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The Impact of Conducting Practitioner Research Projects on Teachers' Professional Growth

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Abstract: There is growing interest in the effectiveness of practitioner research for promoting teachers' professional learning. It is important to determine if and why practitioner research is effective for teachers, however, it is also necessary to determine what support they need to develop research skills to design and implement practitioner research. This article reports on a year-long pilot study that aimed to design a model of professional learning to enhance teachers' research skills and support them to conduct their own research. The study involved 11 participants from four schools. Eight full-day workshops were designed to develop research skills and scaffold the research projects. Participants were surveyed at the beginning of the study and interviewed mid-way and at the end. The findings indicated professional growth for all participants both in terms of research skills and other professional outcomes, such as enhanced classroom or school-wide practice.

Introduction

There is strong evidence that teacher quality is essential for successful student learning outcomes (Hattie, 2003) and there is now an expectation that teachers will commit to ongoing professional learning in order to improve their performance (Barron & Darling-Hammond, 2008). The expectation that teachers commit to lifelong professional learning was described by Scheerens (2010):

> *…as with any other modern profession, teachers have a responsibility to extend the boundaries of professional knowledge through a commitment to reflective practice, through research, and through systematic engagement in continuous professional development from the beginning to the end of their careers. Systems of education and training for teachers need to provide them with the necessary opportunities. (p. 12)*

In recent years, it has been recognised that the most effective forms of teacher professional development engage teachers as active learners over prolonged periods of time (Avalos, 2011). The factors that impact on the effectiveness of teachers' professional learning vary. There is some agreement in the literature about how to ensure its effectiveness (Hurrell, 2013; Justi & Van Driel, 2006); however, there remains a need for further research in this area. One approach that has emerged in recent years and which aligns with Scheerens' (2010) argument is practitioner research through which teachers conduct research projects within their own contexts as a means of promoting their professional learning. Further, recently developed professional standards for teachers in Australia require teachers to use and conduct

research in order to be accredited as highly accomplished or lead teachers. This presents a challenge because many teachers do not have the necessary skills and abilities to undertake practitioner research (Enthoven & de Bruijn, 2010) and consequently, they require research training. This current situation suggests that it is important not only to determine why practitioner research is effective for teachers but if teachers are to undertake such research, it is also necessary to determine what is needed to develop their research skills to allow them to design and conduct research and to achieve their research goals.

School organisation and cultural practices can constrain teachers' professional learning (Kershner, Pedder, & Doddington, 2013). In particular, school leaders can significantly impact on teachers' enactment of professional learning in their classrooms and it is important that school leaders support and encourage teachers to engage in professional learning (Goldsmith, Doerr, & Lewis, 2014; Lachance & Confrey, 2003). This is especially the case when teachers conduct research in their classrooms. Ewing (2007) advocated that school leaders need to be active supporters of practitioner research projects as did White (2011); however, White also cautioned that principals "must champion but not own the teacher-research" (p. 321).

Reflecting these principles, the leaders of the participating schools asked the researchers to develop an ongoing practitioner research program for interested teachers in their schools. This paper reports on the pilot study conducted in 2016 with four schools within one school cluster in inner city Brisbane. This educational design study focused on the development and implementation of a program to encourage teachers to undertake practitioner research as a means of promoting their professional learning. The project had two main goals: (1) to design, implement, and evaluate a school cluster-based model to engage teachers in their own ongoing practitioner researcher projects and (2) to investigate the impact of practitioner research on teachers' professional growth.

Theoretical Background

Teacher Learning and Professional Growth

Teacher change through professional learning is variously described in the literature. In the past, professional development was viewed as something that was done to or imposed upon teachers, or something that happened through experience in the classroom (Clarke & Hollingsworth, 2002; Justi & Van Driel, 2006). According to Clarke and Hollingsworth, many professional development programs have failed to consider the intricate processes through which teacher learning occurs. More recently, there has been recognition that teacher change occurs through complex and interconnected processes when teachers are actively engaged in professional learning (Avalos, 2011; Coenders, 2010; Opfer & Pedder, 2013). In her review of teacher professional development, Avalos (2011) found that little is known about how pervasive or sustainable teacher change actually is. Clarke and Hollingsworth (2002) devised the Interconnected Model of Teacher Professional Growth (IMTPG), shown in Figure 1. They suggested that teachers contribute to their own professional growth through active learning, reflection, and participation in practice as well as through professional development programs. According to this model, teacher change occurs in four domains: the *Personal Domain* (PD) (teachers' knowledge, beliefs, and attitudes); the *Domain of Practice* (DP) (all professional experimentation and preparation); the *Domain of Consequence* (DC) (salient outcomes perceived by the teacher); and the *External Domain* (ED) (external sources of information or stimulus). All change occurs within the professional contexts in which the teacher works, known collectively as the *Change Environment* (CE).

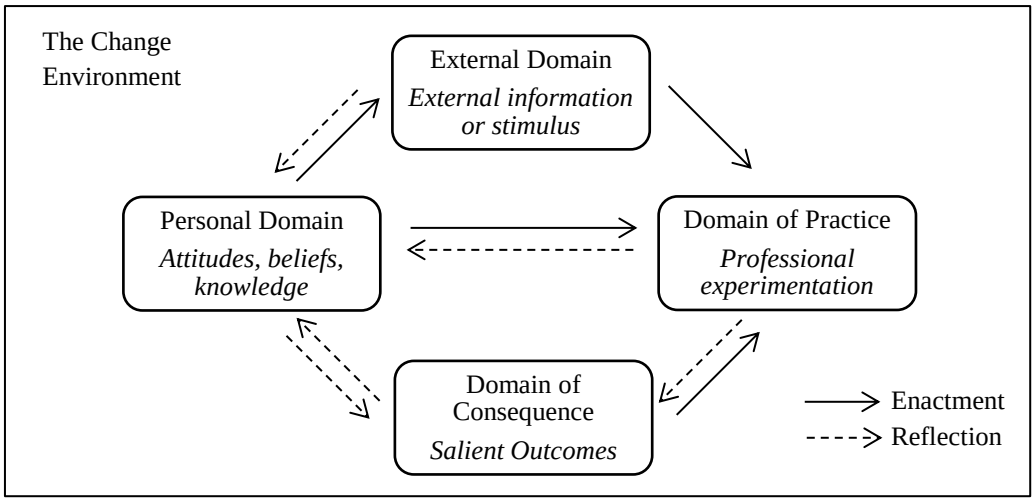

Figure 1: The Interconnected Model of Teacher Professional Growth (Clarke & Hollingsworth, 2002, p. 951)

