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Quality Teaching: A Literature Review for Northern Gateway Public Schools

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April 30, 2018

Acknowledgements

We wish to thank Northern Gateway Public Schools for sponsoring this literature review and for the oversight provided by Leslee Jodry, Assistant Superintendent and the district Steering Team members. We would like to extend our gratitude for the foundational research provided by Dr. Sharon Friesen, Vice Dean of the Werklund School of Education and her words of wisdom provided in the foreword. We also wish to thank Miriam Ramzy, Phd candidate from the Werklund School of Education for reviewing drafts and providing valuable feedback.

Abstract

The purpose of this literature review is to synthesize the body of work that can inform quality teaching. In this literature review the authors draw on a combination of literature gathered by the Northern Gateway Public School District and their Steering Team as well as literature gathered by researchers. The literature review is organized according to four key dimensions of quality teaching: teacher as designer, teacher as engaged professional, teacher as expert in pedagogical knowledge and teacher as cultivator of quality learning environments. The dimensions are linked to Friesen's (2009) principles of Teaching Effectiveness. Implications for teachers and school leaders are synthesized at the end of the literature review.

Keywords: quality teaching, pedagogy, pedagogical knowledge, optimum learning

Foreword

Articulations of quality teaching have evolved over time. In the first part of the 20th century, quality teaching was typically thought of qualities embodied by the teacher i.e., high moral character: abstinence from dancing, immodest dressing; contributions to the community. While teacher contracts requiring teachers to attest to such virtues is no longer common in Canada, the notion of virtue remains as ethics and moral behaviour in some contemporary documents.

Following WWII personality and character traits—such as curiosity, enthusiasm, and compassion started to emerge in definitions of quality teaching. At the time of Sputnik, teacher quality started to be framed in terms of technical skills that teachers brought to the classroom, rather than morality, personality, or character traits. It was during this time that student achievement appeared as a marker of teaching quality.

Since the beginning of the 21st century an explosion of new research in learning occurred. Prior to the year 2000, when asked most people indicated that teachers were experts in teaching. However, the contemporary research literature is clear, teachers must be experts in learning, and teaching is the profession, much like doctors are experts in medicine and not doctoring and lawyers are experts in the law not lawyering. Shifting the emphasis from teaching to learning is not a trivial matter. As experts in learning, teachers need to understand how people learn; how to design learning to engage students intellect—hearts, minds, hands—in work that is worthy of a student’s time and attention; how to provide each learner with accurate timely feedback that advances the student’s learning; how to use the assessment information to inform and guide their teaching; how to make what needs to be learned learnable (also known as pedagogical content knowledge); and how to select the most appropriate resources to support, advance, and sustain students’ learning. In short, quality teaching requires the obligation to understand diversity as a strength, the ability to sponsor deep learning in every student, and the commitment to creating a robust learning environment.

It is not clear how quality teaching might evolve over the next 20 years. What is clear now, is that students are active agents in their learning. Indeed, schools are places where students and their teachers live their lives. One biggest challenges facing education today is enacting what is currently known about learning and learning environments—quality teaching.

Dr. Sharon Friesen

Overview

Purpose: The purpose of the literature review is to synthesize literature that can inform the articulation of **quality teaching** in a district with a core value that is distinctly student-centered and focused on providing optimum learning for all students.

The **District Core Value:** *We are here for students, to ensure learning, regardless of the challenges.*

The District Steering Team provided a list of authors guiding their work in articulating quality learning environments. In this literature review, we expand on this body of literature to help provide recommendations regarding the key dimensions identified by the Steering Team and how this can further inform an articulation of quality teaching within quality learning environments.

Guiding question for the literature review:

The overarching question guiding the literature review:

How does an examination of contemporary literature inform the articulation of quality teaching?

