The Quality of Teacher Professional Learning

Background

An important aspect of the NSW Education Standards Authority's (NESA's) role and purpose is its implicit remit through its regulatory functions, policy framework and programs to raise the quality of teachers, teaching and hence educational outcomes for students in NSW. Fundamental, to this remit is NESA's responsibility for monitoring, evaluating and reporting on the quality of professional development (PD) provided for teachers and for approving courses and programs of PD consistent with the *Teacher Accreditation Act 2004, No 65, s.7 & s.20*. The process and criteria established for the accreditation of PD courses in priority areas[1] for NSW teachers is set out in the *Accreditation of Professional Development Courses Policy* (the Policy).[2] The Policy establishes requirements for PD courses designed to ensure that all teachers in NSW have access to quality PD in prescribed priority areas to complete to improve their practice and improve student learning outcomes and meet their ongoing teacher accreditation requirements.

To be accredited as NESA Accredited PD, a course must:

1. directly address one or more aspects of a priority area that has been identified by the Minister, on advice from the NESA Board
2. address the principles of effective PD published by NESA
3. meet the subject/content specific criteria for the applicable priority area, as published on the NESA website
4. include content and activities that directly align with relevant Standard Descriptors at the Proficient, Highly Accomplished or Lead Teacher level of the Standards.

The four priority areas include:

- Delivery and assessment of NSW Curriculum/Early Years Learning Framework
- Students/children with disabilities
- Aboriginal Education and supporting Aboriginal students/children
- Student Mental Health and Well-Being.

The eight principles are:

- Content focused
- Coherence
- Duration
- Recognises the experience and prior knowledge of participants
- Job-embedded and/or opportunities for transference of learning
- Models of/modelling effective teaching practice
- Supports active collaboration
- Supports opportunities for feedback and reflection.

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1 PD priority areas are determined by the Minister, on advice from the NSW Education Standards Authority (NESA) Board.
2 The Policy replaces the Endorsement of Professional Development Providers and Courses Policy (February 2019).

Purpose of this paper

This paper:

1. sets out the rationale and research basis of the eight principles of effective professional development to be addressed by courses seeking NESA accreditation

2. identifies how the principles might be manifested within the NSW context.

The Principles

Effective teacher professional development has been identified by Hattie (2008) as one of the most significant influences on student achievement. The eight principles of effective PD above, have been identified from research as having a continuing and enduring impact on the work of teachers. Although presented as discrete criteria within this paper, the principles are often reported within the research literature as interrelated aspects of effective professional learning.

It is worth noting, from a pragmatic viewpoint, that the current high demand for teacher professional learning, driven in part by the prevailing regulatory framework requiring teachers to undertake at least 50 hours of accredited PD and by teachers' desire to improve and enhance their capacity, cannot be met solely through the kinds of professional learning requiring extended in-school collaborative engagement.

The following sets out the research basis for each of the principles and how the principles might be addressed by PD courses in NSW.

Content focused

The importance of a clear content-focus to professional learning has been noted by numerous researchers. Firestone et al (2005, p. 415) reported a growing body of knowledge linking subject based professional development (*knowledge of subject content; knowledge of teaching methods; and understanding the special needs of learners*) to changed teaching practice and increased student achievement.

Research by Polly, et al (2008, p. 34) concluded that professional development which comprehensively focused on pedagogy, mathematical concepts, and unpacking content standards led to gains in teachers' mathematical knowledge, and teachers' mathematical knowledge was associated with gains in student learning.

Campbell et al (2016, p. 24) noted that rather than professional development involving generic activities and instructional strategies disconnected from subject areas, a focus on specific subject knowledge in combination with pedagogical content knowledge is an important element of effective teacher professional learning programs.

Thompson, Kriewaldt, & Redman (p. 88) reported that professional learning should have a foundation of subject matter that is worthy, accessible, and relevant (Centre for Educational Statistics (CESE), 2014).

The NSW Centre for Education Statistics and Evaluation (CESE) (2014, p. 4) also noted that PD that has a focus on deepening teachers' content knowledge and knowledge about how students learn that content tends to be more effective.

