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Area 1: An Overview of Evidence for the National Approach to Professional Learning in Education

REPORT FOR THE WELSH GOVERNMENT

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Executive Summary

This report reviews published literature on the way that countries around the globe have organised and systematised professional learning for teachers in a time of curriculum change. It first reviews country specific literature and then presents evidence on the organisation of professional learning from more general literature, which is more concerned with improvements in practice. All literature used is either from peer-reviewed journals or from academic books. The literature was found by using scholarly search engines, searching under various terms indicating professional learning. In this way literature was uncovered that will be used to support or to question the approach that the Welsh Government takes towards professional learning in education.

The literature shows that high quality professional learning designed to support curriculum change in Wales should:

Be collaborative: As students transform into teachers, they should both start and continue to be expected to work collaboratively both within and between schools. Time, support and encouragement must be given for this enterprise. Encouraging competition between schools is shown as detrimental to this process of collaborative improvement and change in practice across the system. Teachers and leaders are central in designing and offering locally appropriate professional learning. However where teachers are inexperienced, less confident or struggling in their role then collaboration can be counter-productive and where the experience is only superficially entered into, mediocre approaches may be shared, as teachers will not naturally challenge one another or probe more deeply into teaching and learning.

Engender a deep understanding of pedagogy and subject knowledge: this may be accomplished by requiring in-depth study prior to taking on the role of a teacher or by encouraging further study within their teachers. Coaching can also be used to deepen and contextualise professional learning. Coaches who are best placed to deepen teachers' understanding of professional learning designed for curriculum change are those with more knowledge and expertise themselves, although working with peer-coaches can be used to help the contextualisation of professional learning engaged in outside school.

Be research-engaged: research is shown as an important aspect of effective learning that improves student outcomes. Using specialist knowledge to inform teaching is important. Engaging in research has been shown to encourage both the agentic behaviours and professional discourse that are needed to implement curriculum change. Teachers' access to quality evidence from research must be facilitated. Quality engagement is not achieved by simply "doing research", the process must be based in an understanding of the issues involved, orderly, systematic and reflective in order to result in high-quality professional learning.

Close the gap between theory and practice: many of the countries investigated recognised that there is a gap between teachers' exposure to theory during professional learning and their reconceptualising theory in the context of their classroom. Steps must be taken to close this gap including increasing teachers' access to research informed evidence and encouraging teachers to take part in research focused on innovating and improving the outcomes for their students.

Encourage risk-taking: Changing teacher practice is not easy or straightforward. Teachers will naturally emulate both the way they were taught and the way that teachers around them act. School leaders are well placed to encourage an ethos of innovation and improvement that will mean taking risks whilst ensuring a supportive and blame free environment. External expertise can model aspects of practice so that teachers can build a vision of what improved practice looks like. Coaching can be used to support teachers as they establish new ways of working within their classrooms.

Focus on student outcomes: focus on aspirations for students provides both a moral imperative and a shared focus. Enhanced student learning has to be the focus of the inputs from all levels. Policy makers and professional development providers have to learn themselves and to adjust their

policies and practices based on evidence. Evidence should not be only examination success but student-centred outcomes, including a broad understanding of student achievement and on equity, engagement, and well-being.

Develop teacher agency: Where teachers are unconvinced of the efficacy of any reform agenda they will exercise their agency to do what they see as most beneficial to their students. Teachers have engrained views of what constitutes good teaching and changes can be hard to embed. Enabling teachers to experience success in using innovative teaching practices can work to change those engrained values.

Change the discourse in schools: the discourse within and without schools can work for or against the success of curricular change. School leaders may be best placed to change the discourse within schools, establishing a shared sense of purpose, and demonstrating a belief in all teachers' ability to make a difference to the outcomes of all the children that they teach. Asking parents and other stakeholders to be part of the vision can help change the discourse beyond school.

Be afforded time: time must be given to teachers to work collaboratively both within and between schools. Without mandated time, collaboration will fall down teachers' priorities. Time is also needed for professional learning to really make a difference. Enhanced learning can be expected where professional learning takes place over weeks and months.

Be evidence informed not data-driven: Evidence shows that curriculum change does not flourish within a culture of accountability that apports blame. Where test results are the only markers of success it is unsurprising that teachers will be overly interested in professional learning focusing on such outcomes. Where teaching is of high quality and evidence informed then improved outcomes for all students will be the result.

Be a process: professional learning must be seen as a process, part of every teachers' working life from initial teacher education, throughout their careers, not as a series of one-off events or as optional extras. The learning experiences require planning and focusing on learning needs through a reflective procedure, including both the context of the teacher and their professional ambitions.

It is recommended that National Approach to Professional Learning in Wales emphasises:

- a focus that is and always should be on improving equitable educational outcomes for all children;
- a professional discourse that *every* teacher can improve their practice and *every* child can progress;
- teacher agency, that teachers are trusted professionals whose role is to treat all learners with equity;
- collaborative learning opportunities, giving time and resources to make these happen;
- that all within the system should see professional learning as part of their role;
- that leaders of learning must offer learning that is evidence-informed, not data driven.

If the national approach to professional learning in Wales is to work as effectively as possible it will need enthusiastic, committed and effective leadership from the Welsh Government, HEIs, regional consortia and leaders in schools as well as wholehearted engagement from teachers themselves. Getting the right people to develop and promote the approaches is key to success.

1. Purpose of the report

Wales is seeking to transform its education system through curriculum change and setting high professional standards for its workforce both as they enter the profession and throughout their careers as teachers.

It adheres to four key enabling objectives. These are:

- develop a high quality education profession;
- inspirational leaders working collaboratively to raise standards;
- strong and inclusive schools committed to excellence, equity and well-being;
- robust assessment, evaluation and accountability arrangements supporting a self-improving system.

The National Mission to achieve these objectives is seen as a journey, a national education reform journey which seeks to learn from the best in order to be the best (Welsh Government (WG) 2017).

This report considers in particular the professional learning approaches which are designed to produce and develop high-quality throughout all professionals in education. The WG plans are designed to work for all in the profession, from initial teacher education to the most responsible leadership positions, including educational support staff. This report looks at published research literature from across the world to establish how successful professional learning systems operate and also seeks to draw lessons from where systems or ideas have not succeeded. The aim of this report is to present evidence that validates the characteristics of a successful approach to professional learning in a time of curriculum change. In this way the report will support or question the approach to professional learning that the Welsh government is currently promoting.

The approach set out by the Welsh Government seeks to produce a teaching profession which will be:

- high-quality, collaborative and driven by a deep understanding of pedagogy and subject knowledge;
- research-engaged, well informed and learning from excellence at local, national and international levels;
- attractive, with high morale and professional satisfaction;
- well supported by a range of learning support professionals who can provide the additional capacity that is needed to meet the needs of every child
- outward-looking and committed to raising standards within and between schools
- creators of vibrant, warm and caring environments that inspire learning
- well led by leaders who will ensure that every teacher can improve through effective collaboration, innovation, professional learning and opportunities to provide professional leadership to others. (Welsh Government, 2017a, page 11)

Through supporting schools as learning organisations which:

- develop and share a vision centred on the learning of all students;
- create and support continuous learning opportunities for all staff;
- promote team learning and collaboration among all staff;
- establish a culture of inquiry, innovation and exploration;
- embed systems for collecting and exchanging knowledge and learning;
- learn with and from the external environment and larger learning system;

- model and grow learning leadership. (Welsh Government, 2017a, page 12)

And also through working with key partners to ensure that all teachers will:

- benefit from opportunities to improve the quality of their pedagogy, while aspiring to be a better teacher;
- be effectively supported by other colleagues within the education workforce;
- have opportunities for professional learning in a research-driven culture, in the knowledge that excellent teachers are effective learners;
- enter the profession having experienced significantly improved initial teacher education (ITE). (Welsh Government, 2017a, page 25)

The key partners involved in the WG plans are:

- HEIs which are accredited to provide ITE and who will be part of supporting the self-improving system through committing to sharing research evidence and effective practice across the system. University–school engagement will be increased beyond ITE and their role in supporting a research-engaged profession will be increased;
- regional consortia whose focus is to be on school improvement through collaborative working and who will be part of building the knowledge, expertise and research base of the self-improving system by supporting;
- the wider public service and third sector where required, work collaboratively to mobilise expertise and minimise duplication of effort and cost.

How far these aims, ambitions and ways of working seem to be in line with other countries that are successful in meeting the educational needs of all learners will be explored in what follows.

