a school will engage in partnership work with universities depends on the leaders of the school. School leaders will also need to consider how to ensure compensation for individual teachers who are willing to engage and invest time and effort in RPPs. The compensation of teachers is strongly bureaucratised and school leadership does not have much flexibility for performance-based compensation. However, it is possible to enable teachers to use teaching hours for additional forms of professional engagement, such as participation in RPPs. Nevertheless, given the tremendous and long-lasting teacher shortage in Germany, this option might not be attractive for most principals.

This context implies that it is very much up to the individual practitioner to decide whether to engage in partnership work between educational research and school practice. At the same time, successful RPP work in this context is dependent on qualified individuals who are able to navigate the tensions and boundaries of the *research-practice gap*.

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[5] A systematic mapping of RPPs in Germany is currently being carried out as part of the PaTH project at the Leibniz Institute for Research and Information in Education.

6.3. How can brokers be successful in partnership work?

Research on brokering has revealed an inherent ambiguity associated with it, describing conflicts of accountability and belonging to each field of practice (Hartmann and Decristan, 2018[19]; Edwards, Lunt and Stamou, 2010[101]; Tanggaard, 2007[102]). At the same time, brokers can be admired for their innovative role in changing professional practices (Jones, 2010[103]). Brokering often comes with feelings of uncertainty in the face of unfamiliar actions (Suchman, 1993[104]), because brokers need to enter new territory to engage in boundary crossing actions. These research findings imply that brokering is associated with several challenges and requires individual competencies as well as supportive contextual conditions to unfold its potential.

Regarding individual competencies, research has identified two factors that characterise successful brokers. First, they are equipped with an ability to flexibly shift between the research and practice contexts, which requires communication and interaction skills. This is linked to what Edwards (2012[105]) called relational expertise and relational agency. Moreover, successful brokers are highly proactive, meaning that they take initiative on their own and quickly recognise opportunities for crossing boundaries between research and practice (Bakx et al., 2016[106]). Key abilities of brokers are summarised in Box 7.

Box 7. Brokerage skills

Brokers are important for initiating, implementing and sustaining partnership work. Building on their in-between position, they are able to:

- accumulate knowledge from both communities of practice
- reach out to members of both communities via established professional networks
- provide information on how to use boundary spaces productively
- manage participants' expectations on the success of partnership work
- compare and evaluate outcomes of partnership work
- see partnership work as their responsibility.

When it comes to contextual conditions, research suggests a strong link between the setup of partnership work and successful brokering (Hartmann and Decristan, 2018[19]). Bakx' and colleagues (2016[106]) identified characteristics of the school context, such as an open school climate, a certain research-mindedness, and sufficient time to align research and school activities with each other. Other research has identified sustained collaborative practices (one of the key features of RPPs) as a relevant precursor as well as a mediator for successful brokering (Edwards and Stamou, 2017[107]).

Taken together, research points to challenges and possibilities that individual brokering activities imply for successful partnership work at the boundary of educational research and school practice. The next section describes a recent initiative that aims to develop these special brokerage competences.

6.4. The Peers4Practice project – A professional development programme for brokers

The DIPF recently launched the *Peers4Practice* project, funded by the Robert Bosch Foundation, with the objective to cultivate brokering skills among education researchers and school practitioners. The theory of change of the project is represented in Figure 11.

Figure 11. Theory of Change of the Peers4Practice project

Issues & Context	Active Ingredients	Activities/ Outputs	Outcomes	Impacts
Successful RPP work needs people with brokering skills that operate at the boundaries of research and practice settings. A clear strategy for assigning roles for actors to support, install, develop, investigate and sustain RPP work is lacking. It is up to individuals to decide whether to engage in partnership work between educational research and school practice. There are no opportunities to develop essential skills for successful brokering.	Successful brokers can: • communicate with members of research and practice communities. • provide information on how to use boundary spaces effectively. • manage participants' expectations on the efforts and success of RPP work. • see RPP work as a shared responsibility of research and practice.	Professional Development Programme to equip early career researchers and teachers with brokering skills. Parts of the programme: • kick-off meeting: team building, setup of research-practice tandems, acquisition of knowledge about brokering in education, defining thematic foci for tandem work • individual tandem work: worksite visits, joint reflection of classroom situations, discussion of literature, joint lesson planning, co-construction of action research projects • professional development series on self-regulation, resilience, conflicts	Participants develop a network of peers from educational research and school practice. Participants are equipped with brokering skills (perspective taking, joint work routines, communication skills, knowledge of research vs. practice contxts, etc.). Participants know about challenges and possibilities of individual and institutional brokering.	The research-practice gap is narrowed by trained brokers who successfully bridge educational research and school practice. Brokers act as role models for others in their respective fields to install and sustain RPP work. School practice becomes more strongly grounded in evidence. Research responds to practice needs.