Introduction

There are many definitions of quality learning environments and terms used synonymously with “quality” (i.e. optimal, effective, efficient, etc.). However, authors generally agree that quality learning environments describe a student-centered learning environment with teachers as designers of learning and responsive to all student needs. The educational context within Alberta has also evolved to identify more readily the need to cultivate a learning environment which is embedded in a vision clearly shifting from an industrial model of education towards contemporary learning environments focused on engaging all students in learning. School jurisdictions in Alberta are currently in the process of enacting Professional Practice Standards for teachers and school leaders. The common through line among the professional practice standards is that all teachers and school leaders support optimum learning for *all* students. For example, the Teaching Quality Standard (Alberta Education, 2018) includes the following description of quality teaching:

Quality teaching occurs when the teacher’s ongoing analysis of the context, and the teacher’s decisions about what pedagogical knowledge and abilities to apply, result in optimum learning for all students. (p. 3)

Key documents supporting Alberta’s teachers (e.g. Guiding Framework for Curriculum (Alberta Education, 2016); Ministerial Order (Alberta Education, 2013a); Learning and Technology Policy

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Framework (Alberta Education 2013b); Teaching Quality Standard (Alberta Education, 2018); Teaching Effectiveness Framework (Friesen, 2009); Promising Practices in Supporting Success for Indigenous Students (OECD, 2017)) reinforce what is needed to help foster the competencies¹, skills and outlook for today's students to be positive citizens and successful learners not only for tomorrow but the future.

Within the last three years, Northern Gateway Public Schools (NGPS) has progressively focused their educational planning and professional learning on supporting students in meeting academic standards, narrowing the achievement gap for their Indigenous students, providing supports to teachers to help further cultivate inclusive learning environments as well as many other approaches to support a student focused approach in teaching and learning (NGPS, 2017). As a result, this literature review will utilize the existing foci of the district and weave in current research as a means to support the district's continued commitment to the advancement of quality learning environments for all their students.

¹ Competencies are combinations of knowledge, skills and attitudes that students develop and apply for successful learning, living and working. They emphasize aspects of learning that apply within and across all subject areas - <https://education.alberta.ca/media/3115408/competencies-overview-may-17.pdf>

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In this literature review, four broad dimensions of quality teaching are discussed and linked to the principles in the Teaching Effectiveness Framework (Friesen, 2009). These principles are also discussed as images of robust teaching and learning in the Alberta Framework for School System Success (Brandon, Hanna, Morrow, Rhyason & Schmold, 2013). The four broad dimensions are all interconnected with a central focus of designing for optimum learning for all students as shown in Figure 1. A design-based approach involves an iterative process of design, enactment, evaluation, and redesign as expressed through the four dimensions of quality teaching in center of the diagram (Friesen & Jacobsen, 2015). This situates the teacher as designer. Also, as an engaged professional, the teacher develops collaborative relationships and is continually learning with colleagues throughout the design process. Pedagogical knowledge, including intentional curricular² planning and purposeful assessment, is another critical component of using a design-based approach. The design process also requires teachers to continually cultivate a quality learning environment through responsive instruction and fostering a positive classroom culture. These four broad dimensions of quality teaching are discussed in the literature review: (1) teacher as designer, (2) teacher as engaged professional, (3) teacher as expert in pedagogical knowledge and (4) teacher as cultivator of a quality learning environment; the dimensions of quality teaching can provide a strong foundation where learners are supported and learners are successful.

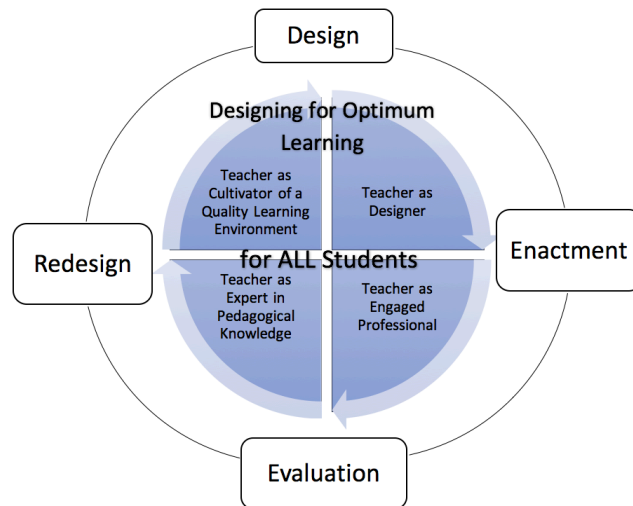


Figure 1. Quality teaching within quality learning environments where learners are supported and learners are successful