2. Introduction

‘the quality of an education system cannot exceed the quality of its teachers’
(Barber & Mourshed, 2007, p16)

The key question to be addressed in the first section of the report is, “how is professional learning been addressed in education systems globally in order to achieve change which improves student outcomes?” The findings successfully or otherwise, are used to support or question, the way the approach that the Welsh Government is currently taking towards professional learning in education. The second section examines the more general evidence on what constitutes a high quality approach to professional learning.

Therefore this report considers what good practice in professional learning looks like when realised in contexts across the world, in particular where changes in the curriculum are being enacted. Such knowledge will provide evidence to support how professional learning might be organised in order to achieve the changes in practice that are mandated and the professional standards that the Welsh Government requires in its teachers. Professional learning must uphold the values and dispositions which are required to enable the best possible teaching of children and young people and to foster learning across the educational system. The report encompasses both what the existing literature indicates concerning the characteristics of effective professional learning and what constitutes an effective system for supporting professional learning.

Professional learning is herein identified as the professional learning undertaken by students who are training to become teachers as well as the learning undertaken by teachers who are already employed within the teaching profession. Arrangements for initial teacher education are explored in systems across the world alongside the arrangements made for continuing professional learning or development for educational professionals. For some education systems such functions are separate entities and for others they are perceived to be part of a continuum of developing the educational workforce. Where initial and continuing professional learning are seen as a continuum they can be referred to as professional learning for teachers, rather than using “initial teacher education” and “continuing professional development” to delineate separate functions.

Professional learning is rarely used in the literature in the way that it is used by the Welsh Government (WG). The WG uses the term as a broad phrase which indicates both formal and informal ways that may be used to increase a student’s or qualified teacher’s understanding of the complex factors of their role. Hence this literature review synthesises learning from all the ways that learning for education professionals both formal and informal is systematised in several countries around the world. Thus the ways that initial teacher education is constituted is explored to understand how the expectations of in-service teachers are established. Continuing Professional Development is also considered as that is a common term used to indicate the professional learning that is offered to qualified and in-service teachers.

The literature reviewed in this report is all published in publically accessible formats. All literature used is from peer-reviewed journals or from academic books. The literature was found by using scholarly search engines, for example, The Open University Library search engine, ERIC (Educational Resources Information Centre) and Google Scholar. Searches were conducted under terms such as professional learning, teacher education, continuing professional development and using singular terms and different combinations of these terms.

In this exploration of professional learning (PL), when the term teachers is used it will refer to all those within the education workforce who take on the role of teaching people. Thus it refers to those people who are training to become qualified teachers or those who are employed as teachers in primary and secondary education settings, as defined in Wales, as well as those who lead professional development for and therefore teach, other teachers. The report also recognises the Welsh Government's ideas that teachers should see themselves as learners, "lifelong professional learners that reflect on and enhance their own practice to motivate and inspire the children and young people in their care" (Welsh Government 2017a page 25). Thus there will be teachers who enable other teachers to fulfil their requirement to consciously learn more and improve their practice. The process of professional learning under investigation is one that offers the opportunity of a seamless approach to professional learning throughout the career of a teacher. A further commitment made clearly by the Welsh Government is that the professional learning system will work to achieve equity for all pupils, realising equitable social outcomes for all, despite the presence of poverty and other inequities. Thus, evidence is sought to answer the questions:

What does the existing literature indicate constitutes effective professional learning approaches which work throughout the career of a teacher and ensure equitable outcomes for all students?

Do the main messages from the literature suggest that the National Approach to Professional Learning in Wales could be improved and if so, how?

3. Methodology Overview

| | | Timescale |
|------------------------------|--|------------------|
| Research Question(s) | What does the evidence from other territories tell us about the most effective models of Professional Learning? | 9/7/18 |
| Inclusion/exclusion criteria | <p>Articles must be</p> <ul style="list-style-type: none"> - directly related to the topic - peer reviewed - published in the period 1988-2018 - based on work undertaken in OECD or English speaking countries, or published in English in reputable journals. - Articles about professional learning in professions other than education will be included. <p>Both qualitative and quantitative studies will be included.</p> | 9/7/18 |
| Data protection (GDPR) | <p>All publications will be accessed with due consideration to GDPR guidelines</p> <p>Citations will be reported accurately.</p> <p>Reports will be redacted if necessary to protect the identity of individuals or organisations</p> | |
| Indicative Keywords | Professional learning, professional development, CPD, in-service training, professional training, curriculum reform, pedagogic reform, effectiveness, impact, ethos, professional beliefs and practice, teacher agency, collaboration in professional learning, active participation, design, professional practice and curriculum change, professional learning and pupil outcomes. | 16/7/18 |
| Primary sources | Academic databases; Peer reviewed journals; Journal databases; Library catalogue ; PL/CPD specific professional websites | |
| Secondary sources | Overview reports: EPPI, OECD. | |
| Grey literature | Government documentation sourced from Wales and other areas of the UK in addition to English speaking countries (e.g. USA, Canada, Australia, Singapore, New Zealand) | |
| Evidence/quality assessment | <p>Every effort will be made to identify the source of any data used to support report outcomes and the methodology used.</p> <p>Articles will be classified where possible by:</p> <ul style="list-style-type: none"> - date of publication - date of the research undertaken - sampling size - methodology used - country of origin | 13-27/8/18 |
| Analysis | <p>Some meta-analysis may be undertaken depending on the degree of variation in methodologies and approaches. Where there is significant variation, a narrative synthesis will be provided.</p> <p>The narrative synthesis will evaluate the validity of results discussed taking account of the context within which the research was produced and the educational context in Wales.</p> | 27/8-14/9/18 |
| First draft | | 14/9/18 |
| Draft to WG | | 21/9/18 |
| Final report | | 21/9-11/10 |

4. National approaches to professional learning – how have others approached constituting an effective system?

In this section evidence from literature on a variety of professional learning approaches used within individual countries is explored, focusing particularly on professional learning at a time of curriculum change.

4.1 Evidence from Scotland

In Scotland teachers have been defined as agents of change (Menter and Hulme, 2013). This is a significant shift following several decades of policies throughout the United Kingdom that worked to de-professionalize teachers, through the use of prescriptive curricula and oppressive regimes of testing and inspection (see, for example, Biesta, 2010). Seeing teachers as agents of change can be regarded as giving teachers explicit permission to exert their professional agency within their contexts of work and to emphasise agency as an important dimension of teachers' professionalism.

The introduction of a new curriculum in Scotland was not without its tensions. Priestly and Biesta (2013) question how far the Scottish curriculum is an extension of technical approaches to education rather than a more progressive approach. Accountability in Scotland takes the form of examinations across schools and is perceived to slant educational policy towards instrumental goals, specifically economic and civic goals, which see education as a driver for economic development. This diverges markedly from the competencies framework which is offered as the core of the new curriculum in Scotland which sees growth in individually endorsed facilities as the goal of education. However success in international comparisons such as PISA (OECD) and TIMSS are required by government to show the efficacy of their innovations. Thus teachers perceive the actuality of their role as one to enable their students to pass examinations rather than to enhance their students' 'soft skills' (Priestly and Hume 2010).

Agency is not simply a matter of individual capacity or beliefs; it is an ecological construct (Priestly, Biesta and Robinson 2013) which is subject to structural, cultural and material influences. The agency that teachers assume or do not assume within their professional environments is heavily influenced by factors which are often beyond their immediate control. Priestly, et.al. (2013) exemplify these ideas through teachers' discourse. On the one hand most teachers under the Scottish system stated a feeling of great responsibility toward their pupils, seeing their role is to maximise their pupils' potential. On the other hand the same teachers used a deficit model when referring to some pupils, labelling some "poor" or "not the brightest". The teachers experienced tensions in their beliefs about children and young people. They understand their role is to actively attend to deficits of background or experience in their students whilst also stating that they espouse the discourses of the new curriculum with its emphases on competencies, personalisation and choice. These tensions could be a factor which undermines a full and wholesale acceptance of the new curriculum in Scotland as teachers can and will use their agency to protect their charges from any deficit they see in the outworking of the new system.

The teachers in the Scottish system "seemed to lack a systematic set of professional discourses over and above those provided by the language of policy. This potentially reduced their agency in developing the curriculum through limiting their potential to envisage different futures and through denying them the language with which to engage critically with policy." (Priestly, et al., 2013 p. 157). A further encouraging or limiting factor on the teachers' abilities to exercise their agency to positively embrace the opportunities offered by the new curriculum seems to be found in the relationships that are encountered within schools. The structures of relationships both within schools and between schools and outside contexts and settings make a crucial difference to

teachers' ability to relieve the tensions that may exist between their currently held beliefs and values and those that the new curriculum requires and thus allow for the achievement of agency.