Source: Authors' elaboration

6.4.1. Goals

This pilot programme stems from the context and literature described above. It expects teachers and researchers who engage in an intense bilateral partnership over one and a half years, to develop the sustainable skills needed to broker between the two fields and make research-practice collaboration more effective. Peers4Practice comprises a part-time professional development programme that supports participants to effectively operate at the crossroads of education research and schools. It lays the foundation for collaborative endeavours between the realms of research and practice.

The overarching goals of the programme are threefold:

- To foster the development of competencies essential for collaboration across the distinct spheres of research and schools; laying a foundation to effectively engage in practice-oriented research.

- To nurture a mindset of brokering that appreciates the unique perspectives of the other field, cultivating a culture of collaboration and mutual respect.

- To establish a robust and enduring network of brokers, enabling all participants to draw upon these valuable connections throughout their careers, thereby creating a sustainable professional community of brokers.

6.4.2. Activities

The project forges tandems, each consisting of an early career researcher (mainly PhD-students) and an early career teacher (mainly teachers during their induction phase for

state recognition [Lehrkräfte im Vorbereitungsdienst]), who will collaborate intensively over the space of approximately 18 months.

Throughout the programme, tandems will partake in several joint professional development activities, designed to be suitable for both researchers and practitioners. They include topics like self-regulated teaching and learning, conflict management and resilience in school and in academia. At its core, the programme encompasses several meetings for tandem project work, such as mutual workplace observations, joint lesson planning and reflection tasks. During these meetings, participants can share their experiences, reflect on common issues from both fields and explore ideas for project work at the intersection of research and practice. These may include joint classroom or school projects, classroom observations, science/research communication or reflecting on the partnership work over the course of the programme. Tandem work also provides opportunities to address differences in perceptions and needs and the skills to recognise when these differences may lead to misalignments in communication between actors from research and practice. The elements of professional development are accompanied by various leisure and social activities to foster positive working relationships and trust among participants.

Commencing in January 2024, the project's inaugural cohort comprises approximately ten early career participants from each realm—research and school practice. A two-day kick-off session facilitates the pairing of tandems based on common interests, ensuring their readiness for the upcoming series of activities over the subsequent 18 months. Upon successful completion of the programme, all participants will receive a certificate of achievement during a concluding ceremony hosted in collaboration by the Robert Bosch Foundation and the DIPF. A second cohort has been scheduled to start in July 2024.

6.4.3. Output and challenges

Over the course of the 18-month programme, participants deliver a variety of products as measures of their collaborative activity and engagement. They regularly engage in and document co-construction, such as joint classroom planning, classroom reflections, research reflections and classroom observations. They also work on a joint collaborative project that should support the work of both parties and span the whole timeframe of the programme. This might involve school or classroom projects, a joint and collaborative research project, a public relations strategy on a research topic or a reflection of their own collaborative work.

6.4.4. Outcomes

The Peers4Practice programme is expected to have a positive impact on outcomes related to participants' brokering skills, such as perspective taking, interdisciplinary communication, cooperation, self-reflection, evidence orientation (teachers), practice orientation (researchers), research (teachers) as well as their attitudes towards and networks with the respective other field. A comprehensive evaluation of the programme includes pre- and post-questionnaires, participant interviews and audio-recordings of individual tandem work (subject to consent of the participants). The evaluation will provide insights into the programme's effects, mainly on the individual level of the participants. We measure these outcomes constantly over the course of the programme as well as after its completion.

Peers4Practice focuses on individuals in an early career stage who have not necessarily been confronted with brokering activities during their careers. This poses challenges and benefits at the same time. One challenge relates to the uncertainty of participants' individual benefits. Participants must first be convinced that brokering will be important

for their development as a teacher or as a researcher. This stance may conflict with the institutional environments they operate in. In the German context, teacher education and educational research have only begun to establish more robust structures for recognising and incentivising research-practice knowledge mobilisation and collaborative engagement. Hence, it will somewhat depend on the participants' environment whether it values efforts to engage in brokering between educational research and school practice and motivates new teachers and researchers to adopt brokering activities as part of their professional development.