Gomez Zeip & Benkin (2013, p. 320) reporting on a study of mathematics and science teachers' perceptions of professional learning noted:

> *The importance of professional development providing teachers with rich content and numerous opportunities to experience the learning that they are expected to facilitate with students may serve to assist them in translating inquiry practices to their own classrooms" (Jeanpierre, Oberhauser, & Freeman, 2005, p. 686). This work suggests that when embedded within an effective PD context, content can be a critical vehicle through which change can be made in teachers' understanding and perceptions of mathematics and science. Professional development must provide challenging learning experiences that inspire conflict and allow teachers to move beyond tightly held notions relative to content and discipline. When participants in our study were able to move beyond their*

internal conflicts and misunderstandings, they could expand their knowledge and perceptions of content and finally bridge to re-conceptualize how to teach that content.

Other researchers reporting on the relationship between a content focus of PD for science teachers and its effectiveness include Birman et al. (2000, p. 30) who reported that "the degree to which professional development focuses on content knowledge is directly related to teachers' reported increases in knowledge and skills". Nelson and Hanegan (2003) found that teachers who had experienced intensive field science professional development reported overwhelmingly that their science content knowledge had improved. Similarly, Cohen & Hill (2000) found that professional development grounded in academic content was more likely to affect instructional practices and student outcome.

Jeanpierre et al. (2005, p. 671) notes *these studies and others … suggested that increasing teachers' science content knowledge and then having them apply that knowledge through actual experiences supports substantial teacher learning and positive change in the classroom*.

How this principle is addressed in the NSW context

The principle of 'content focused' is addressed within the Policy for Accreditation of PD courses through the requirements that PD courses address content from one of four priority areas listed above.

Coherence

Coherence between teacher professional learning and external factors such as government, school, and sector policy, as well as teaching standards and assessment is emphasised throughout the research as an aspect of effective professional learning courses. For example, Phillips, Desimone & Smith (2011, p. 2587) found that policies *promoting consistency in the form of alignment between standards and assessments are perhaps the most important type of policies that states can adopt to encourage teachers to participate in effective professional development*. CESE (2014, p. 5) found also that PD tends to be more effective when it is *linked to clear and relevant goals that are related to student outcomes.* Further, research has suggested that teachers who experienced PD that was connected to other reform efforts and aligned with standards were more likely to change their practices compared to teachers whose PD was not coherent (Garet, Porter, Desimone, Birman, & Yoon, 2001).

Despite coherence of PD programs being an enduring theme reported amongst characteristics of effective professional learning, the term is not well defined. A systematic analysis by Lyndvall and Ryve (2019) of 95 research papers reporting on the subject identified three main categories of coherence: External coherence, Internal coherence and Create coherence.

A majority of the studies described <u>external coherence</u> in words that stress PD should be coherent with constructs outside the PD program itself. The most common factors cited concerning what PD should be coherent with were steering and policy documents, including standards, curriculum, and assessments, in relation to either a broader educational context (e.g., national, state or district) or a more local level (e.g., individual schools). Two other common themes involved alignment with other teacher learning opportunities or reforms (e.g., curriculum reforms, pre-service teacher education, other teacher PD programs than the one in focus of the study), as well as teachers' needs, goals, knowledge, and/or beliefs.

<u>Internal coherence</u> is described as an internal property of PD programs concerned with the alignment of different aspects of the programs themselves (e.g., activities, content, resources). Reporting on internal coherence typically comprises criticism of the disconnect between different activities of the program with individual activities not forming a coherent program of teacher development.

<u>Create coherence</u> was identified in several papers as something that the PD course should create, such as an overall vision for school improvement, or a means to creating coherence between different aspects of the teachers' work.

How this principle is addressed in the NSW context

Courses in NSW will meet this principle if the course:

- addresses the intent of the targeted APST Standard Descriptor/s
- is aligned with NSW Curriculum/EYLF (where applicable)
- is aligned with relevant legislative and regulatory requirements, and is consistent with government and/or sector policies (where applicable)
- the course content and activities are logically sequenced and directed towards achieving the stated Learning Goals.

Duration

A common criticism of professional development activities designed for teachers is that they are too short and offer limited follow-up to teachers once they begin to teach. Curricular reforms are extremely demanding on teachers, and the nature of inquiry-oriented reforms in science are such that they require most teachers to make big changes to implement them well (Bybee, 1993; Crawford, 2000). Frequently, the result is that teachers either assimilate teaching strategies into their current repertoire with little substantive change or they reject those suggested changes altogether (Coburn, 2004; Tyack & Cuban, 1995).