² Bransford, Brown & Cocking (2000) describe curricular planning as a network of connections: The curricula include the familiar scope and sequence charts that specify procedural objectives to be mastered by students at each grade: though an individual objective might be reasonable, it is not seen as part of a larger network. Yet it is the network, the connections among objectives, that is important. This is the kind of knowledge that characterizes expertise” (p. 138-139).

Section 1: Teacher as Designer

In the teaching effectiveness framework, Friesen (2009) describes teachers as designers of learning:

Require[s] teachers to enter an iterative cycle of defining, creating, assessing and redesigning that is essential in creating effective learning environments in which students inquire into questions, issues, and problems; build knowledge; and develop deep understanding. (p. 5)

Design for a knowledge creating system. Contemporary learning environments are often referred to as knowledge creating systems (Chen & Hong, 2016; Guerriero, 2017; Scardamalia & Bereiter, 2006). This places design at the center of the system with the assumption that everyone in the system is working towards knowledge creation. In other words, in a school all students and adults are working together towards advancing knowledge instead of simply transmitting or receiving knowledge and disciplinary understanding. When design is at the center of the work in schools, the teacher is the designer of learning. The student is an important member of the knowledge building community (Scardamalia & Bereiter, 2006). Learning designs require engaging students in a design-mode as this is a critical mindset to undertake creative work with ideas (Ritchhart & Perkins, 2008). Contemporary or quality learning environments shift the role of teacher from teaching what is already known to designing learning for the unknown or what is not yet understood; the role of student shifts from a recipient of learning to a contributing member of the learning community. *Teachers are designing knowledge creating systems with opportunities for everyone to be contributing members in the learning community.*

Design for deep learning. Researchers argue for models of teaching and learning that develop deep learning or dispositions that young people need to create new knowledge (Fullan & Langworthy, 2014). Deep learning is considered a process and not an achievement at the end of a learning experience (Mayer, 2010; Pellegrino, 2017). Flow theory is often used to describe the deep absorption or learning that can occur during intellectually demanding experiences that are also enjoyable (Csikszentmihalyi, 1990). “Through deeper learning, individuals not only develop expertise in a particular discipline, they also understand when, how and why to apply that they know. They recognize when new problems or situations are related to what they have previously learned, and they can apply their knowledge and skills to solve them” (Pellegrino, 2017, p. 229). Through flow experiences, students are engaged in learning and can develop competencies commonly referred to as 21st century skills, standards, or essential learning outcomes. Studies show both academic intensity (not too easy) and a positive emotional response are needed to experience deep learning (Jacobsen, Friesen & Brown, 2017; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003). For example, in a study with high school students in the U.S., Shernoff et al. (2003) found learners were more engaged when provided with an appropriate level of challenge for their skill level in both individual and group work activities. *Teachers are designing engaging learning experiences with opportunities for deep learning to occur.*

Design for a digital age. The learning sciences inform the future of learning and how learning environments should be designed to help students develop deep knowledge and adaptive expertise (Sawyer, 2014). As the digital age continues to evolve, a teacher's role as designer of learning is important in order to design real world opportunities and contextualize learning in a way that supports the development of critical competencies in technology-enhanced learning environments (Alberta Education, 2013b; Benade, 2015; Mayer, 2010). It is important for teachers to consider how learning needs to be designed for increasingly digital learning environments (Friesen, 2009; Wiske, Franz & Breit, 2005). For example, in a study with early learners in Alberta, Jacobsen et al. (2017) observed intellectual engagement in classrooms when young students were working in pairs or groups and using a range of technologies and processes in real-world ways. Students can use the power of pervasive digital tools and resources for deep learning and knowledge creation instead of relying on technology only for knowledge consumption purposes (Ritchhart & Perkins, 2008; Benade, 2015; Fullan & Langworthy, 2014). *Teachers are designing for the digital age with opportunities for learners to use technology in meaningful ways.*