However, training teachers and researchers for brokering skills in an early career stage, can also greatly benefit their further development. At that stage, professional routines have not yet been developed, so more flexibility can be expected in terms of thinking outside the box and finding new solutions to pressing problems during joint work. Moreover, as brokering means breaking new ground, early career participants can use the professional development programme to reflect on feelings of uncertainty and ambiguity, which are not only side-effects of brokering activities, but occur in every career development path. A reflective stance on how to use such seemingly unpleasant emotions productively with the goal of workplace learning and development can help future teachers and researchers both with regards to their traditional job roles as well as for acting in brokering positions.

6.4.5. Expected impact

Although not every RPP will have clearly defined brokering roles at the outset, it is evident from the literature that brokering activities are key to successful partnership work. Such activities can be situated on various levels, ranging from one-off discussions that build bridges between different perspectives, distributing responsibilities and tasks among partners, to broader conceptual tasks such as identifying common goals and demands, as well as disseminating results to various stakeholder groups. Brokers can either belong to formal brokering institutions, have a formal role as a broker (e.g. research champion in a school) or – if formal roles and institutions are lacking – individuals can take on informal brokering roles in addition to their traditional job tasks. Brokering can be predefined, for instance by certain tasks within an institution or a project, or it can be carried out spontaneously. For example, stemming from individual motivation to engage in research-practice collaborations, or emerging in response to challenges that can only be addressed by brokering activities.

We expect the programme to have a broader impact on research-practice collaboration in the Rhine-Main-metro region, where the initiative is located. We nurture a network of engaged individuals from both fields who are prepared to develop, coordinate and advise research-practice collaborations in the area. The network is expected to serve as an accelerating hub and a snowball mechanism for more effective RPPs and other forms of cooperation in the area. To reach this goal, the focus on early career researchers and practitioners is of particular importance, as they will be able to set the climate for interdisciplinary collaboration and act as role models for others.

The knowledge we gain from Peers4Practice can provide insights and concrete methods related to the ways in which partnerships can be promoted and funded, the nature of brokering skills and how these can be developed. These insights can influence the broader education system and further the policy objectives of reducing the research-practice gap and thereby supporting both school improvement and the production of relevant research. They can also be valuable to redesign teacher education by integrating brokering skills.

6.5. Implications for educational policy and research

The Peers4Practice programme and the concise evaluation of its outcomes provides valuable insights for policy makers and policy objectives to promote and institutionalise partnership work in Germany.

Given the complexities associated with brokering activities and positions, there is a strong need within education systems to devote more attention to the qualification of the individuals that are supposed to perform these tasks. Too often, brokering tasks are taken on by inexperienced individuals who are not able to anticipate the challenges arising from research-practice collaborations. They may not have opportunities and support to reflect on their roles as brokers and develop professional brokering skills, which can diminish their motivation to engage in such tasks. This in turn acts against establishing stronger connections between educational research and school practice.

More research on the topic of brokering is also needed to investigate the developmental pathways of people with brokering roles and establish effective methods. The Peers4Practice project is one possible approach to build brokering communities and networks. It is likely that brokerage professional development programmes, like other professional development opportunities, will need to build on local structures and contexts to be effective.

An open question relates to the institutionalised brokerage structures and roles for research-practice collaborations. As brokering activities are often situated within temporary project work, there remains a need to create permanent positions for brokers, in academia, schools and district administration. This should be accompanied with an incentive structure that values people's engagement in brokering activities in addition to their research and teaching tasks. Such institutionalised brokering structures could provide a strong base for successful partnership work and contribute to reducing the research-practice gap in education.

7. Discussion

RPPs operate under the assumption that well-thought out and appropriately structured collaborations between researchers and practitioners can ensure that research meets rigorous quality standards and is relevant for classrooms. On the practice side, this should mean that teachers have better access to up-to-date research and receive support in making use of research in their own classrooms. Partnerships however are complex social mechanisms (Schlicht-Schmälzle et al., in preparation[7]) and, in order to be effective and sustainable, they require favourable local conditions. This section will first discuss the case studies in light of the RPP literature and then distil some common themes in conditions for their effectiveness.