Studies regularly emphasise the importance of the sustained duration to the effectiveness of professional learning (Thompson, Kriewaldt, & Redman, 2020; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). The following quotes elaborate:

> Effective professional development provides teachers with adequate time to learn, practice, implement, and reflect upon new strategies that facilitate changes in their practice. As a result, strong PD initiatives typically engage teachers in learning over weeks, months, or even academic years, rather than in short, one-off workshops (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009).

> Professional development that is sustained, offering multiple opportunities for teachers to engage in learning around a single set of concepts or practices, has a greater chance of transforming teaching practices and student learning. (Darling-Hammond, Hyler, & Gardner, 2017)

> While duration is consistently included in lists of key features of successful professional development programs, some empirical evidence (e.g. Corcoran, Shields, & Zucker, 1998) has suggested that the influential factor is the frequency and length of training sessions (intensity), rather than the total number of contact hours involved (duration) (Corcoran, Shields, & Zucker, 1998).

CESE (2014) concluded from its review of research in this area that despite some gaps in the research, the research can largely *agree that professional development programs that include follow-up sessions with participants after the initial program has taken place are more likely to have positive effects student outcomes* (p. 6). Longer and repeated periods of engagement allow teachers to plan and consider how their new learning might best support their students, to evaluate the impact of the learning and to refine future approaches (Campbell, 2016; Brown, 2004).

Extended duration provides opportunities for professional development that is interactive with teachers' teaching practice, allowing for multiple cycles of presentation and assimilation of, and reflection on, knowledge. (Blumenfeld, Soloway, Marx, Guzdial, & Palincsar, 1991; Kubitskey, 2006; Penuel, Fishman, Lawrence, & Gallagher, 2007).

How this principle is addressed in the NSW context

Courses in NSW will meet this principle if the course has a duration of at least 1 hour of directed coursework.

Courses in NSWS could further address this principle by:

- having an extended timeframe involving a n umber of episodes (e.g. fortnightly sessions over a school term
- requirements for ongoing application of learning between course episodes.

Recognises the experience and prior knowledge of learners

This principle addresses the third of six core assumptions or principles that distinguish andragogy from pedagogy (Knowles, Holton, & Swanson, 2015, pp. 44-45). It arises from the insights of Lindeman, (1926, cited in Knowles, Holton, & Swanson, 2015, p. 20) whose work laid the foundation for a systematic theory of adult education. Lindeman noted:

> *The resource of highest value in adult education is the learner's experience. If education is life, then life is also education. Too much of learning consists of vicarious substitution of someone else's experience and knowledge. Psychology is teaching us, however, that we learn what we do, and that therefore all genuine education will keep doing and thinking together.*

Hence, adult education theorists consider prior experiences to be the richest resources available to adult learners, with adults bringing a greater volume and higher quality of experience to their learning activities than younger children. This belief that the richest learning resources for many kinds of learning reside in the adult learners themselves prioritises an emphasis in adult education on experiential techniques that tap into the experience of the learners, such as group discussions, simulation exercises, problem-solving activities, case methods, laboratory methods, and a greater emphasis on peer-helping activities (Ozuah, 2005, p. 84).

However, the greater experience of adult learners has some potentially negative effects through the mental habits, biases, and presuppositions that develop as adults accumulate experience. These act against the acceptance of new ideas, fresh perceptions, and alternative ways of thinking. Adult educators use a range of techniques to counter these barriers to learning and help adult learners examine their habits and biases and open their minds to new approaches. These include sensitivity training, values clarification, meditation, and dogmatism scales.

Knowles at al (2015, pp. 44-45) note that there is another, more subtle reason for emphasizing the experience of the learners; it has to do with each learner's self-identity. Young children derive their self-identity largely from *external definers, that is, who their parents, brothers, sisters, and extended families are; where they live; and what churches and schools they attend*. As young people mature, they increasingly define themselves in terms of the experiences they have had. *To children, experience is something that happens to them. To adults, experience is who they are*.