Donaldson (2011) made an explicit connection between the quality of leadership in schools and across the system and the ability and willingness of teachers to respond to Scotland's Curriculum for Excellence. Indeed, he implies that there is a need for high-quality in leadership throughout the system if teachers are to be enabled to engage with the type and level of professional learning that will allow for the successful implementation of the new curriculum.

A further lesson from Scotland is in terms of the need to ensure that teachers really do get the time agreed to collaborate together in school and outside school. Menter et al. (2006, p. 14) identified "a need to further enhance negotiation and discussion skills of all staff in the development of school agreements on the use of time and to foster a culture in schools to enable collegiate working processes". This must not be a deficit model that teachers, who are unable to work collegially and collaboratively because their schools are short staffed or because of choices made by others, are not labelled as having poor negotiation skills.

The Scottish model demonstrates through extensive research that, despite policy rhetoric that constructs teachers as agents of change and professional developers of the curriculum, the success of curriculum reform is dependent on other reforms to educational policy focused around professional learning. Without the opportunity, time and relationships within and without schools for teachers to learn in a collegiate and collaborative way, based on each teacher's sense of agency and efficacy, tensions will remain within the system. There is also a need to mitigate the effects of performance based accountability which may result in outcomes which are not as anticipated.

4.2 Evidence from Finland

In Finland, teachers are required to have a Masters level qualification in Education before they can apply for a license to teach in schools. They are encouraged to become doctoral students in education as part of their continuing professional learning once qualified as teachers (Eteläpelto, Vähäsantanen and Hökkä, 2015). Student teachers are required to learn wide ranging professional competencies in the university and to undertake periods of teaching practice in schools. Here, the focus of the curriculum is on applied socio-cultural and social constructivist ideas of learning and collaboration and collegiality are part of learning to teach. The students study in small learning communities of between five and ten students. The groups have autonomy within the mandated framework of the competence-based initial teacher education curriculum in Finland. The components of this curriculum encompass: learning and social interaction, specialist subjects, growing into the school and growing in scientific work. Finnish teachers have a high degree of autonomy in their work, a climate of trust in academic teacher education. The way these courses are organised are said to lead to a high level of expertise among qualified teachers as the graduates join the workforce (Eteläpelto, Vahasantanen and Hokka, 2015).

Teachers in Finland have a high degree of agency and have freedom to use pedagogical approaches of their choice (Sahlberg, 2011). Schools are tolerant of different kinds of 'teachership' teachers' pedagogical choices are developed with teacher colleagues in school and with educational researchers at universities. Thus, for teacher professional learning in Finland, there is both a higher level of qualification required, a focus on research, learning and social interaction, specialist subjects and an expectation that student teachers will continue with their professional learning through their years as a qualified teacher.

Finnish teachers are provided with the time to work together. They are given one afternoon each week for collaborative planning and curriculum development. Teachers in each school work together at these times exploring evidence and using research to develop a curriculum and a way to teach it tailored to the needs of their pupils. Schools and often HEIs in the same municipality also work together, sharing ideas, plans and resources so that good practice spreads quickly through the system (Barbour & Moushed, 2007)

A further point is that in Finland educational policies are not focused on accountability, accompanied by high stakes testing and externally designed learning standards (Sahlberg, 2011). Instead there is an emphasis on equity, flexibility, creativity, teacher professionalism, trust and sustainable leadership. Strong emphasis is placed on teaching and learning, intelligent accountability, encouraging schools to craft optimal learning environments and implement the educational content that best helps their specific students reach the general school grading. Teachers are expected to exercise their collective professional judgement. Sahlberg (2011) identifies the Finnish model of teaching as a research-based profession. The work of teacher educators is focused on preparing student teachers for a research-informed profession, where schools are seen as learning and nurturing communities. Finnish schools are characterised further by being equitable (Sahlberg, 2007) all children enrol in identical comprehensive schools regardless of socio-economic background or personal abilities or characteristics resulting in heterogeneous schools and classrooms.

The Finnish curriculum for professional learning is "both theoretical and practice, it is about mastering values, teaching methods and the 'science of effective teaching and learning'" (Sahlberg, 2007 page 154). It focuses on educational psychology, diagnosis of problems that might occur in the classroom and applies evidence based and alternative solutions through evaluation and analysis to ensure impact as a result of those solutions. There is a culture of trust in teachers who are highly qualified, external assessment is minimal and policy is developed with practitioners and others. The Finnish system has ensured that it is the only OECD country that had consistent improvement in all of the first three PISA mathematics tests (OECD 2017).

The success of Finland in offering equitable, high quality schooling to all its learners offers evidence to support encouraging collegiality and collaboration between schools in Wales rather than competition. Many countries such as England, USA, some Canadian provinces and Australian states have taken for granted that competition between autonomous schools, measured by standardised accountability assessments is the only way to generate self-improving schools (Levin and Fullan, 2008). The Finnish model offers an alternative. In Finland, teachers design and pursue high quality learning and shared goals and improve their schools continuously through professional teamwork and networks, from evidence, and from literature (Sahlberg 2011).

Finland as a whole has a culture of working together rather than competing. However collaboration and networking in an environment that seeks solutions through reflection on and analysis of the problem and by sourcing information from a wider global community is a system that has been shown to work by global measures. The other note of caution is that all Finnish teachers have a Masters degree and are encouraged to pursue doctoral degrees. Their teachers thus have training in research methods and analysis and access to current literature, which is currently not true for many teachers in Wales.

4.3 Evidence from Canada

Canada seems to offer much to learn from as it also works to encourage communities of learners among its education professionals and appreciates “that diversity is our strength, but recognizing that inequities are our greatest challenge.” (Campbell 2017, page 1). Canada as a whole has expressed concern over time about the existence and persistence of inequities in educational experiences within schooling and in the outcomes students gain and is attempting to address this issue. It is also the case that Canada has recently performed relatively well in PISA assessments (OECD, 2013), but of most interest is the seemingly lower impact of socio-economic status in Canada as a whole on educational outcomes.

Professional development in Canada appears to be evidence-informed but not data-driven; thus it is posed to respond to a range of voices, social leaders, teachers and learners, and to take account of their experiences, needs, and context. This evidence is used to inform a diversity of content and types of delivery which is differentiated according to need. Evidence, inquiry, and professional judgement inform professional learning policies and practices in the Canadian provinces and territories (Campbell et al., 2016).

Education is organised at a province or territory level and the various curricula are specific to each territory or province, as are the arrangements for their teachers’ professional learning. Each curriculum in Canada shares similar principles (Crehan, 2016):

- Individualisation – individual support is at the heart of the system. For example there are many school counsellors;
- Motivation – each division has a truly comprehensive system, providing equity to all its learners using neither selection nor streaming. Each system has high expectations for all its learners;
- Assessment – criterion referenced systems of assessment are used, crediting what learners can do;
- Intelligence – each system is based on the view that everyone can learn with the right support;
- Accountability – systems do not attribute blame for lack of success to individual teachers or to particular schools but seek to solve any problems identified collectively across the system.

Curriculum development is seen as being the responsibility of the teacher within a framework set out at state level. Thus professional learning is designed to address this responsibility and subject and pedagogical knowledge has been shown to be a priority in professional learning (Campbell 2017). However the curricula in Canada all focus on student-centred outcomes, a broad understanding of student achievement and equity, engagement, independent learning and well-being. Professional learning responds to these priorities with a diversity of courses designed to meet linked professional needs. Further priorities for teachers’ professional learning include the needs of diverse students, addressing inequities and learning designed to provide a sustainable future in changing social, demographic, economic, political, and technological contexts. The Canadian approach is to see professional learning as a process which reflects the diverse population and the principle of valuing the individual. In this, teachers are held in a more central and agentive role in designing and offering locally appropriate professional learning, informed by guiding principles.

Canada’s accountability system uses standardised tests to ensure that no issues or difficulties are overlooked (Crundwell 2005). Where issues are discovered the province team work with the school to overcome the issues, providing professional learning as appropriate. The school or the teachers in the school are not blamed for the difficulties uncovered. Thus schools can ask for assessment to

inform its quest for improvement, there is no need to fear a visit from an inspection team. (van Barneveld, Stienstra & Stewart, 2002)

Canada shows that a “one size fits all” approach to professional learning is inadvisable. A wide array and repertoire of professional learning opportunities are more likely to meet the variety of needs, experiences, interests, contexts, and career stages, in a country that has marked differences in socio-economic status as well as particular ethnic groups that require specific approaches (Campbell et al., 2016). The theme of differentiation in both professional and personal learning is important, such variation is seen as appropriate, professional, beneficial, and positive.