7.1. Implications for partnership literature

This section uses the five defining criteria for RPPs (Farrell et al., 2021[11]) to compare and contrast the case studies and inform a wider discussion on the diverse partnership work in education and the role it can play in bridging the research-practice-gap (see Table 2 for an overview).

Table 2. Five RPP principles across the case studies

Principles	MOVE-P (Norway)	LATTICE (United States)	Peers4Practice (Germany)
They are long-term collaborations	Fixed duration: 2.5 years Accessible to a small number of individuals with high intensity of involvement	Very long-term initiative with flexible participation in PD activities and short-term research projects Accessible to a large number of individuals with varying intensity of involvement	Fixed duration for the pilot: 1.5 years Sustainability yet to be established Accessible to a small number of individuals (in the pilot stage) with high intensity of involvement
They work toward educational improvement or equitable transformation	Narrow focus on a specific aspect of teaching and learning: student motivation. Develops pedagogical strategies	Broad focus on specific aspect of education: global education Develops teachers' competences	Very broad focus on competences that can improve quality teaching: Develops teachers' and researchers' competences
They feature engagement with research as a leading activity	Research transfer Research co-production throughout the entire process	Research transfer (PD activities) Research co-production (fellowships)	Development of skills for research transfer and co-production Option to engage in forms of transfer / co-production
They are intentionally organised to bring together a diversity of expertise	Organisations: university, school Participants: researchers, teachers and school leaders	Organisations: University, local authorities, schools Participants: researchers (international scope), teachers, policy makers, community…	Organisations: Research institution (DIPF) Participants: early career researchers and early career teachers
They employ strategies to shift power relations in research endeavours to ensure that all participants have a say	Co-production Significant time spent on defining the *what*, *how* and *who*: Several roles defined Joint research outputs	In fellowships: joint research production	Joint activities to develop knowledge of the research/practice contexts Optional co-production

Source: (Farrell et al., 2021[11])

7.1.1. Long-term collaborations

The case studies make it clear that genuine collaboration evolves through partnership work, but it takes time. It is not immediately evident to the prospective partners, no matter how willing, what their collaboration will achieve. Despite already taking place in the context of a long-standing regional school partnership, MOVE-P made the case for devoting significant time to the initial phase of definition and discovery, where the nature of the partnership is agreed on and mutual understanding of the roles and responsibilities is developed. This process cannot be rushed if the partnership is to be effective at a later stage.

As identified by the LATTICE case study, the very long-term nature of the initiative provides a reliable feature of the local education landscape that allows individuals who may benefit from professional development opportunities to drop in and out of the partnership as their career trajectories and personal lives allow. Flexible participation is obviously not beneficial for all areas of partnership work and is perhaps a specific benefit for professional development networks attached to partnerships. However, it does make collaboration accessible to a larger number of individuals. It also provides the time and trust needed for cultural shifts to take place and co-designing and/or using research to become part of the work, not additional work (Farley-Ripple, Mead and Tilley, 2023[108]).

The activities that characterise long-term partnerships require partners to create a working infrastructure – such as time schedules, planning time, meeting time, as well as "third spaces" where partners can convene and work together (see section 2.4 on "boundary-crossing infrastructure"; and (Phelps, 2019[56]; Lillejord and Børte, 2016[54];

Penuel et al., 2020[65]). This involves implementing practices that foster collaboration and establishing reliable schedules and spaces for partnership work. Over the years, LATTICE has built strong and sustainable partnerships with local community organisations that regularly provide "third spaces" for LATTICE sessions and professional (see section 5.2.3) LATTICE has also established a very stringent and reliable annual and monthly schedule with regards to board meetings (taking place on a certain week-day during a certain week of the months for years), monthly sessions (certain week-day at the same hours of the day for decades) and yearly events at the same time of the school year (award ceremonies in May, holiday season events in December), and monthly newsletters. These "third spaces" facilitate reliable and productive interactions.

Developing these consistent features of a partnership takes time. Peers4Practice has yet to develop these sustainable and regular practices and spaces for its partnership work, as it is still in a piloting phase and the future development strongly relies on the input and needs of the participants. So far, all group activities mainly take place at the DIPF, which does not qualify as a neutral "third space". However, the participant-driven activities throughout the programme fully rely on self-organised "third space" meetings.