The implication of this fact for adult education is that in any situation in which the participants' experiences are ignored or devalued, adults will perceive this as rejecting not only their experience but rejecting themselves as persons.

A further implication of the focus on the learners' experience identified by Covay Minor et al (2016) was the need to differentiate PD for teachers. They commented:

> *… what teachers learn in PD depends on what they already know. This may seem obvious, but current models of "one size fits all" PD do not reflect this reality. Our data suggest that teachers can take away very different information and strategies from a learning experience, depending on the knowledge they bring to the activity, as well as their own proclivity and assessment of where they would like to improve. The PD may not have the intended outcome if teachers have varying responses and learning from the PD. Focusing on high-quality PD is not enough; we need to think more about how the PD interacts with teachers' previous knowledge and experiences (pp. 21-22).*

How this principle could be addressed in the NSW context

Courses in NSW will meet this principle by:

- structuring materials to address the learning needs of an identified, nominated target audience
- being relevant to the participants' professional experience and/or career stage (i.e., Proficient, Highly Accomplished, Lead).

Courses in NSW could further address this principle by:

- providing differentiated activities to meet the needs of the various groups and individuals within the nominated target audience
- providing opportunities for participants to build on prior experience and contribute prior knowledge.

Job-embedded and/or opportunities for transference of learning

On the issue of job embedded learning and transference of learning Killion & Harrison (2006) noted that:

> *traditional professional development usually occurs away from the school's site, separate from classroom contexts and challenges in which teachers are expected to apply what they have learned, and often without the necessary support to facilitate transfer of learning.*

Zepeda (2014, p. 35) defined job-embedded learning as what occurs during a teacher's "daily work activities" (Wood & Killian, 1998, p. 52) that signals collaboration, joint problem-posing, problem-solving, and a sincere desire to improve practice from the lessons learned on the job from teaching and interacting with peers (Zepeda S. J., 2012). Parise & Spillane (2010, p. 323) comment that on-the-job learning opportunities include interactions with colleagues around teaching and learning, including conversations about instruction, peer observations, feedback, and advice-seeking about instruction.

Zepeda (2014) note that job-embedded learning can be both formal and informal with teachers learning from teaching their students, while studying student work, engaging in conversations with their colleagues, analysing student data during grade-level data team meetings, and during other opportunities. Teachers learn from reflecting on their own and from reflecting after a conversation with a colleague. Teachers learn while they are blogging, Tweeting, or constructing an electronic portfolio. Teachers learn from listening to students respond to questions. She reports that job-embedded professional development:

- holds relevance for the adult learner
- includes feedback as part of the process
- supports inquiry and reflection
- facilitates the transfer of new skills into practice
- promotes collaboration (Zepeda S. J., 2012).

The Australian Institute for Teaching and School Leadership (AITSL) (2014, p. 18) defined transference as being concerned with aspects of the learning design that directly support *the application of learning, in context*. AITSL noted the following:

> *transference may be supported directly through tailored materials and resources embedded within the learning to provide scaffolds for using the learning in context, such as templates, guides or outlines.*

> *Alternately, transference may occur through the combination of elements within the learning design, for example: a series of learning experiences encouraging participants to reflect on implications of a new concept as part of a broader inquiry; examination of student data to determine needs and approach; receiving feedback from observation, linking this to theory.*

> *Deeper understanding and transference are supported by multiple opportunities to learn through a range of activities focused on content aims.*

In making the connection between job-embedded learning and PD, Darling-Hammond, Hyler and Gardner (2017, p. 5) report that effective PD is commonly job embedded, meaning the PD is situated in teachers' classrooms with their students. They noted that job-embedded PD provides teachers with opportunities to study their students' work (Doppelt, et al., 2009), test out new curriculum with their students (Penuel, Gallagher, & Moorthy, 2011), or study a particular element of pedagogy or student learning in the content area (Meissel, Parr, & Timperley, 2016). Timperley (2008, p. 11) saw job-embedded learning as addressing the integration of theory and practice commenting that *in effective professional development, theories of curriculum, effective teaching, and assessment are developed alongside their applications to practice.*

As with other principles described within this paper there are a range of approaches to embedding professional learning in schools and classrooms.