According to this model, teacher professional growth occurs when change in one domain leads to change in another through the processes of enactment or reflection. The importance of critical reflection for deep professional learning has also been emphasised elsewhere in the literature (Avalos, 2011; Meijer, Geijsel, Kuijpers, Boei, & Vrieling, 2016; Mezirow & Taylor, 2009). Further, it has been found that in order for deep learning to occur, the following are necessary: experiencing situations in an unbiased manner; observing and reflecting from multiple perspectives; and constructing and using theories or concepts for problem solving or decision making (Meijer et al., 2016).

Interestingly, when teachers are asked how they make decisions about ways to improve their teaching, they state that they tend to rely on their own experiences. They don't refer to professional development, theories, or pedagogical models and do not gather and use data in structured ways (Rosendahl & Rönnerman, 2006; Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2016). This suggests that there is interplay among teachers' Personal Domain and their Domains of Practice and Consequence – they experience or observe a particular outcome or circumstance, reflection upon which leads to changed knowledge, attitudes, or beliefs. Their enactment of new knowledge, attitudes, or beliefs then leads to changes in practice. However, it also suggests that some of the components necessary for deep learning as described by Meijer et al. (2016) are missing (e.g., critical reflection, using theories to solve problems). Indeed, research suggests that experience alone is not enough to ensure teacher growth or effective changes to teachers' pedagogies. Carr and Kemmis (2005) and Cochran-Smith and Lytle (2009) argued that school-based research should be an integral part of school culture. According to Katz and Dack (2014), a school culture of inquiry is needed to support teachers to undertake classroom-based research and actively participate in professional learning to improve their practice.

Learning through Practitioner Research

Recent research has focused on practitioner research to support teachers to improve practice through active learning (Fox, Martin, & Green, 2007; Menter, Elliot, Hulme, Lewin, & Lowden, 2011). Indeed, practitioner research has been described as a powerful approach by which to investigate educational practices in order to rethink or transform them (Campbell & Groundwater-Smith, 2010; Ellis, 2012). The literature abounds with definitions and debate about the goals and purposes of practitioner research, a detailed discussion of which is

beyond the scope of this paper. In the current study, we view practitioner research as being focused on research done by teachers, either individually or in small groups, in their own contexts in order to develop skills, contribute to knowledge, change practices, or to evaluate or investigate.

The quality and outcomes of practitioner research are dependent on factors that include teachers' motivation for doing research, the type of research they conduct, the type of learning and support provided during this process, the challenges faced, and the teachers' perceptions of the benefits of the research experience (Ellis, 2012). A key factor that contributes to whether or not teachers find practitioner research beneficial and one that influences their motivation to complete their research is the degree of autonomy they have in designing their own research (Ellis, 2012; Groundwater-Smith & Mockler, 2005). There are many examples of practitioner research in which school leaders have directed the research agenda or imposed the need to conduct practitioner research on teachers. This 'top down' approach has been criticised for constraining teachers' understanding and their work (Groundwater-Smith & Mockler, 2005; Kemmis, 2011). Indeed, it has been claimed that teachers will only truly engage in meaningful and productive practitioner research if they perceive the research as directly relevant and beneficial to their classroom (Ellis, 2012). The factors that influence teachers' motivation to engage in, complete, and disseminate research are also likely to have a bearing on the sustainability of practitioner research initiatives in schools. Indeed, the dissemination of practitioner research has been identified as a crucial step in the research process because of its capacity to make the research public, thereby sharing findings, encouraging dialogue, and 'deprivatising' classroom practice (Elliott, 1998; Ellis, 2012; Pring, 2000).

Uiterwijk et al. (2016) argued that if teachers are to be successful inquiry-based learners they require four capacities: an inquiry habit of mind, data literacy, the capacity to contribute to a culture of inquiry at the school, and the capacity to create a culture of inquiry in their own classrooms. In other words, teachers need to base their teaching on more than knowledge, experience, or habit; they must be able to recognise different types of data and collect and use them for particular purposes; collaborate with colleagues to use data for decision making; and finally, they should promote inquiry and curiosity in their students. While some of these capacities may be familiar to teachers, it is unreasonable to expect that they have the skills necessary to fulfil all of these expectations. Teachers need ongoing support and professional development in order to ensure that they develop these capacities in effective and meaningful ways. One approach that has been recommended as a means of supporting teachers as practitioner researchers is working in collaboration with university-based researchers (e.g., Aubusson, Ewing, & Hoban, 2009; Greenwood & Levin, 2000; Raphael, 1999).

Practitioner research in education is still developing as a source of professional development for teachers and while several models exist, many involve schools embarking on small action research projects 'in-house' and there is a need to investigate models of practitioner research and their impact on teacher professional learning. Indeed, Ellis (2012) concluded that the "potential of practitioner research remains to be fully actualised" (p. vii) and recommended more explicit description of models of practitioner research and that teachers receive "comprehensive and systematic training in practitioner research" (p. vii).

This study focused on a cluster-based initiative in which teachers were invited to apply to conduct their own research projects. The aim was to gain an insight into the development and impact of a program in which teachers designed and undertook a research project with the support of the school leaders and guidance of academic mentors. The project sought to develop and evaluate a professional learning model, including workshop resources and support materials, which would engage and support teachers in conducting practitioner

research and develop their research skills. This paper reports on the teachers' perceptions of the program and of the effectiveness of conducting practitioner research for promoting teachers' professional learning.