7.1.2. Work toward educational improvement or equitable transformation

All three case studies take a targeted and thematic approach to improving education. LATTICE's central mission is to promote the value of the global education ethos in curricula in teaching practice in Michigan. When it comes to MOVE-P, the focus on student motivation and participation is also narrow from an education perspective, relying on a concrete body of research literature. In terms of changes in educational practice, Peers4Practice equips practitioners with the skills to implement research findings more effectively, potentially leading to adaptable and informed pedagogical strategies. LATTICE directly influences teaching methodologies by supporting closer integration of curricula with global perspectives, whereas MOVE-P's targeted strategies for academic motivation offer direct tools for enhancing student engagement. Therefore, while Peers4Practice and MOVE-P provide tools and strategies for practice, LATTICE facilitates a content-focused pedagogical shift.

7.1.3. Engagement with research as a leading activity

As outlined in section 2, RPP work necessitates a dynamic feedback loop between research and practice. However, existing literature does not agree on what exactly counts as research engagement in RPPs and the threshold for considering it as a leading activity. The way partnerships engage with research can vary greatly in terms of the methodologies used, the length and intensity of research engagement and the roles for participants. Research engagement in the case studies can be grouped under two broad processes: research production including, for example, formulating tailored research questions; and research dissemination, for example raising awareness of expert knowledge through digital databases. Both processes have the potential to positively impact the quality of relationships between the partners by enhancing mutual understanding and trust.

For instance, one of the defining features of MOVE-P is the co-design process for developing strategies to increase academic motivation among students. This involved collaboratively defining the topics based on practitioners' needs and splitting the implementation tasks and responsibilities depending on the skills of partners. Importantly, MOVE-P involved both traditional research transfer (where researchers curated workshops on motivational theories) and research co-production (where teachers and researchers co-developed new strategies and tested them) approaches. When it comes to LATTICE, co-design of research features most explicitly in the research fellowships, which are the

main research production mechanism within the partnership and can only be awarded to projects addressing a concrete issue faced by the collaborating practitioner. While the goal of Peers4Practice – equipping brokers with the necessary skills – is not explicitly about research dissemination or (co-)production, the pilot includes many elements which lend themselves to such practices (joint reflection tasks and lesson planning, possibly joint projects involving research). The evaluation of the project also aims to contribute to research on brokering.

7.1.4. Bringing together a diversity of expertise

The combination of actors who are involved in a partnership matters because each group can contribute different sets of skills, perspectives and ideas to the collaborative work. In addition to different groups of actors, involving different managerial or decision-making layers of an education system can enrich the nature of the collaboration but also bring added complexity to managing it. LATTICE partners and network members come from organisations beyond schools and research institutions, involving local policy makers and bringing knowledge from the international research base, thus having a complex set of layers. However, this broad membership is not directly involved in research production in the context of the partnership.

By contrast, MOVE-P has a relatively flat structure, with just one school and one university involved in the pilot and a heavy focus on practitioners and researchers as the main layer of actors involved in research production. Within the practitioner group, there were additional layers of participants that the partnership categorised for different roles within the collaboration: regular teachers, primary teachers, teacher champions, and teacher coordinators. The Peers4Practice project as a pilot has a specific and narrow composition: early career teachers and early career researchers. This choice facilitates horizontal interactions and possibly easier management of power dynamics between researchers and practitioners but not when it comes to research processes.

7.1.5. Strategies to shift power relations in research endeavours

Each case study seeks to address imbalances in power between researchers and practitioners and transform the nature of education research through fostering greater collaboration and involvement of diverse stakeholder groups. What this looks like in practice differs. MOVE-P aimed for power-equality in terms of deciding the *what*, *how* and *who* at the outset of the partnership, to ensure a common point of departure. However, this model would most likely not be appropriate for the aims of LATTICE or Peers4Practice. LATTICE, for instance, has a much stronger emphasis on bringing expertise in from outside the partnership. Furthermore, such an approach is challenging to implement. Data from MOVE-P indicates that there was some dissatisfaction from school partners regarding how the initial phase (i.e. the anchoring of the project) was carried out. Partner school staff perceived this initial phase as too traditional or top-down.