Many provinces have emphasized the importance of collaboration in professional learning designed to facilitate school improvement and professional development. The need for particular support for this is also evident; teachers need official time set aside during the working day if they are to become actively involved in professional learning communities. Collaboration with universities in many Canadian provinces offers both the motivation and support for inquiry into new practices to enhance students’ success. Collaboration with community groups and educators from other districts and schools can enhance school, family, and community connections. Such collaborative learning experiences were found to be highly valued and prevalent (Campbell, 2017).

Job-embedded professional learning is widely discussed in Canada (Naylor, 2010). Such learning is not to be confused with school-based learning but rather seen as self-directed professional learning. Such learning would include opportunities for teachers to expand their professional networks beyond their own school, as a result, learning new ideas, observing innovative practice and accessing new resources for example, through conferences, workshops or participating in professional organisations. Completing graduate studies or other qualifications, and participating in online networking would also come under the umbrella of job-embedded learning which is highly valued by Canadian teachers. The importance of these experiences is in the new learning and co-learning which can be embedded in the professional’s identity as a teacher, bringing about changes in their knowledge, skills, and practices.

The diversity of context and provision within the whole of Canada means that this is by no means a wholly positive picture. For example, funding for professional learning differs markedly between the states and self-driven professional learning can result in huge discrepancies in what each teacher receives which are not wholly explainable by teachers’ motivation to take part. “Issues of, and concerns about, teachers’ voices, choices, autonomy, and judgement (particularly contrasted with system-decided and/or district- or school-directed professional development) were present throughout our research. Who decides the necessary content and methods for teachers’ professional learning is a point of contention.” (Campbell, 2017, page 13)

Campbell, (2017) reports that ten key principles can be seen in the objectives of the professional learning provision in each province and territory in Canada. These principles were derived from the existing research literature. Table 1 summarises these principles.

Table 1. Key research-informed components and principles of effective professional learning

| Key Components | Principles and Practices for Effective Professional Learning |
|------------------------------------|--|
| Quality Content | Evidence-informed |
| | Subject-specific and pedagogical content knowledge |
| | A focus on student outcomes |
| | A balance of teacher voice and system coherence |
| Learning Design and Implementation | Active and variable learning |
| | Collaborative learning experiences |
| | Job-embedded learning |
| Support and Sustainability | Ongoing in duration |
| | Resources |
| | Supportive and engaged leadership |

Source: Campbell et al. (2016)

In Ontario, Canada, evidence informed, that is research based, professional learning was studied (LaPointe-McEwan, DeLuca, & Klinger, 2017). In this example middle leaders played a central role in promoting evidence use within a networked, collaborative professional learning system. It was found that diverse strategies were needed to support middle leaders' use of evidence. Both research- and classroom-based evidence was used throughout collaborative inquiry cycles, to inform and monitor classroom, school, district and regional impacts. However the results were mixed as the use of classroom evidence was inconsistent and the middle leaders demonstrated little knowledge of data collection and analysis and they found a critical interrogation of research evidence sources difficult.

4.4 Evidence from Australia & USA about collaboration

A recent initiative in Queensland was given the title, Great teachers = Great results. This initiative strongly asserts this assumption that it is only teachers that count or make a difference, something which may have resulted from a superficial reading of Hattie (2008). In Visible Learning (Hattie, 2008) he does assert that teacher classroom practices, such as feedback, do have the most effect on student learning but also notes that societal factors such as socio-economic background and poverty might have more effects. The most likely impact of systemic education policy will be on and through teachers' classroom pedagogies. Social justice policy, inclusion policies, and gender equity policies all depend on the agency of teachers to implement them with fidelity (Lingard, Martino and Rezai-Rashti, 2013).

Australian states all encourage collaborative learning between teachers, between schools and between schools and HEI as a cost-effective way to promote professional learning. However, an experience of professional learning from Australia provides a reminder that collaborative learning is not universally beneficial. Collaborative learning is shown to take a back seat in teachers' busy lives when poorly supported by the school system. However there are further reasons to be cautious in its use. Where teachers are inexperienced, less confident or struggling in their role then the requirement to collaborate may not be successful in helping them to improve their practice.

“It does pose questions, however, about how PL of this nature may best support teachers whose instruction would benefit from most development. In addition, how this might occur without outside facilitators is also worth investigating. For this peer approach to be sustainable, we would argue that the reliance on the university-based facilitators needs to diminish over time so that teachers begin to lead their networks. For some participants, this seemed to be an emerging trait; however, this was not true for all of the participants, particularly those who were recent graduates or struggling with the demands of teaching.” (Mansfield & Thompson 2017, p. 679)

A further potential problem for the success of collaboration as a professional learning tool was found in the USA. If the experience is only superficially entered into, then this form of learning could result in the sharing mediocre instruction as teachers tend towards politeness and congeniality rather than engaging in collegial, professional conversations which ‘probe more deeply into teaching and learning’ (Nelson et al. 2010, p. 175). Teacher leaders can play a role in mitigating this by adopting and modelling strategies that support the use of a more substantive professional discourse.

4.5 Evidence from Hong Kong

Student teachers develop into professional teachers through an active process which involves both the construction and the reconstruction of knowledge that can be sourced from many different people and contexts, including HEI educators, literature, mentors, peers and their own pupils. Initial teacher education in Hong Kong seeks to equip student teachers with a set of competencies, which will enable their student teachers to cope with the complexity of challenges in their everyday teaching work. This involves enabling them to close the gap between theory and classroom practice. Recognising that such a gap exists is not limited to Hong Kong and other Asian systems, and how to close that gap is a focus of many studies (e.g. Nuthall, 2004, Flores 2016). Cheng, Cheng & Tang (2010) found that the practices of teachers in school had a disproportionate effect on student teachers. Student teachers’ previous teacher models and their experience whilst at school themselves, affect their beliefs about teaching in the learning-to-teach process (Levin and He 2008). There is agreement with Blume’s (1971) statement that teachers will teach as they are taught and not as they are taught to teach.

The aspects of a teacher education programme in Hong Kong that seemed to have the most successful influence on teachers’ practice in school were: raising the awareness of various teaching contexts; role modelling by lecturers; and the emphasis on self-learning. These aspects were further realised by the development of reflective practice which helps student teachers to integrate theory and practice (Orland-Barak and Yinon 2007) and the encouragement of frequent, systematic and explicit modelling of good practice by teacher educators (Lunenberg, Korthagen, & Swennen 2007). Thus in successful early teacher education teachers are encouraged to connect theory and practice through an emphasis on reflection and on their teachers in HEIs explicitly helping them to make the links.

4.6 Evidence from Russia

The role of universities in developing a system of reflective and research-oriented teacher education is organised differently in different countries. In Russia the focus of teacher training is on becoming highly knowledgeable in a subject specialism alongside learning pedagogical concepts. Teaching remains a highly attractive career choice in Russia with more than 7 applicants for each training place available. In 2014 reforms were instituted aimed at overcoming perceived existing problems in pedagogy; including use of educational technologies; traditional transmission approaches in learning and teaching and the absence of a system of independent assessment of the quality of future teachers’ training. In order to provide high-quality teacher education, Kazan University instigated a

project “to design and develop a system of reflective and research-oriented teacher education” (Valeeva and Gafurov, 2017 page 354). The University established pedagogical divisions within each subject institute. Each institute thus became a centre for training teachers in its respective subject. The university believed that immersion in the academic subject area is a key factor in increasing professional competence. Student teachers study in these institutes alongside students who are specialising in the particular subject of the institute. It is considered that studying in this way enables them to access the latest research and to practice in laboratories which model the educational process in secondary schools. In addition to the subject specialism, student teachers focus on educational psychology and pedagogical training which is overseen by a separate pedagogical institute within the university.

Research is perceived to be an integral part of the framework of the educational processes and serves as a basis for exploring pedagogical interventions. Teachers are asked to study a pedagogical reality in order to gain a better understanding of it, to systemise their knowledge about it, and develop their professional style and worldview (Menter 2016). Those graduates who distinguish themselves in the research they conduct as part of their course in university find it easier to get a job, receive better offers and gain promotion more quickly. This engagement in research is seen as a way to link theory to practice which as in most countries is seen as problematic. However, despite the benefits that may accrue to the student through engagement in research the projects “are often contradictory, chaotic and lack reflection. The studies are incomplete, and indifferent to the professional development of the researcher himself/herself.” (Valeeva and Gafurov, 2017 page 355)

4.7 Evidence from Singapore

Singapore is an example of a country where educational policy has been influenced and altered by economic and societal changes moving the system from a strong emphasis on socialization and vocational learning towards a focus more on self-fulfilment of the learner and transformative approaches.