Method

This qualitative study focused on the participating teachers' perceptions of practitioner research, the model used to support and enhance the research process, and their professional learning as a result of participation in the program. The study adopted an educational design research (EDR) approach (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003), which uses a series of iterations to develop solutions to practical problems and results in the creation of usable products and research insights (McKenney & Reeves, 2012; Reeves, McKenney, & Herrington, 2011). It involves close interactions among practitioners and researchers (Reeves et al., 2011) and is also compatible with the IMTPG because it views teachers' professional learning as 'recursive and iterative, occurring via cycles of design, enactment, reflection, and evaluation' (Hilton, Hilton, Dole, & Goos, 2015, p. 108).

Participants and Setting

The participating cluster schools are located in inner-city Brisbane in a mid-high socio-economic area. The project was initiated following discussions involving the researchers and the principal of one of the schools in the cluster. In Term 1 of the school year, all leaders of schools in the school cluster were invited to attend an information session about the development of a practitioner research program for teachers. Four schools (all public co-educational schools with students from mid-high socioeconomic backgrounds) chose to participate in the program (one high school and three primary schools).

The teachers at the participating schools were then invited to an information session about the project and were subsequently invited to submit brief research proposals outlining the project that they would like to undertake. The final group of 11 self-selected participants came from a range of backgrounds and classroom roles and experiences (ranging from 9 to 35 years teaching experience). There was one secondary teacher, nine primary teachers from three different schools (5, 3, and 1 respectively), and a primary school principal. Most participants had limited previous experience in research, although one had a doctorate and two had completed a master's degree with research components.

The Practitioner Research Program

The practitioner research program consisted of a series of eight full-day workshops, which focused on providing research training and support, were designed and delivered by the academic mentors across Terms 2, 3, and 4. Both mentors were teachers for many years before entering academia and have extensive experience in working and researching in schools, which allows them to understand the complex nature of teachers' professional lives. At the beginning of the project, the teachers were surveyed to determine their previous research experience and their knowledge of practitioner research. The overall program was planned by the academic mentors according to the needs articulated by the teachers and the goals of the participating school leaders; however, in keeping with EDR approaches, subsequent workshops were designed on an ongoing basis to ensure that each was responsive

to teachers' needs, progress in the preceding workshop, and conversations with participants between workshops. The topics of each workshop are shown in Table 1.

Workshop Timing	Topics
1 – Term 2	The research process, practitioner research, ethics Communicating and disseminating research
2 – Term 2	Writing a literature review, sourcing and critiquing literature, referencing style Developing a research question
3 – Term 2	Writing up the background and literature review Methodological considerations, refining the research question
4 – Term 2	Writing proposed methods Designing data collection instruments
5 – Term 3	Undertaking data collection, collation, and analysis
6 – Term 3	Individual school visits to provide advice on data collection, collation, and analysis
7 – Term 4	Data collation, representation, analysis Writing up results
8 – Term 4	Writing the discussion, linking to the literature, formulating a conclusion

Table 1: Workshop Topics for the Practitioner Research Program

The model that was planned to develop the participants' practitioner research skills consisted of a series of eight full-day workshops, held across three school terms; time between workshops for participants to undertake the different stages of their research; and support via email, phone, and in person from the researchers, who also acted as mentors to provide advice, support, and resources (e.g., literature, sample instruments). At each workshop, in addition to exposing the participants to new information about each stage of the research process, the participants shared their progress and reflections with the other group members, were allocated time to write about their research (in the form of a research article), and had the opportunity to get individual help or advice about their projects. Instead of a second full day workshop in Term 3, Workshop 6 was replaced by school visits because it was realised that teachers needed individual assistance at that time. In Workshop 7, the participants received assistance with data analysis (particularly statistical analysis of quantitative data and thematic analysis in the case of qualitative data). Following Workshop 8, the participants finalised their research papers in which they reported on their projects and the researchers provided feedback and guidance during this process.

Data Collection

Pre-Program Survey

Before the first workshop, teachers were surveyed about their previous research experiences, their knowledge of practitioner research and their professional learning goals. The survey consisted of seven open-response items. The responses to this survey were used to inform the planning of the initial workshops.

Semi-structured Interviews

The participants were interviewed at the end of Workshop 4 and again following Workshop 8. The first interview focused on their perceptions of their learning, the challenges and benefits they perceived, and their perceptions of conducting practitioner research. The second interview targeted teachers' perceptions of the benefits of practitioner research as a form of professional learning and whether they felt it was of benefit to themselves and their students. They were also asked about whether they would continue to conduct practitioner

research in the future. Each interview was about 15 minutes in duration and was audio-recorded for later transcription. Because of its focus on teacher professional growth, this paper focuses on the pre-survey and post-program interview data only.

Data Analysis

All responses to the survey and interview questions were transcribed verbatim. The responses to each data collection instrument were treated separately because we were interested in identifying aspects of professional growth in the teachers over the course of the project. The data were analysed using NVivo software to code the data into themes using a pragmatic approach, which took the research focus and theoretical framework into account (Patton, 2002; Saldaña, 2013). During the review process, further categories and new codes were generated and existing codes refined to reflect emerging themes. To ensure the internal validity of the analysis, all coding was undertaken independently by both researchers who then compared and discussed the outcomes, with agreement reached through re-coding (Cohen, Manion, & Morrison, 2000).

Results

Pre-Program Survey

The results of the survey conducted before the project began showed that while the teachers had mixed feelings about research, ranging from excitement to nervousness and uncertainty, they were all interested in learning more about how research might help them in their classrooms or schools. Most teachers were concerned about the time that would be involved and some were also concerned about their lack of experience in research or academic writing. The teachers' responses to the question about the nature of practitioner research suggested varied levels of understanding of educational research in general and limited knowledge or experience of practitioner research specifically. Their responses were quite brief and mentioned asking questions, linking theory to practice, conducting empirical research, using data to inform practice, and professional reading. No respondents elaborated on these brief statements. Table 2 presents the key themes identified from other aspects of the survey with reference to the IMTPG where relevant.