In addition to shifting power relations, the initiatives aim to foster changes in the research process to varying extents. Research activities in MOVE-P involve a careful consideration of the knowledge of all participants, and genuine co-production building on this. Research production is used as a professional development tool within the LATTICE fellowships, which mobilise educators and research students in joint research endeavours that integrate educational practices with global education theories. By contrast Peers4Practice facilitates an appreciation of the "other world" (teaching and research respectively) early in the career of teachers and researchers. The early development of brokerage skills can prevent issues linked to power relations and foster a respectful collaborative environment in later partnerships. This delineation underscores the variance in outcomes related to research,

with Peers4Practice having a stronger focus on behavioural and process enhancements, LATTICE on global education content integration, and MOVE-P on directly applying research outputs to classrooms.

7.2. Promising conditions for effectiveness

This paper began by introducing three specific systemic challenges that RPPs face, and connected them to the case studies. These were: inappropriate funding structures for building long-term, interdisciplinary partnerships; bureaucratic barriers arising from the distinct governance systems of schools and research institutions; and the language and epistemological gaps between research and school practice communities. A closer look at the presented cases reveals that they all intend to tackle these challenges in their unique ways and, in doing so, reveal some promising conditions for effectiveness.

7.2.1. Pragmatic and flexible funding

The literature points to often inappropriate funding structures which rarely allow for building long-term interdisciplinary partnerships. Frequent reliance on third-party funding sources with short-term funding schemes results in short-term outcomes.

Creating trust, fostering high-quality relationships between partners and implementing an iterative process in collaborative research, require funding mechanisms that take the nature of these conditions into account (OECD, 2022[1]). Funders set priorities for areas of focus but there can be a tension if these priorities do not align with the needs of the local community (OECD, 2022[1]). In the same way that the challenges addressed by RPPs need to be adapted to local conditions, the programming of the financial support may benefit from a local approach that is more flexible and can appropriate for the local environment (e.g. needs, incentive structures).

Two of the case studies demonstrate approaches to locally anchored, long-term funding. MOVE-P is wholly supported by a single, long-term funding source (the Scheme for Local Competence Development). In addition, this funding is for partnership work, not research. As such, one of the traditional limitations of academic funding sources, the pressure to publish in high-impact journals, is perhaps less acutely felt. This means the research can be shaped more intensely by the needs of local practitioners and the curiosities of local researchers.

When it comes to LATTICE, this partnership heavily relies on the longstanding financial commitment of federal Title VI funds through various units at Michigan State University based on a subscription model. This base funding is combined with additional sporadic third-party funding sources. This internal institutional funding provides stability in the sense that there is commitment to the mission of LATTICE even through challenging periods of the partnership, for instance when financial and/or human resources might be stretched. This commitment throughout different partnership phases undoubtably contributes to the partnership's longevity. However, area studies centres can lose those funds (as they did from 2018-2022).

Peers4Practice, by contrast, was funded by a foundation, which is a source not uncommon for testing pioneering work. However, making this a sustainable, long-term project will require stable funding sources to be identified.

7.2.2. Organisation and system governance

When it comes to organisational governance, two concrete structures emerged from the case studies. Firstly, incentives and support are needed from senior management in partner

organisations on all sides for the collaboration to function well, achieve its goals and be sustainable. All partners must be dedicated to the work and incentivise participants to commit their time. In the case of MOVE-P, the University of Stavanger had a strong strategic focus on bringing more research into existing partnerships between the university and the practice field. This objective gave confidence to researchers that their proposal would have institutional support, as it met this strategic objective.

Secondly, consciously designed soft infrastructure is required. This not only refers to the presence of useful networks but also to the need for those networks to be allocated a specific role that can work towards achieving the goals of the partnership. For LATTICE, Michigan State University encouraged key personnel across various colleges and university units to dedicate time and meeting rooms for LATTICE board meetings, LATTICE professional development sessions, or annual events. A certain degree of imbalance occurred as board members from education practice mainly had to dedicate leisure time to fulfil board responsibilities. However, LATTICE financially compensates the Session Director (who oversees the LATTICE curriculum). In addition, several local schools allowed teachers to attend the half-day professional development sessions and provided regular meeting spaces for LATTICE sessions.