In 1956 when Singapore gained independence from Britain it suffered from high unemployment and an unskilled labour force. Over one generation it transformed from an ethnically divided and poverty-stricken island to a modern successful industrial city-state. Education has been seen by the government of Singapore as key to this development. The government promoted the idea that investment in education would result in a clear economic return. Classroom practices in Singapore have traditionally encouraged whole-class rote learning and the transmission of curriculum content. Success in high stakes national examinations has been the central focus of this pedagogy.

Singapore has the highest-achieving primary and secondary pupils in international education tests in mathematics and science according to the PISA tests of 2016. However, concerns have been raised in the city-state about young people feeling under too much pressure. The government has responded to these concerns, and changes in the economic needs of the country, with changes in educational policy and has begun to implement change in what would appear to be a very successful education system.

Since the late 1980s, subsequent governments have attempted to change the traditional approach to learning through promoting a more student-centric, active learning paradigm, with the aim of producing independent learners with capacity to think, innovate, and engage in learning throughout their careers. In 2005 the Ministry policy ‘Teach Less Learn More’ (TLLM) re-envisioned students as ‘engaged learners’ in the process of learning for life rather than for examinations, and called on teachers to rethink the ‘why’, ‘what’ and ‘how’ of education (Teo 2013).

New programmes have been introduced for secondary schools. There is more focus on project work that aims to provide students with integrated learning experiences, encouraging a break away from a compartmentalisation of school subjects. Content reduction ranging from 10% to 30% has been mandated in order to create more curricular space for pedagogical innovations and the development of critical and creative thinking and other attributes seen as desirable in a 21st century global economy (Deng and Gopinathan 2016). A curriculum strand on Innovation and Enterprise introduced in 2004 aims to cultivate in students intellectual curiosity, innovative thinking, self-reliance, persistence, resilience and a spirit of team-work and social commitment. Pupils are increasingly being encouraged to express themselves; rote learning and memorising have been asked to give way to applying knowledge to real-world scenarios and more current content. For example, language lessons and assessment now place more weight on communication skills to help students converse in English and mother tongues more confidently.

But critics say there is still some way to go before societal attitudes change. Regardless of these policy changes, the continued emphasis on high stake examination results means that parents and students still focus on grades, with creativity viewed as something interesting but secondary in importance to high examination scores.

A further challenge for policy makers in Singapore has been to take teachers with them. Moving from a traditional approach which has given the city-state much success internationally, to a more personalised model, requires teachers to make their own decisions about what to do, how to do it and how to judge whether it has been done. Competing ideologies about the process and purpose of schooling, interact with the need to build on the willingness and ability of teachers to enact these policy decisions in their classrooms and to convince parents and guardians of the value of these changes.

Singapore is already selecting and training the best of high-school graduates by limiting teacher training places to ensure that supply matches demand and by formally employing teachers and paying a salary during training. This has made it an attractive and high status profession. There is only one teacher training provider in Singapore. Thus the teacher training curriculum is centralised and standardised. Student teachers study a demanding and well respected course tailored to the expectations of teachers in Singapore. However the single provider may result in a “one size fits all” approach, which could impact on quality throughout the system. Once qualified, Singaporean teachers are required to complete 100 hours of professional development each year, all of which is fully paid for by the government.

5. The Literature on Professional Learning

Globally governments and education systems are placing increased emphasis on teachers and the quality and effectiveness of their teaching. Professional learning (PL) has been seen as a mechanism which can be used to change practice and improve teaching (Bleicher 2014). There is little agreement as to what exactly constitutes PL. Searching against the term “professional learning education” in scholarly search engines such as ERIC, results in a great many articles, the most recent of which seem to use the term alongside collaborative learning, communities of enquiry, communities of practice or teacher networks (for example Damjanovic & Blank, 2018, Spencer, 2016 and Leonard, 2015). A further common use for the term PL is to indicate the learning that results from Lesson Study (for example Hadfield and Jopling 2016) which is a distinct form of collaborative learning used in education.

PL has recently emerged in various countries as a policy tool nested within a wider shift in education systems to use policy as a regulatory tool or a tool for mandated change, as a way to perform ‘steering at a distance’ (Lingard 2011, p. 370). Some governments have decided on policy initiatives at the macro scale designed to hold teachers and schools to account for student achievement. Many of these standardised testing regimes, have developed alongside initiatives with a more micro focus, such as the observation of teachers work for collecting evidence about what goes on in classrooms (O’Leary 2012). In these instance PL can be characterised as a driver to enhance teaching quality and student achievement (Leonard 2015), but must also be seen as part of a policy ensemble exerting the pressure of governance. Where change is mandated at government level, PL can be mobilised to enable teachers to understand the required changes and to see where the changes are needed to enable their practice to more closely match the values promoted by government. Teacher agency can be a positive or a negative force when it comes to implementing change. Where the mandated change does not fit well with the teachers’ ideas of best practice, the teachers may only pay “lip-service” to the change, as is seen to have happened in Singapore and in Scotland.

The history of professional development (PD) in schools is a problematic one, ‘derided as fragmented, disconnected from teachers’ work and ineffective in supporting lasting change’ (Thomas and Niesz 2012, p. 683). Unsatisfactory PD has often meant that teachers distrust innovations and new teaching approaches. In response, there has been an international shift from PD to PL characterised by collaborative ‘in-house’ models (Thomas and Niesz 2012, Bleicher 2014). The challenge for PL is to reframe its purpose and truly address the problems of authenticity, relevance, practical application and continued impact on classroom practice that PD has failed to address.

5.1 Quality in Professional Learning

In order to establish the high-quality in teaching that underpins high-quality learning throughout the system, there is evidence (Barbour & Mourshed, 2007) to suggest that effective professional learning should accomplish three interconnected objectives:

1. Helping individual teachers to become aware of where their practice requires development. In most cases this means not only exploring where teachers’ practice could be better but also exploring and seeking to change the beliefs and values that underpin that practice (Swan & Swain 2010).
2. Enabling individual teachers to become aware of evidence around good practice, to explore the ideas and to understand how such practice either does or could align with their own context. This seems best achieved through exploration of exemplar practice in an authentic setting.

3. Setting high expectations of teachers and enabling a shared sense of purpose, thereby cultivating a collective belief in *all* teachers' ability to make a difference to the outcomes for *all* the children that they teach.

It is a cause for concern, given the ideas above, that very little professional learning in education systems across the world takes place in teachers own classrooms. It is not sufficient to expose teachers to ideas concerning best practice, it has to be explored and understood by those teachers. They have to be motivated to apply ideas in their classroom and to compare their own practice with new ideas, thereby coming to an understanding of where and how their practice could or should be developed (Elmore 2004). Such precise understanding is only gained over time and within the teacher's own classroom. In order to address the need for development to be at the level of classroom practice, several high performing systems around the world (e.g. Canada, Finland, Japan) have support systems which enable teachers to learn from one another. In Japan and Finland this means collaborative planning, lesson observations, reflection on the results and what can be termed peer-coaching.

Bell et al. (2012) agree with the above objectives in the models of professional learning, which they consider evidence supports, are likely to improve student outcomes but expand some of the ideas. The professional learning experiences which they state are more likely to benefit student outcomes are:

- collaborative – where staff work together, to identify starting points, try out new approaches and collaboratively collect and share evidence about the approaches when used in practice;
- supported by specialist expertise, which is usually drawn from beyond the learning setting. Specialist expertise is used in the selection of approaches likely to have impact and in modelling those approaches. It is also used in the provision of support via observation and debriefing. Importantly such support, when effective, gradually transfers control over learning to the teachers involved (MacBeath, 2011);
- focused on aspirations for students, thereby providing both a moral imperative and a shared focus (Parr & Timperley, 2010);
- sustained over time, professional learning experiences can be seen to have substantially more impact on student learning when they are sustained over weeks or months (Darling-Hammond et al., 2007);
- focused on exploring evidence, this may mean trying out innovative practices which connect practice to theory, enabling practitioners to transfer new approaches and practices along with the concepts underpinning them, to multiple contexts. (Cordingley, 2015)

The quality of the design and content of the professional learning events affect the quality of the professional learning that the participating teachers experience. Bell et al. (2012) consider that the following practices to be of value in professional learning environments:

- observing teaching and learning interactions and exploring students' learning and how teacher actions have contributed to it;
- active engagement with the intended learning, through collaborative problem solving, role play, practising, planning, experimenting, adapting, reviewing and debriefing;
- synthesising generalised, context-free theories and concepts with the specifics concerns and contexts of the teachers resulting in the development of practical theories or rationales;
- support through a mix of specialist and collaborative coaching.