Yendell-Hoppey & Dana (2010, p. 6) cite the National Staff Development Council's (NSDC's) vision of high-quality professional development as being conducted among educators at schools facilitated by well-prepared school principals and school-based professional development coaches, mentors, or other teacher leaders. The NSDC's vision of job-embedded professional development is that it "occurs several times per week among established teams of teachers, principals, and other instructional staff members where the teams of educators engage in a continuous cycle of improvement" (NSDC, 2009). The emphasis is on systematic, planned, intentional, and regularly scheduled efforts to embed teacher learning within teachers' daily lives.

Artman et al (2015, pp. 183-184) identified coaching as one of the implementation practices that enhances the fidelity of PD in EC settings. They consider coaching essential for supporting ongoing implementation of evidence-based intervention practices (Joyce & Showers, 2002; Rush & Shelden, 2011). They note the body of literature dedicated to unpacking the characteristics of effective coaching (cf. Snyder et al., 2012), which makes a strong case that effective coaching must be sustained, systematic, and directly linked to the intervention practice(s) (Sheridan, Edwards, Marvin, & Knoche, 2009).

Other research literature conceptualises teachers' professional development as a learning process that is embedded within the context of the school, that takes place in the workplace and during teachers' entire career (e.g., Putnam and Borko, 2000; Sleegers et al., 2005, Smylie and Hart, 1999). Within this conceptualisation, teachers are expected to actively engage in work-related learning activities (Geijsel, Sleegers, Leithwood, & Jantzi, 2009; Kwakman, 2003). Moreover, by participating in a variety of professional activities within the school context, teachers stimulate both their own professional development and the development of the school, and thus make a significant contribution to improve educational practice (Smylie & Hart, 1999; Runhar, Sanders, & Yang, 2010, p.1154).

How this principle could be addressed in the NSW context

Courses in NSW will meet this principle by providing:

- examples of how course content can be used in teaching and learning practice; or
- opportunities for transference of learning into teaching and learning practice.

Courses in NSW could further address this principle by:

- requiring participants to implement learning from the course content into their practice
- including opportunities for participants to confirm the learning has contributed to improved practice.

Models of/modeling effective teaching practice

Darling-Hammond, Hyler & Gardner (2017) reviewed evidence in support of this principle. They report that:

> *PD that utilizes models of effective practice has proven successful at promoting teacher learning and supporting student achievement. Curricular and instructional models and modelling of instruction Modelling helps teachers to have a vision of practice on which to anchor their own learning and growth. The various kinds of modelling can include*

- video or written cases of teaching,
- demonstration lessons,
- unit or lesson plans,
- observations of peers, and
- curriculum materials including sample assessments and student work samples.
  (p. 11)

They concluded from their review that the importance of providing professional learning in conjunction with model curriculum and classroom materials should not be underestimated (p. 12). Relevant studies reported on by these authors are summarised below.

The first by Heller et al. (2012, p. 333) was based on a large-scale study which compared three different interventions with the performance of a control group. The three interventions were: a *Teaching cases* course with discussion of prestructured cases of classroom practice (Barnett-Clarke & Ramirez, 2004); a *Looking at student work* course involving analysis of teachers' own student work in conjunction with concurrent teaching (Little, 2004; Little, Gearhart, Curry, & Kafka, 2003); and a *Metacognitive analysis* in which teachers engage in metacognitive reflection on their own learning experience (White, Frederiksen, & Collins, 2009).

They found all three courses raised teacher and student test scores well beyond those of the control group, and the effects were even stronger a year later (p. 356). They comment that based on their findings that *policy makers should invest in professional development that emphasises analysis of student learning, pedagogy, and content, rather on focusing on general pedagogy or purely content* (p. 356).