Theme and sub-themes (Number of participant references)	**Example quote and aspect of IMTPG**
Teachers' goals • Improving knowledge (11) • Improving classroom practice (13) • Improving student outcomes (4) • Developing research skills (5) • School wide contribution (8)	*What are your goals from participating in this project?* • To deepen my understanding of documentation and cultures of thinking: PD • To improve my teaching practice: DP • To enhance literacy learning for students: DC • To gain improved knowledge of data collection tools: PD • To improve the reading model within the school: CE
Perceived value of practitioner research • Based on evidence (4) • Deepens understanding (6) • Empowers teachers (4) • Relevant and interesting topics (3)	*What are the advantages of adopting a research-based approach to professional learning?* (all statements relate to ED) • Authentic learning backed by results • Deeper understanding of what current practices work in my context • Finding the answers rather than just being 'told' – control over the 'how' • Professionally relevant and allows a focus on personal interest areas

Perceived issues around PR	*What are some issues to consider when adopting a research-based approach?*
• Methodological issues (10)	• Needs to be based on theory and use valid tools for data collection and analysis DP
• Skill levels (7)	• My level of knowledge and expertise to identify measureable outcomes PD
• School support (6)	• Support from the principal and an understanding of time commitments CE

Table 2: Results of Analysis of Teacher Survey Responses

Post-Program Interviews

The participant interviews were coded to identify themes and subthemes. The main themes identified focused on the professional development model used, the perceived benefits of practitioner research as a form of professional learning, including its impact on participants' Personal Domain and their Domains of Consequence and Practice; and future directions. Each of these themes is presented in the following sections with subthemes.

Perceptions of the Professional Development Model: The External Domain

The participants spoke very positively about the model that was used to facilitate their learning about research and support them to conduct their research projects. The main subthemes were active participation, pace and timing, reflection, shared journeys, and structure and support. These comments indicate that a number of aspects of the professional development model (which exists within the External Domain of the teachers) influenced their learning and their practice.

Active participation: The teachers felt that because they were fully engaged as active learners throughout the program, their learning was more effective and that it was likely to result in long-term and sustainable changes in practice. For example, this comment indicates enhanced learning (Personal Domain): "Because we're not just sitting there, we're actually participating – we're fully involved and we go through the trials and the errors, we're constantly learning and refining our knowledge along the way." The following comment reflects the perception that this form of professional development differs from others in terms of sustainability:

> *Sometimes when you go to PDs, it's someone who's already done something and they just throw it out at you and you have to pick and choose whatever you can but how many times do you, once the novelty has worn off, how many times do you continue that practice?*

Reflection: The teachers strongly felt that the program offered opportunities for reflection and that this assisted them to deepen their understanding, change their practice, and to better direct the course of their research projects. For example, "What makes me think I'm different now? Having this project has made me really reflect on my practice as a teacher and look at my perceived weaknesses and reflect on those." The following comment notes the cyclic nature of the program: "This counts right up there with the most valuable PD I've done … it has a model of cycling – reading, reflecting on theory, putting it into practice, reflection on that …"

Shared journeys: This aspect of the model was important to the participants because they felt that they learned together and from each other through shared experiences: "Even though we've all done different things, we've all been on the same journey and it's been nice to see everyone's different approaches, … it gives us insight …" and "I've had conversations with everyone about what they're doing and what I'm doing – so there's that communication and feedback and reflection on other people's topics and journeys as well as your own."

Structure and support: The stepped and scaffolded structure of the program was noted

by the participants as being very beneficial. Having a series of workshops so that the research process could proceed gradually was noted as particularly helpful: "We were guided through every step and we could get feedback from you before moving on – it's a format that is easy to follow and the guidance along the way has been very helpful." Some teachers felt that the structure of the program provided a unique professional learning experience: "I don't think I could have had this kind of learning experience in any other form of PD because there's a great structure". Several participants noted that support was very important. The following comment reflects support from colleagues as well as from the administration at the school:

> *I liked the support of doing it in a team – that's not so scary for me … we were given time and we were really supported by both of you as well as the principal – we were really supported. That was really important to me.*

Finally, the following comments reflect the importance of scaffolding practitioner research to help teachers build their research skills: "I would hate to have done this by myself – teachers don't know how to research – it just wouldn't have worked," and

> *Even though I've done some research before, I haven't specifically done practitioner research so this is great, especially for those who haven't done much research before – it's very scaffolded and it's a good way for teachers to become involved and to realise that they can do classroom research.*

Pace and time: The program was structured so that teachers came together for one or two days to learn about the next stage of the research process and to ask questions, work on their projects, and share their progress with the group before returning to their schools to continue their research projects. This format was considered to be a benefit of the professional development model. It also gave flexibility to the participants to work on their projects in their own time and at their own pace: "I think it's a superb model for learning and I like the fact that it's a bit self-paced." They also appreciated having the time out of the classroom to focus on their research: "We've been given time to remove ourselves form our daily tasks and to work with other colleagues and that's been fabulous." The timing of the workshops, being spread across a number of terms rather than presented in a block was also emphasised: "This project really hits the mark because it's been spread over time; it's not 'come for a week and see you later'."

Other Influences of the External Domain on Teacher Change

Changes in the External Domain led to changes in the participants' Personal Domains and their Domains of Practice. This occurred through several avenues: through the teachers' immersion in research literature and the research process; through discussions with colleagues; and through reflection on professional readings.

Change through the research process: The following statement illustrates the influence that the practitioner research process had on this participant's professional growth. She collected baseline data, which gave her an insight into the professional learning needs within her school. She then read about research in the literature, reflection on which influenced her knowledge of reading pedagogies (Personal Domain) and subsequently, enactment on this new knowledge influenced her Domain of Practice as she designed and provided professional learning for her colleagues:

> *… the teachers weren't giving whole class reading sessions – a lot of that Fisher and Frey literature on reading strategies – we need to be using those kinds of strategies. We've given teachers PD (professional development) and we've been to classes and taught model lessons. We've demonstrated how to do that …*

Professional dialogue and change: The participants felt that the conversations with

their colleagues contributed to their own learning:

> *It's important when you do a project like this because you're exposed to everyone else and what they're looking into so it gives you a great general overview of other areas that might also be relevant and you're learning from one another.*

Comments such as this show that all of the participants formed part of one another's External Domains and contributed to change in one another's Personal Domains as a result of the discussion and reflection sessions during the project.