Peers4Practice is building a network of brokers to act as an accelerating hub and a snowball mechanism for more effective RPPs and other forms of cooperation in the area. The DIPF has a key role in this network and cooperates with individuals from other organisations. To support the network, the Hessische Lehrkräfte Akademie, a sub-unit of the Ministry of Education in the state of Hessen responsible for teacher education, provides high-level policy support. This ensures incentives for the individual early career teachers and researchers to dedicate their time for Peers4Pratice activities from their own organisation.

At the system level, research and education practice tend to work with very different incentives that do not particularly promote collaboration and interaction [e.g. (Phelps, 2019[56]; Gamoran, 2023[25])]. This was also evident in the case studies. In LATTICE, engagement of faculty members and teachers mainly relies on volunteering and is not rewarded or recognised in career path processes (for example, promotion). In Peers4Practice, DIPF faculty and surrounding research institutions widely support and appreciate PhD students' involvement and the programme provides multiple ways to use the work for research that can feed into individuals' dissertations. However, it is still unclear whether and how schools reward the engagement of early career teachers.

7.2.3. Skilled and respected brokers to bridge the two communities

The research and practice communities often operate with distinct languages and diverse perspectives when it comes to the nature, origin and scope of knowledge, as well as how it is acquired. These divergences mean that different education communities often struggle to understand each other's context and what engaging with research and other forms of knowledge means in that context. Biesta (2010[109]) posits that there is a *knowledge deficit* in evidence-informed education practice, where knowledge about the relationships between actions and consequences can only ever reveal options for interventions, never certainties about what outcome an intervention will cause. To overcome this deficit, he emphasises that prospective users of research must first agree on the values and normative orientations that underpin the goals of their education practice. Without agreeing on these values, relevant evidence cannot be generated or used. Yet, this process is fraught with challenges and skilled brokerage is needed in any given system. Having a common framework helps partners to agree how they will approach the task of combining research knowledge with professional (and other forms of) knowledge in service of a shared goal.

The challenges and opportunities of this brokerage are well-illustrated by MOVE-P. The combination of exploratory anchoring meetings, workshops and seminars focused on presenting the empirical and theoretical motivation literature to practitioners in order to ensure a baseline of common knowledge and combining deductive and inductive processes for developing teaching strategies.

As in the case of MOVE-P, a partnership can seek to broker its own knowledge base specifically for a concrete theme. Alternatively, it can involve brokers to raise awareness of how an existing knowledge base might inform education practice, as seen in LATTICE. It might also aim to mobilise a knowledge base that lies predominantly outside of education and develop a common understanding of how it can be integrated into education practices (Peers4Practice).

It is the Peer4Practice initiative that directly targets the challenge of bridging epistemological gaps. The programme elements – self-directed learning, mutual observation, joint project work – were carefully designed to respond comprehensively to the respective knowledge gaps and build necessary skills. The choice of involving early career participants in the tandem work is also strategic in that the existing context-specific (research and practice respectively) language and knowledge of such participants is less likely to be deeply "ingrained" and could therefore be easier to shape than in those who are later in their careers.

8. Conclusions

This working paper set out to explore approaches to bridge the research-practice gap. It focused on a broad conceptualisation of RPPs reflecting the diversity of forms of partnership. Drawing on research, international data and three case studies, it aimed to take initial steps towards two crucial questions relevant for policy makers.

The first question relates to the **impact and effectiveness of RPPs**, which is a known gap in the literature. The theories of change for each case outline different types of outcomes and discuss a range of impacts. Effectiveness means the extent to which initiatives can achieve the expected outcomes, and whether those lead to the overarching impact.

An immediate outcome expected from RPPs is making research more relevant for practice and increasing its accessibility and use. While the theory of change of all three case studies included these outcomes, their evaluations focused less explicitly on measuring them. This is not unique to the case studies presented in this paper, but a general feature of the literature. There may be multiple reasons for this gap. First, evaluating research itself may be somewhat contentious among researchers, compared to focusing on outcomes that are external to their core work such as improving teaching practice and student learning. Second, methods of measuring research relevance, accessibility and use may be less widespread and/or less developed. Whatever the reason, it would be crucial to invest in measuring the impact of RPPs on research itself as this is a key intermediary outcome that is assumed to be a mediator of improved teaching and learning in the long run.