The second study undertaken by Kleickmann et al. (2016) found that long term professional development where teachers were provided with expert scaffolding in their use of educational curriculum materials teachers who had higher student achievement than those teachers who had access only to the curriculum materials. They concluded:

> *We found clear evidence in favour of the superior effectiveness of scaffolded PD in proximal teacher outcomes, teachers' instruction, and student achievement (p. 40).*

Further, Doppelt et al. (2009) studied the effects of professional development on student achievement of a newly implemented curriculum. Teachers participated collaboratively in active learning based on the new curriculum, engaged in the model lessons, reflected during workshops on instructional activities in their classrooms, shared student work and instructional materials and actively discussed and reflected on their teaching. They concluded:

> *This study further leads us to believe that not only are the individual features of the PD important, but the combination of all three is powerful. For example, the collaborative community builds around the active learning activities, and then the distributed workshops allow lessons from the classroom to be shared within the community. Active learning activities make salient the challenging features of the curriculum, which later workshops can then build upon by connecting pedagogical content knowledge questions that arise in the classroom with experiences from prior workshops.*

Of this study, Darling-Hammond, Hyler & Gardner (2017, p. 12) note:

> *Students whose teachers used the new curriculum and participated in PD had statistically greater achievement than those students whose teachers used the new curriculum with no PD. Even more significant, achievement for students of those teachers who continued to use the older standard curriculum was greater than that of those students whose teachers used the new curriculum with no PD (Doppelt, et al., 2009). That suggests that students were better off if their teachers did not attempt to utilize new curricular materials without effective PD supporting them.*

A further study by Polly et al. (2015, p. 28) comprised a large-scale study held over three years. The theoretical framework underpinning the project "Learner-centered professional development" focused on student learning data to identify the focus of activities and provide teachers with active learning experiences that give them some ownership of their activities while simultaneously developing knowledge of content and pedagogy. Ongoing support was provided through collaboration with colleagues and more knowledgeable professionals who assisted teachers to implement new pedagogies in their classroom through reflective activities that allow teachers to process their learning.

The study found that the project was associated with statistically significant changes in teachers' enacted practices, and gains in teachers' Mathematical Knowledge for Teaching (MKT). There were also statistically significant relationships between teachers' mathematical knowledge for teaching post-test score and student achievement as well teachers' change in beliefs. (p. 34)

It is worth noting that a significant feature of the initiatives above is extended duration and multiple engagements of teachers with extensive support offered by the programs.

How this principle could be addressed in the NSW context

Courses in NSW will meet this principle by:

- explicitly unpacking for participants, models of effective evidence-based teaching and learning practices relevant to the course content. This could involve modelling the evidence-based teaching and learning practices;

and/or

- requiring participants to utilise these models of effective evidence-based teaching and learning practices.

Supports Active Collaboration

Active collaboration between teachers is recognised by a number of researchers as having a significant impact on the effectiveness of professional learning. For example, Darling-Hammond, Hyler & Gardner (2017) commented in their report of factors impacting on the effectiveness of PD:

> *High-quality professional development creates space for teachers to share ideas and collaborate in their learning, often in job-embedded contexts that relate new instructional strategies to teachers' students and classrooms. By working collaboratively, teachers can create communities that positively change the culture and instruction of their entire grade level, department, school, and/or district. "Collaboration" can span a host of configurations—from one-on-one or small group collaboration to schoolwide collaboration to collaboration with other professionals beyond the school (p. 9).*

and

> *Teacher learning in a community can be a source of efficacy and confidence in the process of adopting new practices. (p. 18).*

Loughlan & Ryan (2020, p. 1) report that *collaboration between teachers is critical to the effectiveness of their professional learning*. They note that agentive collaboration between teachers is an important feature of professional learning which distinguishes it from professional development where teachers' learning is directed by the provider. They note:

> *… mastery of the discipline and the pedagogic craft is enhanced by the constructs of collaboration, trust, respect and dialogic approaches to learning and leading. Strategies that enable these elements across an ongoing program of professional learning should be a key focus in development programs for future leaders in schools (p. 9).*

Timperley (2008, p. 19) emphasised the importance of active collaboration and the need for such collaboration to be focused on student outcomes which can help teachers integrate new

learning into existing practice. The research also supports the idea that professional learning should be practical, and job embedded (Australian Institute for Teaching and School Leadership, 2014, p. 2). It might include mentoring or coaching (Darling-Hammond, Hyler, & Gardner, 2017, pp. 12-13) and should be contextually relevant to the participants (Darling-Hammond, Hyler, & Gardner, 2017, p. 11).

How this principle could be addressed in the NSW context

Courses in NSW will meet this principle by providing:

▪   opportunities within the course for active collaboration with others;

and/or

▪   suggestions for collaboration that participants undertake int heir educational setting or teaching and learning context.