Professional reading and change: All participants considered the access to research literature and having the time to reflect on it to be a valuable part of their learning. For example, the following comment shows change in the External Domain (through reading) leading to change in knowledge (Personal Domain), which in turn leads to change in the classroom (Domain of Practice): "By having practical examples that link to current research, teachers are developing their expertise and knowledge to support what they're doing in their classrooms."

Influences on Knowledge, Attitudes, and Beliefs: Changes in the Personal Domain

A number of themes were directly related to changes in the participants' Personal Domains. These were perceived relevance, interest, confidence, and empowerment and ownership.

Perceived relevance: The participants appreciated the opportunity to choose research topics that were of direct relevance to their roles in the school or to aspects of practice that they wanted to address. The following quote illustrates the importance this participant places on practitioner research as a relevant way to fulfil her role in the school:

> *Practitioner research was very relevant to what we're doing, and obviously if you can relate it to what your job is and improvements in schools, then it's going to be a lot more beneficial to what you're doing. I'm glad I chose something that was relevant to what I do … that really was a significant part of my job.*

Other teachers appreciated the direct relationship between their research and their classroom practice:

> *I think this is a really good, very positive, meaningful and empowering approach because you can relate it right back to your own practice in your own classroom and relate it to the issues that you face in your classroom*.

Interest: Interest was related to the theme of relevance and many participants linked the two. They noted that the project was enjoyable because they were able to read and research in an area of personal and professional interest. For example, "I think practitioner research is the best practice [in professional development] that any teacher can do because you can choose your interest area." Some teachers noted that reading literature of interest helped them to develop their knowledge and apply it in their practice:

> *It has a direct impact on your practice and knowledge because you're reading and reflecting on things that you're interested in. If it's yours and it's something that you've identified as an issue or something that you're really interested in, then it will actually impact and change your practice over the long term.*

Confidence: Several teachers described the impact of the practitioner research program on their confidence. For some participants, this related to feeling more confident as a practitioner researcher: "It's about giving me the confidence to research what needs addressing in my practice or in my classroom in the future." Other teachers described feeling more confident as a professional: "Confidence as a professional … it's nice to have

confirmation that we are acting as professionals the way other professions do."

Empowerment and ownership: This theme, perhaps the most powerful of all the themes within the Personal Domain, was clearly related to the others within this domain. The participants' sense of ownership and empowerment came from their perception of relevance and their freedom to research in an area of interest to them. In turn, their confidence was a product of this sense of empowerment. Examples of comments related to empowerment and ownership included: "I think, as opposed to other PDs, I could direct what I get out of this"; "It's not about teaching us about anything, it's about us doing it and I love it"; and "I don't think I could have got that feeling of ownership – I've never been to anything else like that. This has been driven by me and it's me doing the reading and driving where the research is going." A key aspect was teachers' perception of ownership and empowerment related to their ability to select their own topic and devise their own research questions:

> *I prefer this model of PD because it's directed by us and it's therefore more relevant to our work and what we're doing … it comes from us as teachers and it's relevant whereas with a lot of top down PD from the department, there's either no interest or no relevance or motivation to even try to implement it.*

In addition to the themes related to changes in the participants' Personal Domains, there were themes that related to changes in their Domains of Practice.

Influences on Teachers' Professional Work: Changes in the Domain of Practice

A number of themes indicated that the practitioner research project had a strong influence on teachers' practice. These covered the range of contexts in which different teachers work: classroom practices, practices within the school, and practices within the broader school community.

Classroom practice: Numerous comments reflected changes to participants' classroom practice. For example, "Obviously, you take it back to the classroom in your head and in your heart and it impacts on how you do what you do," and "It's changed my teaching and my reflective practice … although I've spent all that time doing this project … now I just do what they (the students) want me to do and what they feel works for them."

School-wide practice: Some participants' roles within the school were broader than classroom teaching. For these participants in particular, their research experience influenced their practice on a school-wide basis. For example,

> *It can help you to see where there are gaps or where there is a need for new programs so as to bolster student achievement. It can also identify PD needs and allow you to look at exactly what needs to be done to improve students' learning outcomes … so it provides opportunities for discussions and it helps you to determine where and how to build capacity in teachers.*

Practices beyond the school: Both classroom teachers and other participants felt that their research had a broader impact on their work. For some, this was because of the nature of their projects but for others this was related to having evidence to support decisions and being able to share this in conversations with parents or the wider community. For example, "It's important in terms of administration or parent questions – if you have the knowledge that supports your decisions – evidence to support what you're doing and why you're doing it"; and

> *Quite often we're asked to justify why we do things and I think I could use those skills to reason or find evidence to back up what I'm doing – this is my preference but there is far more to it than that – it's more about evidence-based practice rather than anecdotal evidence.*

Teachers' Perceptions of Student Learning Outcomes: The Domain of Consequence

In most cases, the participants' research topics focused on the improvement of quite explicit student outcomes. These teachers were adamant that their practitioner research had a positive influence on their students' outcomes. For example, "I think it's benefited the kids too – these are all benefits … It's been really good and my kids have really enjoyed learning about feedback types as well."

Several participants spoke of the benefits to student outcomes in future years if more teachers in their schools undertook practitioner research: "It would be great to have them on board and if they could choose something that they were really passionate about, that could make a real difference to our work and to the children's learning."

There were also reflections from participants whose research did not specifically target students. The following quote is from a teacher whose research focused on teachers:

> *Although my focus was on teachers, the converse is that with my topic … you automatically ask 'ok what's happening with the kids? … What's it like from their perspective?' It's not just our role as learners but transferring and projecting to kids' situations – how are they going?*

Some responses from the participants didn't fit neatly within the domains; but rather, they related to aspects of the Change Environment or future directions.