The most important long-term impact should certainly be improving learning for all students. It must be noted that building evidence on the effectiveness of RPPs with respect to learning outcomes is challenging. RPPs are complex social systems and isolating the individual effects of these partnerships is almost impossible, for reasons that are similar to why it is difficult to measure the impact of educational interventions (Wrigley and McCusker, 2019[110]; Parra and Edwards, 2024[111]; Pawson, 2006[112]).

The case studies rely on evaluations – conducted or planned and with varying methodologies and comprehensiveness – to measure effectiveness. These all reveal important and valid information, but also have natural limitations. First, they are all internally conducted (by those running or participating in the initiative) and as such may carry biases. Second, they are not experimental (or quasi-experimental) and the lack of a control group does not permit the elicitation of added value (such as effect size in terms of student learning). Third, they are unique to the actual initiative and do not allow comparison with the effectiveness of other initiatives with the same/similar expected outcomes. Although they cannot answer "what works", these evaluations can provide a frame of reference which can inform and inspire future initiatives.

Nevertheless, a lot can be learnt on how and under what conditions RPPs work from process evaluations, participant surveys and other measures. Conducting more rigorous, impartial evaluations would enhance the robustness of the overall evidence. Regularly conducting systematic reviews would also benefit the field. If policy makers and funders want robust information on effectiveness, they need to incentivise robust, preferably external, evaluations of a variety of RPPs. This could mean setting up or commissioning existing evaluation centres to evaluate RPPs and including incentives (e.g. criteria for funding) for RPPs themselves if they agree to be evaluated. This is costly, but the return could be substantive if it provides information on where to invest.

The second question asked about **organisational and systemic conditions** that support the implementation and scaling of RPPs. The three case studies confirm what has been found in the literature: individuals' attributes and the nature of their relationships, the organisational structure of RPPs and system-wide factors all matter for RPPs to achieve their expected outcomes.

The literature review revealed that certain factors have not yet been investigated thoroughly. One of these is the relationship between institutions that participate in the RPP and their broader context, in particular their policy environment. The most conducive policy environment for RPP work seems the be the Norwegian one, with its national strategic scheme for partnerships, accompanied by funding and also organisational-level incentives both in universities and schools. This is somewhat ironic given that the funding scheme does not directly fund research. It is perhaps unsurprising that the Norwegian case study is the only one not specifically mentioning the system-level context as a challenge. In the US, various funding sources are available for RPPs, along with guidance in some states. However, a lack of a comprehensive system-level strategy (which in the case of this federal country would likely be at the level of states) makes it more challenging to ensure long-term funding. The bottom-up approach to establishing RPPs in the German context could be beneficial for addressing local needs, however various contextual factors impede the wide-spread development of RPPs.

Based on the cases presented in this paper, and perhaps unsurprisingly, it does seem that a system-level strategy for RPPs fosters their development and effective functioning. Such a strategy should include funding structures, infrastructural support, reducing bureaucratic barriers and rethinking teacher education. However, developing such a strategy requires robust evaluative data to orientate it. The value of partnership work is often normatively described as "nice to have". Work on knowledge mobilisation conducted in the last 20 years gives a strong indication that the relationships built during RPPs can raise the relevance, accessibility and use of research in education. However, the final piece of this evidence puzzle has to be large-scale robust evaluations that are specific to RPPs.

A final note relates to the limitations of this paper. The general criticism with respect to the literature on RPPs is that the majority of studies are small-scale case studies. This paper is

no different in that it also presents three small-scale case studies. While the three selected countries showcase distinctly different contexts, it would also be desirable to represent RPPs from a much wider range of systems. Importantly, various forms of RPPs are widely used in some of the Asian systems, like Japan, Korea and Singapore (Fang, Paine and Chen, 2022[15]; Wei and Huang, 2022[113]). Another feature of the paper is that the case studies were authored by their designers, coordinators or participants, which inevitably includes certain biases and reduces their objectivity.

Despite these acknowledged limitations, the authors hope that the paper brings at least three new perspectives. First, it illustrates three highly distinct forms of RPPs, which brings to policy makers' attention the diversity of their nature. Second, it builds on a recent systematic review of literature and international data on the context of such partnerships which together provide a fresh look at RPPs. Third, while giving ultimate answers to the two questions raised is certainly beyond the scope of this paper, it did provide valuable guidance to policy makers on how to move forward to enrich the evidence on RPPs and support such structures effectively.

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