These practices should also support the development of a professional identity where teachers see themselves as learners as well as facilitators of learning.

5.2 Leadership in Professional Learning

Effective professional learning calls for a renewed focus by school leaders on pedagogical leadership, supporting teacher agency, and enabling teachers to undertake research and pursue learning through a variety of means. Professional learning must be recognised as meaning many things according to the needs of teachers. PL may mean attendance at conferences, undertaking formal studies as university to Masters and Doctorate levels or supportive or supported collaboration within and between schools or between schools and universities. The school leaders' role is to enable a culture of professional learning and support within their school. Time, resources and funding will be required to support teachers' PL and it is the leaders' role to secure this.

Reforms in Boston, England and Singapore have demonstrated that good leadership in schools is important in producing improvements in practice (Barbour & Mourshed, 2007). Leaders can effect substantial changes in practice to improve student outcomes throughout their school workforce in a timely fashion. However, they like everyone else, must engage in effective professional learning themselves, in order to understand what changes to effect, especially in times of curriculum change.

However as leaders, they can often find it hard to engage in learning themselves. Timperley (2006) found that leaders of education, who are themselves accustomed to leading learning, often found it difficult to engage with learning. Leaders' disposition toward learning and growth will affect their own engagement in learning and therefore both the professional learning they take part in and the learning they facilitate (Kochan et al., 2002). What leaders in education bring to their learning experiences, including personal biography, prior knowledge, experience, values, habits of mind and innate curiosity, will greatly influence the quality and outcomes of the professional development they offer. The need for leadership of professional learning in all leaders in education has important implications for the design and content of professional learning for leaders. Robinson et al., (2009) found evidence that suggests school leaders should approach their role as though their teachers are "their class". In that case, many of the findings about effective delivery of professional learning are also likely to apply to learning about the leadership of professional learning. Robinson et al., (2009) identified five key leadership activities linked with pupil achievement, most importantly the promotion and modelling of professional learning by teachers.

The role of school leaders is to support their teachers in using innovative practices which they feel will offer much to their students. Teachers may feel that they will be taking a risk in implementing changes in their practice and support from school leaders will be crucial to enable improvement through professional learning (Bell et al, 2007, Cordingley et al, 2015 and Timperley, 2006). School leaders who exhibit interest in their teachers' learning and offer practical and emotional support will be best placed to ensure that their teachers are able to make the most of professional learning opportunities.

5.3 Research in Professional Learning

The evidence for research informed professional learning is clear as; "The resulting evidence is surprisingly consistent and coherent. Common and substantial benefits for pupils are linked to CPD that is research-informed and rich in research-related processes" (Cordingley, 2015 p. 236). Research is part of the professional learning offer in Finland, Japan, Australia and Canada.

Bell et al. (2010) suggest that there are many types of research engagement that could apply to teachers taking part in professional learning. These include: collaborative enquiry, action research

(Crippen et al., 2010), research and scholarly study. Each of these activities has to be designed to expand teachers' sense of what is possible and to increase their self-awareness through requiring them to put themselves in the shoes of others. Cordingley (2007) suggests that those research approaches which focused only on analysing current practice were not linked with benefits for students, what worked better were research approaches which were rooted in evidence from experimenting with new approaches.

There are many benefits for teachers' professional learning that accrue from participating in research-rich CPD activities. Amongst these benefits are improved knowledge of their subjects, relevant teaching and learning approaches, a willingness to innovate, take risks and to continue learning, improved skills in matching teaching and learning approaches with their pupils' needs, and confidence in experimenting with approaches that are research-based.

Stenhouse (1979) asserted that to engage with research, teachers need to engage in it. Engaging in research takes many forms, for example: Researcher-led, larger studies (academic studies), Teacher-initiated small scale studies and Masters-level teacher enquiry (Cordingley 2015). However teachers' engagement with research occurs, engagement both in and with research is linked with an increase in teachers' readiness to identify the theories or rationale that underpin the new approaches, leading to a developing practical and contextual theory about their professional practice. Focusing on why things do and do not work in different contexts works to develop an underpinning rationale or practical theory alongside practice

Research involvement encourages teachers to make use of specialist expertise, such as research evidence and to use that evidence and expertise to support the planning of their own study. Specialist expertise is important in research-led professional development. Such expertise could help teachers and schools relate particular research to their internal expertise, thus making use of research feel like part of the professional world of teachers. Building on research findings and outside expertise through research processes may help ensure that teachers do not "re-invent the wheel" but rather move ideas forward. Using specialist coaching can further enable enquiry-oriented approaches to be used. Both specialist and peer support can be used to create opportunities for professional learning within day to day school life.

For McLellan and Soden (2008), professional learning should be focused on the insights of psychological research and on developing an understanding of how learners construct knowledge through thinking and reasoning alongside the teachers' role in facilitating these processes. However, how one enables teachers whose job is to teach, to interpret and understand research written for other academics, is in question. Nuthall (2004) found that when working in New Zealand, theory that connects with and changes teacher practice must be "directly and transparently connected to relevant evidence" (page 93). He notes that it is vital that speculation and evidence-based theory are clearly delineated, which is not the case in many studies, which then produce speculation about the relationship between teaching and learning. Evidence-based theory becomes useable when it is built from the bottom up and contains detailed and precise data on what is happening in the classroom and in the minds of students. How a model of professional learning can ensure that young learners are enabled to experience learning activities that require thinking and reasoning requires careful thought. A system of professional learning must model the process through setting up communities of practice which facilitate the co-construction of knowledge through thinking and reasoning on behalf of the participants.

Through research teachers may be encouraged to give and receive peer support in a collaborative setting, involving joint risk taking and professional dialogue, which are core learning strategies.

Undertaking sustained, enquiry-oriented studies over time will provide professional learning, especially if supported by protocols to discipline learning and secure both coherence and progression. Research-use can also enable teacher participants to learn to learn from evidence about pupil outcomes and from observing teaching and learning interactions. Such research will need leadership support in terms of time, encouragement and possibly modelling.

5.4 Coaching and Mentoring in Professional Learning

Coaching and mentoring are key roles in enabling teachers to contextualise PL in their practice. This is especially true for both new teachers and those new to leadership roles (Earley et al, 2011; Vanderburg & Stephens, 2010). Coaches can be:

- peer-coaches, a pairing of teachers or leaders whose experience is similar to one another and who are experiencing similar stresses and tensions; such coaching partnerships will offer advice, support and encouragement (Egan 2013).

Or

- have a greater degree of experience than the teacher being coached, enabling them to advise, demonstrate and facilitate.

A common feature of both of these coaching types is that the relationship built will be one of trust and confidentiality where problems and issues can be explored in depth without fear of judgement that may affect, for example, career prospects. Coaches are used internationally. They are often expert teachers who have been trained in coaching other teachers. These coaches observe teaching, give feedback model instruction and share in planning. These may be employed by a district or ministry or be expert teachers with a reduced workload that allows them to coach other teachers (Barbour, M & Mourshed, M., 2007).

According to Bolam & Weindling (2006) mentoring and coaching is a key component of effective professional learning. Coaching can promote high fidelity when evidence-based practices which are first encountered in training settings are transferred to authentic classroom contexts (Kretlow & Bartholomew, 2010). Coaching can enable those coached to develop a sense of agency in teaching and therefore enable them to think in terms of student outcomes. Coaches empower practitioners to take risks and to use innovative teaching approaches thereby helping teachers to focus on developing a curriculum and pedagogies driven by the needs of their students rather than 'coverage' of the curriculum.

5.5 Collaboration in Professional Learning

Internationally, schools are adopting joint or collaborative practice in order to effect professional learning (Hargreaves 2010). Working collaboratively in Japan and Finland motivates teachers to try out new and potentially improved ways of teaching. Collaborative professional learning offers the support of peers and stimulates professional dialogue. Working with trusted colleagues creates a meaningful context for teachers to make tacit routines explicit and expose their professional practice for reflection, critique and potential improvement. Collaborative enquiry and problem solving is identified by Bell et al. (2010) and Cordingley et al. (2007) as being of particular benefit in enabling the type professional learning that is effective in improving student outcomes.