Practitioner Research as Characterising Professionalism: The Change Environment

Most teachers acknowledged that there is a need for the public to perceive teachers as professionals and for teachers themselves to undertake work practices that align teaching with other professions, such as those in the medical field. There was a perception that if parents and the wider community were aware of teachers undertaking practitioner research they would be more likely to have a higher regard for teachers and schools. For example,

> *You feel more professional as a result of this extra layer to your practice. I feel it's quite valuable. Maybe that's why so many people don't value teaching as much … maybe we need to have that other layer to our work – it's about the perception of what a professional does.*

Some comments reflected a personal view: "I think research is a necessary part of my work and it will continue to be a necessary part of it as long as I continue to do this job." Others suggested a need for a systemic recognition of the importance of practitioner research: "I do think we'd be taken more seriously as professionals if we were seen to be doing serious research" and "… if we want to be seen as professionals then we need to do this – it has to be a systemic realisation that this is what we have to do."

The final set of results relate to the participants' intentions beyond the project.

Beyond the Research Project: Long Term Change

Three different sub-themes reflected the ways in which the participants intend to use their practitioner research skills going forward: Working with colleagues, continuing to use data to inform practice, and building on their current research or conducting new research.

Working with colleagues: Several comments reflected the notion that participants' research experiences might assist other colleagues while others showed that some participants were keen to encourage colleagues to undertake their own research. For example, "Once we've completed this and had a chance to refine it, I'll be better able to answer questions but obviously, I'd like to share this with our colleagues," and

> *… teaching is very collaborative – you might see someone else in their classroom or there might be a staffroom conversation – it can be very repetitive about this person experiencing something over and over again. It might be that you can say to that person, well that happened to me and this is what I did. I did this research and this is what happened …*

Continuing to use data: A number of participants spoke of their intention to use data more systematically. For example,

> *It will be interesting to see next year when we get our reading data – I'm going to have that straight away … we always analyse it but now we'll be looking at where we can improve. That might be building teacher capacity or it might be in other areas to help improve the school and for the students.*

Continuing and conducting new research: All of the participants mentioned the intention to continue to conduct practitioner research. The following example reflects the intention to continue current work: "This is the first phase of my project – this experience has helped me to think really carefully about the next phase – what data to collect and what's not relevant and what I need to do more of." Other teachers felt that they would like to address a new question or interest area. For example,

> *It has definitely deepened my knowledge of what to do and how and why I do it, but also through this process I've learned that I will continue to conduct practitioner research into topics of interest. Now I have the background of reading articles and literature, and this is a practical way to apply what I've read and also to collect evidence to support what I'm doing or to know that I should change what I'm doing.*

Discussion

This study aimed to (1) develop a model of professional learning that would build teachers' practitioner research skills and (2) determine the impact of practitioner research on teachers' professional growth. The initial findings showed that the participants had clear goals in mind that they hoped to achieve through practitioner research but that the majority of them had limited experience in conducting research and were unsure about how to achieve their goals. The participants were able to name the key aspects of research but most suggested that they needed to learn more about the research process. Several were concerned and described feelings of nervousness and anxiety because they were inexperienced in terms of practitioner research, which reflects the findings reported by Aubusson et al., (2009). These data were used as the base on which to design the practitioner research program and underpinned the decision to provide a structured series of workshops that exposed participants to each step of the research process in detail. The data collected at the end of the project revealed a profound change in the participants, not only in terms of their confidence, but also in terms of their research skills and the changes in their knowledge and practice that resulted from their active engagement in the research process.

Most of the participants in this study had limited research experience and when asked about their own circumstances, their responses mirrored those described in the literature (e.g., Rosendahl & Rönnerman, 2006; Uiterwijk-Luijk et al., 2016). They sometimes used data but in general the teachers tended not to rely systematically on evidence, theory, or pedagogical models when making decisions, instead basing decisions on experience Although teachers are exposed to data in schools, the data are often collected by others (e.g., via external tests such as NAPLAN) and teachers are presented with the analysed data and left to determine how to address them. This process is in stark contrast with the data collection carried out by teachers

during practitioner research, in which data are collected by the teacher for a specific purpose or to address a well-defined problem unique to their context, whether at the classroom or school level. Indeed, the responses to the interviews at the end of the project and the teachers' written research articles indicated that they had been able to synthesise research literature, design and carry out robust research, and they had developed skills in using data in structured ways. In other words, practitioner research has the capacity to promote teachers' use of data for decision making.

The participants attributed the success of the practitioner research project, as an effective professional development experience, to the model that was used to deliver the program. The structure of the program with multiple workshops spread over time allowed participants to work at their own pace and be self-directed while at the same time having support to achieve milestones along the way. The access to literature and the requirement to write a research-based article as the project progressed supported the participants' professional growth by enhancing their knowledge and allowing them to make connections between the theory, research, and their classroom practice, an outcome that addresses concerns in the literature that there is often a gap between research and practice (see Ellis, 2012; Greenwood & Levin, 2000). A key aspect of the model was the freedom for teachers to choose their topic of interest and devise their own research questions. Participants mentioned time and again how this had been pivotal to the success of the program and to their sense of ownership and empowerment. This finding aligns with the arguments that teachers must direct their own research rather than being directed by others such as principals or school systems (Ewing, 2007; Groundwater-Smith & Mockler, 2005; Kemmis, 2011; White, 2011). This sense of ownership motivated the participants to act as active learners because they could see relevance in their work and they had a personal interest in it. The freedom to choose their research focus also contributed to the participants' perceptions of being valued as professionals, which is important in light of arguments regarding the need for research to develop teachers' professionalism (see Ellis, 2012). Time for reflection individually and with other participants was also a key to promoting the participants' learning. Reflecting on the learning or change that occurred within one domain promoted change within other domains, which subsequently led to enactment, further reflection, and growth.