Courses in NSW could further address this principle by requiring:

▪   participants to collaborate actively throughout and between course episodes
▪   participants to work with others in the planning and implementation of new learning into practice to improve student outcomes.

Supports opportunities for feedback and reflection

This principle recognises the importance of creating professional development opportunities that provide time for teachers to receive feedback and to reflect on and change their practice. Darling-Hammond, Hyler & Gardner (2017, p. 14) synthesised the results of 35 research papers that discussed feedback and reflection. They noted:

High-quality professional learning frequently provides built-in time for teachers to think about, receive input on, and make changes to their practice by facilitating reflection and soliciting feedback. Feedback may be offered as teachers analyze lesson plans, demonstration lessons, or videos of teacher instruction, which also provide opportunities for reflection about what might be refined or retained and reinforced. These activities are frequently undertaken in the context of a coaching session or workshop, but may also occur among peers.

While feedback and reflection are two distinct practices, they work together to help teachers move thoughtfully toward the expert visions of practice that they may have learned about or seen modelled during PD.

In effective PD programs, the practices of generating feedback and supporting reflection often include opportunities to share both positive and constructive reactions to authentic instances of teacher practice, such as lesson plans, demonstration lessons, or videos of instruction (Gallagher, Woodworth, & Arshan, 2017; Johnson & Fargo, 2010; Landry, Anthony, Swank, & Monseque-Bailey, 2009; Powell, Diamond, Burchinal, & Koehler, 2010). These activities are frequently undertaken in the context of a coaching session (Allen, Hafen, Gregory, & Mikami, 2015; Allen, Pianta, Gregory, Mikami, & Lun, 2011; Gallagher, Woodworth, & Arshan, 2017; Powell, Diamond, Burchinal, & Koehler, 2010) or a group workshop facilitated by an expert. (Johnson & Fargo, 2010; Lara-Alecio, et al., 2012; Taylor, Roth, Wilson, Stuhlstaz, & Tipton, 2017; Roth, et al., 2011). In a few cases, feedback was shared among teachers (Gallagher, Woodworth, & Arshan, 2017; Johnson & Fargo, 2010). In each of these settings, effective PD programs leveraged feedback and opportunities for reflection to create richer environments for teacher learning.

Bates & Morgan (2018) commented that feedback and reflection are critical components of adult learning theory, often employed during mentoring and coaching but are not limited to these spaces. They commented:

feedback and reflection are two distinct but complementary processes and are both part of effective professional development. Feedback and reflection are critical to deepening knowledge and understanding (Schön, 1987). In some models of professional development, especially those characterized as one-shot learning, there is often no time for feedback or reflection. (p. 625)

They reported on the conditions of effective feedback and reflection noting that feedback is most helpful when it is constructive and not critical and provided in conditions where there is a sense of community involving trusting relationships and the ability of those involved to position themselves as co learners. Feedback provided in the absence of these conditions can be internalized as negative and can be detrimental.

Further, feedback directly connected to concrete data provides a focus on improving practice and supporting students and ties the resulting goals to improving instruction (Petersen, Taylor, Burnham, & Schock, 2009). Grounding feedback in behavioural evidence also illuminates the process of using observational data as the foundation of instructional decision making (Clay, 2001; Fountas & Pinnel, 2009). Bates & Morgan (2018) conclude:

> *Part of receiving feedback is the way that teachers reflect on that feedback. If suggestions about practice are made and teachers do not spend time thinking about what that means for their individual practice, chances are there will be no resulting change. Being a reflective practitioner means a number of things but connecting feedback and reflection in a symbiotic way can deepen learning. When this occurs, teachers see feedback and reflection as contingent on their instructional practices and student outcomes (p. 625).*

How this principle could be addressed in the NSW context

Courses in NSW will meet this principle by:

- requiring participants to give or receive feedback on teaching and learning practice

and/or

- requiring participants to reflect on their own teaching and learning practice or the teaching and learning practice of others.

Courses in NSW could further address this principle by:

- providing multiple opportunities for participants to give or receive feedback on teaching practice and/or to reflect on their own practice or the practice of others

- requiring participants to plan for and/or modify teaching practice based on reflection and feedback.

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