Collaborative practices seen in the studies of different countries include establishing communities of inquiry from initial teacher training which last throughout teachers' careers, lesson study groups being established within and between schools, groups of teachers working with researchers in HEIs to establish evidence based practice and teaching triads formed to explore innovative teaching

practice between three teachers, as well as less formal arrangements between colleagues. Collaboration may also be facilitated by such organisations as subject associations.

5.6 Using distance learning

Online approaches can be particularly useful in the spreading of good practice through on-the-job training, serving to transform schools into sites of teacher learning as well as student learning. However distance learning is not a panacea. It does have the potential to support the challenge of dramatically expanding the scale and quality of teacher learning where used expediently. Efficient use of online resources can reduce the overall cost of providing professional learning for student and qualified teachers. It can also encourage students to enrol to train as teachers who would otherwise consider themselves unable to study. For example at the tertiary level in the USA, for example, the growth rate for online enrolment was 12.9% compared with a 1.2% increase in overall student population (Allen & Seaman, 2008). This enables larger numbers of older graduates to enter the profession. Older students have responsibilities that mean they need greater flexibility in their work and placement patterns, as well as the option to study part time. Students are registering for distance learning teacher education courses not necessarily to solve the problem of distance but rather to be able to fit their study into work and family commitments (Shelton and Burgess, 2012).

E-learning is characteristic of a new kind of social configuration, the knowledge society: 'E-learning should not be viewed as just another 'swing of the pendulum' but more as a way to achieve the educational ideals of a post-industrial society' (Postle and Tyler, 2012 p. 68). Mechanically replicating location-based courses on-line will not, of itself, meet the expectations of students in the new virtual world. However, online approaches can and do provide alternative educational experiences and these must be utilised within any on-line professional learning offered.

Cady & Rearden (2009) examined the impact of online learning communities in providing professional learning in mathematics teaching in rural schools in the USA. They found that teachers found many positive aspects of online courses as long as they were able to hear each other talk; listen to others explain problems and to interact face-to-face at some times during the course. Participants found that if they were unable to see faces and body language at all they were less positive about the learning experience. Online courses enhanced collegiality and reduced isolation for rural teachers.

Even well-designed online modules need to be regularly updated and evaluated, in order to ensure that they allow for the different backgrounds and prior knowledge of participants (Herrington et al., 2009). Where on-line is the chosen vehicle for professional learning participants will still need sufficient time release for learning from and evaluating the ideas in the module, planning lessons resulting from the learning and reflecting on their use and efficacy. Where professional development support is provided by expert online facilitators, learning is maximised.

The web means that collaborative knowledge-sharing is made possible across distances. Communities of teachers can now use tools such as blogs, podcasts and wikis to share resources and ideas and to interact with each other nationally and internationally. Younger teachers can learn from more experienced practitioners, as well as from each other within such on-line spaces. Asynchronous discussion boards can be used to facilitate the possibility of deep individual professional reflection. Instead of seeing schools as closed autonomous institutions that serve their immediate community, using the power of the world-wide web they can become open, collaborative sites within teaching and learning networks with a global reach.

6. Conclusions and recommendations

The literature reviewed and presented in the report has been examined in order to answer two key questions. Here the results of that examination are presented.

6.1 What does the existing literature indicate constitutes effective professional learning approaches to achieve curriculum change?

The review of literature specific to countries and of the general literature on professional learning implies that to be effective in providing professional learning for curriculum change it must:

Be collaborative: Canada, Finland and Australia all focus on collaborative activities as a means for enabling professional learning. In the case of Finland, forming communities of practice (Lave and Wenger, 1991) is a required part of the training offered to students learning to teach. As students transform into teachers, they continue to be expected to work collaboratively to meet the needs of their students both within and between schools. This is facilitated in three ways. Firstly, teachers have one afternoon each week which is expected to be devoted to collaborative planning or other collaborative work, for example working between schools. The second way Finland encourages collaboration is to expect equity between schools, rather than competition. They see sharing learning between schools as building knowledge within the system of how to enable high quality learning for the young people of Finland. The third way professional learning is made collaborative is that every teacher is required to have a masters degree to qualify as a teacher, where they learn collaborative research skills, and by encouraging and funding all teachers to continue both research and collaboration whilst studying at doctoral level.

Canada is less formal in the way that it encourages collaboration, but again competition between schools is not encouraged. Schools work together within districts to develop curricula and associated pedagogies which meet the needs of diverse and geographically spread communities. There is no “one size fits all” but teachers are given the responsibility of providing for the learning needs of their students. This responsibility is discharged collaboratively. Teachers are held in a central and agentive role in designing and offering locally appropriate professional learning, informed by guiding principles.

Evidence from Australia and Scotland sounds warning bells about reliance on collaborative professional learning. The first is that if teachers are inexperienced, less confident or struggling in their role or are not fully committed to curriculum change, then a requirement to collaborate may not be successful in helping improve or change practice. A further potential problem for the success of collaboration as a professional learning tool is that if the experience is only superficially entered into, then this form of learning could result in the sharing of mediocre or even subversive approaches, as teachers tend towards politeness and congeniality, rather than engaging in challenging, collegial, professional conversations which ‘probe more deeply into teaching and learning’.

Hence in all cases studied, some collaboration is seen as important in professional learning. In Russia the collaboration between students studying teaching and students studying only a subject specialism is seen as highly beneficial in enabling student teachers to develop as highly knowledgeable teachers. However without time, support and encouragement many teachers will allow collaboration to take a back seat to more immediate day to day concerns. Superficiality in the professional conversations surrounding a collaborative project must be avoided, further evidence

suggests expertise from outside the immediate environment might be useful in increasing the depth of the discourse.

Engender a deep understanding of pedagogy and subject knowledge: this is accomplished in many ways in the systems studied. Singapore, Russia and Finland's requirement for in-depth study prior to taking on the role of a teacher begin to establish this within their teachers, but both Finland and Singapore encourage further study throughout their teachers' careers. Finland does this by encouraging and funding doctoral study in its teaching force and Singapore by requiring and funding its teachers to take part in 100 hours of professional learning every year.

Coaching is used by several nations to deepen and contextualise professional learning. Coaches may be variously employed by the district or government or employed within schools with a reduced timetable. Coaches are best placed to help teachers deepen understanding of professional learning when they have more knowledge and expertise themselves, although working with peer-coaches can be used to help the contextualisation of professional learning engaged in outside school.

Be research-engaged: the large studies of professional learning see engagement in research as an important aspect of effective learning that improves student outcomes, although only Finland and the example from Russia, actively encourages and facilitates this aspect. Engaging in research has been shown to encourage both the agentic behaviours and professional discourse that are needed to implement curriculum change. Scotland has begun to take steps to encourage its teachers to become research aware and this has been a thrust of the work of its General Teaching Council in Scotland. However where there is no tradition of high-quality engagement in research difficulties, such as superficiality, can arise.

Teachers who are not registered for higher levels courses at an HEI can find it difficult to access quality evidence, such as that within education peer-reviewed journals. This has changed a little lately as open access publishing is often funded within research grants. Nevertheless exploring peer-reviewed quality research in the areas of interest remains difficult for the majority of teachers, who are forced to rely on populist books.

Russia provides a warning on the introduction of small scale research studies by teachers without a system of support to ensure quality. It is not sufficient to "do research", the process must be based in an understanding of the issues involved, and be orderly, systematic and reflective if such studies are to result in high-quality professional learning.

Close the gap between theory and practice: many of the countries investigated recognised that there is a gap between teachers' exposure to theory during professional learning and the reconceptualization of theory in the context of their classroom. Hong Kong uses its initial teacher education system to help teachers to think in terms of how, when and what theory applies to their classroom practice. Canada and Scotland see this as a challenge that they were working to address. In Scotland the GTCS makes relevant academic journal articles available electronically to its members, enabling access to theory by those who can use it to innovate and improve the outcomes for students in the classroom.

Encourage risk-taking: The evidence from Hong Kong, Singapore and Scotland shows that changing teacher practice, even in the face of much academic evidence indicating the efficacy of the improvements, is not easy or straightforward. Teachers will naturally emulate both the way they themselves were taught and the way that teachers around them act. Change will always engender feelings of risk and uncertainty and teachers may protect themselves from such intrinsic feelings by overtly stating that they are acting to protect their students. High-stakes examination systems which

operate in most of the United Kingdom and elsewhere can actively discourage risk-taking by teachers, who are more inclined to continue approaches that have realised some success for their students in examinations.