The teachers in this study gained a feeling of support from the other participants and they mentioned being part of a group of colleagues who were sharing a learning journey. This sense of collegiality promoted a culture of inquiry within the group as each participant shared his or her experiences, ideas, progress, data, and interpretations with the other group members at each workshop. Each of the participants took an active interest in others' research topics, making suggestions, providing feedback, and asking clarifying questions. This culture of inquiry was noted by Katz and Dack (2014) as being essential to promoting teachers' active learning through research. The role of the researchers as instructors / mentors was important to building this culture of inquiry and it morphed over time. At the initial workshops, there was a significant amount of direct instruction interspersed with activities in which the participants engaged to help them make sense of the information that was being presented. As time progressed, the focus shifted to the participants and the mode of instruction became one of facilitation and mentoring. This was necessary because the participants chose quite different research questions, which required varied methods, types of data, and research designs. It became more difficult to present a 'one-size-fits-all workshop' and instead, the participants' needs determined the content with most of the time being devoted to the participants working on their own projects with one-on-one support and advice being given as and when it was required.

As Katz and Dack (2014) argued, teachers need a high level of support within their schools if they are to undertake research and engage in active learning opportunities. The

participants felt that they received a high level of support from their schools and this encouraged them to volunteer for the project and to devote the time and energy necessary to successfully achieve their research goals. The participants felt that their efforts were acknowledged and supported back at school and that their research had the potential to make a direct impact on their own practice, on a school-wide level, or on their students' learning outcomes. These perceptions contributed to the participants' motivation, their willingness to persevere despite challenges, and their engagement with each step of the research process.

The final interviews with the participants indicated that they were keen to continue researching and that they would actively encourage colleagues to do the same. Participants described the ways in which they would conduct further research or stated that they would plan and conduct new research projects in the future. This is a significant finding because programs such as this require time and financial commitment on the part of schools and teachers so sustainability of the professional learning is important. As noted by Ellis (2012), teachers are motivated to undertake practitioner research if they perceive it as relevant and beneficial to themselves and their classes and if they feel they have autonomy in the research process. These factors were all evident in the case of the participants in this project.

There are additional factors that relate to sustainability of practitioner research in schools. Some relate to pragmatic considerations such as cost and time. The participants in this program were strongly supported by their schools in terms of release from class to undertake the workshops and in many cases, additional time was given to collate and analyse data. Clearly, the time commitment from the teachers was high because they had multiple tasks to perform between each of the workshops and they conducted their research within a tight timeline. The added requirement for the participants to create a written research article necessitated further time commitment. The participants acknowledged that these demands were quite high at times; however, they also said that they felt the benefits outweighed the demands and that they would be keen to participate in further practitioner research.

Other factors that have the potential to impact on sustainability relate to the use of the research that is conducted. It is clear that the participants underwent changes in knowledge and practice so on an individual level, the research has had a lasting impact on each participant. For some projects, there will be outcomes that are implemented across year levels or even at the school level. Beyond these contexts, practitioner research has the capacity to influence practice more broadly through dissemination. The model used in this project required teachers to write a research article as they undertook the various stages of the research process. These articles will be further refined and it is hoped that in the future some of the participants will publish them in teacher or research journals.

A final and essential factor that impacts on the ability of practitioner researchers to use and conduct research is access to research literature. The vast majority of research articles that the participants in this study used in their background reading and literature reviews were only accessible because the researchers have access to university libraries, which subscribe to myriad online journals. If teachers are to successfully read about, use, and conduct research, there must be a systemic effort to improve access for teachers to these important resources. This study was limited to four schools from one school cluster. Further research is needed in multiple clusters and with schools from different contexts to ensure that the model is usable across a range of contexts. It would also be useful to conduct the program with more school leaders and heads of curriculum. Future iterations of the model will include more time to focus on how to make links between the literature and results and ways to discuss results.

Conclusion

This study has shown that engaging in practitioner research has a profound effect on teachers' professional knowledge and practice as well as their knowledge of research and research skills. These changes result from a cyclic process of reading, planning, enacting, data collection, discussion, and reflection. The key factors that influenced the participants in this study were the structure of the model, opportunities for collegial discussion and reflection, ongoing support from mentors, and freedom to research a topic of personal and professional interest without direction from school administrators. The messy nature of practitioner research and its close alignment to the context in which it is conducted suggest that there is more to be learned about practitioner research. It is our belief that it provides a means for teachers to be valued as knowledgeable professionals and it has the potential to be a powerful tool for teachers when they are supported by school leaders and trained in research methods.

References

Aubusson, P., Ewing, R., & Hoban, G. (2009). *Action learning in schools: Reframing teachers' professional learning and development.* Oxford: Routledge.

Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education, 27*(1), 10-20. https://doi.org/10.1016/j.tate.2010.08.007

Barron, B., & Darling-Hammond, L. (2008). Can we teach for meaningful learning? In L. Darling-Hammond, B. Barron, P. D. Pearson, A. H. Schoenfeld, E. K. Stage, T. D. Zimmerman, … Tilson, J. L. (Eds.), *Powerful learning: What we know about teaching for understanding* (pp. 11-70). San Francisco: Jossey-Bass.

Campbell, A., & Groundwater-Smith, S. (Eds.). (2010). *Action research in education. Volume 1. Historical perspectives in action research in schools: from curriculum development to enhancing teacher professional learning.* London: Sage. https://doi.org/10.4135/9781446260791

Carr, W., & Kemmis, S. (2005). Staying critical. *Education Action Research, 13*(3), 347 - 358. https://doi.org/10.1080/09650790500200316

Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education, 18*, 947-967. https://doi.org/10.1016/S0742-051X(02)00053-7

Cobb, P., Confrey, J., diSessa, A., Lehrer, R., & Schauble, L. (2003). Design experiments in educational research. *Educational Researcher, 32*(1), 9-13. https://doi.org/10.3102/0013189X032001009

Cochran-Smith, M., & Lytle, S. L. (2009). *Inquiry as stance: Practitioner research for the next generation.* New York: Teachers College Press.

Coenders, F. (2010). *Teachers' professional growth during the development and class enactment of context-based chemistry student learning material*. Doctoral Thesis. University of Twente, Enschede.

Cohen, L., Manion, L. & Morrison, K. (2000). *Research methods in education* (5th ed.). London, United Kingdom: Routledge Falmer. https://doi.org/10.4324/9780203224342

Elliott, J. (1998). *The curriculum experiment: Meeting the challenge of social change.* Buckingham, England: Open University.