School leaders are well placed to encourage an ethos of innovation and improvement that will mean taking risks, risks which are taken in a supportive and blame free environment. Leaders can themselves model the practices that they would like to see in their school. External expertise can also be used to model aspects of practice so that teachers can build a vision of what improved practice looks like. Coaching is a further practice that can be used to provide a clear model of good practice as well as support teachers to establish that way of working within their classrooms.

Focus on student outcomes: focus on aspirations for students, thereby providing both a moral imperative and a shared focus. Enhanced student learning has to be the focus of the inputs from all levels in an endeavour like professional development. Flexibility is required in all stakeholders in professional development. Policy makers and professional development providers have to be prepared to learn themselves and to adjust their policies and practices based on evidence of the outcomes regarding student learning. Such outcomes should not be only examination success but rather student-centred outcomes, including a broad understanding of student achievement including equity, engagement, independent learning and well-being. The latter skills are much harder to measure but are important in students becoming “qualified for life”.

Develop teacher agency: the evidence from Scotland emphasises the need to work with teacher agency. Where teachers are unconvinced of the efficacy of any reform agenda they will exercise their agency to do what they see as most beneficial to their students, which is often to use well-trying approaches that they see as maximising examination success. Teachers have engrained views of what constitutes good teaching and changes can be hard to embed, as exemplified by the Singapore experience. Enabling teachers to experience success in using innovative teaching practices can work to change those engrained values. Involving teachers in agentic activity such as the action research cycles of planning, teaching, observing, analysing and reflecting are also likely to be effective.

Change the discourse in schools: the evidence from Scotland and Singapore further demonstrates how the discourse within and without schools can work for or against the success of curricular change. Where the discourse continues to allow that some pupils are hard to teach or where parents pressurise teachers to act in certain ways, then change may be hard to establish. School leaders may be best placed to change the discourse within schools, establishing a shared sense of purpose, and demonstrating a belief in all teachers’ ability to make a difference to the outcomes of all the children that they teach. Canada also demonstrates that asking parents and other stakeholders to be part of the vision can help change the discourse beyond school as well.

Be afforded time: The Scottish and Finnish system evidence the need to formally mandate that time is given to teachers to work collaboratively both within and between schools to establish curriculum change and improve practice. Without this, as the Australian case reminds us, such collaboration will fall down teachers’ priorities. Time is also needed for professional learning to really make a difference. Enhanced student outcomes can be expected where professional learning takes place over weeks and months.

Be evidence informed not data-driven: Evidence from Canada, Finland, Scotland and Singapore warns that curriculum change does not flourish within a culture of accountability that apportions blame. Where test results are the only markers of success it is unsurprising that teachers will be overly interested in professional learning focusing on such outcomes, such as courses provided by

examination bodies, and not on research based, collaborative learning. That said, where teaching is of high quality and evidence informed then improved outcomes for students will be the result, which will include, but will not be limited to, examination success. Canada's system uses standardised tests to ensure that no issues or difficulties are overlooked. Where issues are discovered the province team work with the school to overcome the issues, providing professional learning as appropriate. The school or the teachers in the school are not blamed for the difficulties uncovered. Thus schools can ask for assessment to inform its quest for improvement, there is no reason to fear a visit from an inspection team.

Be a process: Evidence from Canada, Finland and Singapore makes clear that professional learning must be seen as a process, part of every teachers' working life from initial teacher education throughout their careers. It should not be seen as a series of one-off events or as an optional extra. Seeing oneself as continually learning should part of every teachers' identity. Where professional learning is seen as a process, the learning experiences undertaken require planning and should be focused on learning needs established through a reflective procedure, using both the context of the teacher, their students' needs and their professional ambitions as a guide.

These ideas compare well with the system of professional learning devised for Wales. In particular it supports the ideas that professional learning should be:

- high-quality, collaborative, both between teachers, between schools, and between schools and HEIs, and driven by a deep understanding of pedagogy and subject knowledge;
- research-engaged, and that learning should be provided from expertise at local, national and international levels;
- well supported by a range of learning support professionals who can provide the ideas, expertise, modelling and coaching that is needed to meet the needs of every child
- outward-looking and committed to raising standards both within and between schools
- well led by leaders who will engender the belief that every teacher can improve through effective collaboration, innovation and opportunities to provide professional leadership to others.

6.2 Do the main messages from the literature suggest that the National Approach to Professional Learning in Wales could be improved and if so, how?

The National Approach to Professional Learning in Wales closely follows the main ideas that are set out in the literature. However there are a few recommendations for emphasis in professional learning in order to mitigate any issues that have been part of the process in other countries' experiences. These are:

- focus on the child, stating clearly that success in professional learning will be measured not only by examination success but rather through a broad understanding of student achievement, equity, engagement and wellbeing.
- work hard to engender a professional discourse that focuses on the fact that *every* teacher can improve their practice and *every* child can progress.
- work with teacher agency, emphasising that teachers are trusted professionals whose role is to treat all learners with equity and to develop the four purposes of the new curriculum in all their learners.
- ensure teachers value collaborative learning opportunities by giving time and resources to make such opportunities happen and clearly valuing the outcomes of such opportunities by perhaps, publishing the outcomes.
- ensure that all see professional learning as part of their role, including school leaders and those that facilitate professional learning.
- ensure that leaders of learning be they regional leaders, school leaders, coaches or outside experts offer learning that is evidence-informed, not data driven, values research-based information and focuses on improved and equitable outcomes for all children in all schools.

The lessons from around the world show that the National Approach to Professional Learning in Wales is likely to bring about curriculum change and enable the teaching workforce to make a difference to the outcomes for all students, only if it remains focused on: treating all children with equity and enabling all to succeed; getting the right people in the right place, people who will lead and coach teachers to develop as professionals who will make the necessary changes; developing a discourse of growth and progression, seeing success in education as improved outcomes for all students, including, but not limited to, examination success and professionalising teachers as leaders of change. If the professional learning system in Wales is to work as effectively as possible it will need enthusiastic, committed and effective leadership from the Welsh Government, HEIs, regional consortia and leaders in schools as well as wholehearted engagement from teachers themselves. Getting the right people to develop and promote the approaches is key to success.

6.3 Professional learning for curriculum change

What Professional Learning has research shown to be required in order to manage curriculum change?

The evidence indicates that collaborative, research-engaged professional learning is required over extended periods of time if curriculum change is to be embedded into professional practice.

What Professional Learning may be efficacious as a vehicle to implement rapid educational change?

Rapid educational change will always be difficult, lasting changes in practice require changes in the discourse in schools and in the beliefs and values of teachers. Evidence shows that these changes are best accomplished through a system of professional learning that recognises the agency of teachers

and gives them both the support and time to discuss the need to change, experiment with how the change can be embedded in their practice and a vehicle to disseminate what they have accomplished. Support is required in terms of both professional learning opportunities aligned to the teachers expressed professional needs and mentors and coaches within school and from external sources. Time is also required as none of this is “quick fix”, professional learning that takes place over six months or longer is most likely to result in lasting change. Such professional learning work must be recognised as the onerous task that it is and must therefore have time set aside for its accomplishment within the teachers’ normal workload.

What ways of effectively managing curriculum change have been identified and how effective are they?

Effective professional learning is focused on improved student outcomes, as such it is evidence informed not data-driven. Teachers need to be convinced that the changes they are being asked to make will improve the outcomes of their students at both examination level and at the level of life-long learning. It is not sufficient to suggest to a teacher that the change will enhance their students’ life-skills if the teacher considers it will diminish examination success, which are the immediate gatekeepers. For a similar reason curriculum change that is data driven, that is judged from the start by examination outcomes, will be subverted by teachers. Any change is likely to result in diminished student outcomes initially, when judged by current measures, as both teacher and student become acclimatised to the new way of working. Thus effective mandated change occurs collaboratively, through research engaged learning and is well supported and given time. Such change are monitored and evaluated carefully, if the measuring devices themselves are not to result in poor take up of the change.

What links, if any, have been established between Professional Learning and student outcomes?

In the literature where student outcomes have been discussed as a measure of successful professional learning, improvements have been shown to occur where the learning has been longitudinal in nature, taking place over weeks and months. Professional learning that focuses on student outcomes, not only examination success but other student-centred outcomes, using a broad understanding of student achievement including equity, engagement, independent learning and wellbeing, has also been shown to make a difference, especially where the difficulties in assessing such outcomes have been addressed.

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