Ellis, N. L. (2012). *Teachers' experiences as practitioner researchers in secondary schools: A comparative study of Singapore and NSW*. Unpublished doctoral dissertation. The University of Sydney, Australia. Retrieved from http://prijipati.library.usyd.edu.au/handle/2123/8609

Enthoven, M., & de Bruijn, E. (2010). Beyond locality: the creation of public practice-based knowledge through practitioner research in professional learning communities and communities of practice. A review of three books on practitioner research and professional communities. *Educational Action Research, 18*(2), 289-298. https://doi.org/10.1080/09650791003741822

Ewing, R.A. (2007, March 29-30). *Designing quality teaching action learning projects.* Paper presented at the Quality Teaching Action Learning Planning Conference, Sydney, Australia.

Fox, M., Martin, P., & Green, G. (2007). Introduction. In M. Fox, P. Martin, & G. Green (Eds.), *Doing practitioner research* (pp. 2-7). London: Sage Publications. https://doi.org/10.4135/9781849208994.n101

Goldsmith, L. T., Doerr, H. M., & Lewis, C. C. (2014). Mathematics teachers' learning: A conceptual framework and synthesis of research. *Journal of Mathematics Teacher Education, 17*(5), 5-36. https://doi.org/10.1007/s10857-013-9245-4

Greenwood, D.J., & Levin, M. (2000). Reconstructing the relationships between universities and society through action research. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of Qualitative Research* (2nd ed., pp.85-106). Thousand Oaks, CA: Sage.

Groundwater-Smith, S., & Mockler, N. (2005, July 46*). Practitioner research in education: Beyond celebration*. Paper presented to the Australian Association for Research in Education Focus Conference, James Cook University, Cairns, Australia.

Hattie, J. (2003). *Teachers make a difference: What is the research evidence?* Melbourne: Australian Council for Educational Research.

Hilton, A., Hilton, G., Dole, S., & Goos, M. (2015). School leaders as participants in teachers' professional development: The impact on teachers' and school leaders' professional growth. *Australian Journal of Teacher Education, 40*(12), 104-125. https://doi.org/10.14221/ajte.2015v40n12.8

Hurrell, D. (2013). *Effectiveness of teacher professional learning: Enhancing the teaching of fractions in primary schools* (Doctoral dissertation). Retrieved from http://ro.ecu.edu.au/theses/596

Justi, R., & Van Driel, J. (2006). The use of the Interconnected Model of Teacher Professional Growth for understanding the development of science teachers' knowledge on models and modelling. *Teaching and Teacher Education, 22*, 437-450. https://doi.org/10.1016/j.tate.2005.11.011

Katz, S., & Dack, L. A. (2014). Toward a culture of inquiry for data use in schools: Breaking down barriers through intentional interruption. *Studies in Educational Evaluation, 42*, 35-40. https://doi.org/10.1016/j.stueduc.2013.10.006

Kemmis, S. (2011). A self reflective practitioner and a new definition of critical participatory action research. In N. Mockler & J. Sachs (Eds.), *Rethinking educational practice through reflexive inquiry* (pp. 11-29). London: Springer. https://doi.org/10.1007/978-94-007-0805-1_2

Kershner, R., Pedder, D., & Doddington, C. (2013). Professional learning during a schools university partnership master of education: Teachers' perspectives of their learning experiences. *Teachers and Teaching: Theory and Practice, 19*(1), 33-49. https://doi.org/10.1080/13540602.2013.744197

Lachance, A., & Confrey, J. (2003). Interconnecting content and community: A qualitative study of secondary mathematics teachers. Journal of Mathematics Teacher Education, 6(2), 107-137. https://doi.org/10.1023/A:1023908127831

McKenney, S., & Reeves, T. C. (2012). *Conducting educational design research*. Abingdon, UK: Routledge.

Meijer, M.-J., Geijsel, F., Kuijpers, M., Boei, F., & Vrieling, E. (2016). Exploring teachers' inquiry-based attitude. *Teaching in Higher Education, 21*(1), 64-78. https://doi.org/10.1080/13562517.2015.1115970

Menter I., Elliot, D., Hulme, M., Lewin, J., & Lowden, K. (2011). *A guide to practitioner research in education.* London: Sage Publications. https://doi.org/10.4135/9781473957770

Mezirow, J., & Taylor, E. W. (2009). *Transformative learning in practice: Insights from community, workplace, and higher education.* San Francisco: Jossey-Bass.

Opfer, V. D., & Pedder, D. (2013). Teacher change and changing teachers via professional development. In C. McLaughlin (Ed.), *Teachers learning: Professional development and education* (pp. 93-117). Cambridge, UK: Cambridge University Press.

Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd Ed.). Thousand Oaks: Sage Publications.

Pring, R. (2000). *Philosophy of educational research*. London: Continuum.

Raphael, T. (1999). What counts as teacher research? An essay. *Language Arts, 77*(1), 48-52.

Reeves, T. C., McKenney, S., & Herrington, J. (2011). Publishing and perishing: The critical importance of educational design research. *Australasian Journal of Educational Technology, 27*(1), 55-65. https://doi.org/10.14742/ajet.982

Rosendahl, B.L., & Rönnerman, K. (2006). Facilitating school improvement: The problematic relationship between researchers and practitioners. *Journal of In-Service Education 32*(4), 497-509. https://doi.org/10.1080/13674580601024457

Saldaña, J. (2013*). The coding manual for qualitative researchers* (2nd Ed.). Thousand Oaks, CA: Sage Publications.

Scheerens, J. (Ed.) (2010). *Teachers' professional development: Europe in international comparison.* Retrieved from www. bookshop.europa.eu

Uiterwijk-Luijk, L., Krüger, M., Zijlstra, B., & Volman, M. (2016). The relationship between psychological factors and inquiry-based working by primary school teachers. *Educational Studies,* https://doi.org/10.1080/03055698.2016.1248901.

White, B. (2011). The vulnerable population of teacher-researchers; or, "Why I can't name my coauthors". *English Education, 43*(4), 321-340.