Summary:

In this section, we discussed the dimension of quality teaching referred to as Teacher as Designer. Drawing on Friesen's (2009) principle of teaching effectiveness (Principle 1 – Teachers are Designers of Learning), three aspects of design work are provided as examples: (1) Teachers are designing knowledge creating systems with opportunities for everyone to be contributing members in the learning community. (2) Teachers are designing engaging learning experiences with opportunities for deep learning to occur. (3) Teachers are designing for the digital age with opportunities for learners to use technology in meaningful ways. Teachers are now more than ever, designing for deep learning (Fullan & Langworthy, 2014; Robinson, 2011).

Section 2: Teacher as Engaged Professional

In the teaching effectiveness framework, Friesen (2009) describes teachers improving their practice in the company of their peers:

For far too long, teachers have worked in isolated classrooms with only brief interludes in the staffroom to discuss professional learning. Research is clear, however, that teachers improve their practice and hence, their effectiveness, in the company of their peers. (p. 6)

Professional learning in the company of peers. As engaged professionals, teachers shift their thinking from professional development to professional learning (Timperley, 2011). In a culture of professional learning, teachers work together and interact with their colleagues in meaningful ways. This supports teachers learning not only when they attend one-off workshops but embeds professional learning in the workplace (DuFour, DuFour, Eaker & Many, 2010). Such a culture also promotes the work of continuous improvement into teaching practice (Earl, 2008; Wiliam, 2011). Moving from classrooms with isolated practices, teachers form collaborative professional relationships where they develop interdependence (Johnson, 2012) which fosters a shared responsibility and collective ownership (Hargreaves & Shirley, 2012) for student learning. Furthermore, this can help limit the barrier of within-school variability (Hattie & Yates, 2014) that can impact student learning and maximize high quality teaching. Ronfeldt, Farmer, McQueen, and Grissom (2015) found that when teachers engaged in quality collaboration in teams this had positive impacts on both teacher performance and improvements in student learning. Likewise, critical reflective practice can be leveraged in professional learning communities where research is embedded and time is provided for teachers to engage in an iterative design process to inform their practice (Benade, 2015). Teachers are engaging in critical reflective practice in networked professional learning communities and utilizing technology to access educator expertise beyond the local community (Fullan & Langworthy, 2014). *Teachers are engaging in professional learning in the company of peers in physical and digital learning spaces.*

Professional learning centered on student learning through cycles of inquiry. The nature of these collaborative professional relationships should reflect both focus and depth with a critical examination of teaching practices (Yuang & Zhang, 2016). Keeping students as their central focus, teachers work with colleagues and leaders to engage in ongoing cycles of teacher inquiry and in evidence-informed conversations (Earl, 2008; Timperley, 2011). These cycles of teacher inquiry involve identifying student needs, designing strategies/activities to meet needs, and then evaluating the impact on student learning (Timperley, 2011). In their role as teacher as designer of learning (Friesen, 2009), these cycles of inquiry provide teachers with evidence to support their instructional decision making, allow for intentional design to engage learners, and alignment to balanced assessment practices (Stiggins, 2017). Research findings show that teachers who were engaged more readily in critical reflective practice, individually and collaboratively, were more likely to intentionally maintain approaches that worked well and change other approaches that could be improved (Benade, 2015). The engaged professional

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puts students at the center of their collaborative professional relationships in order to sharpen their professional practice and ensure that all students are successful. *Teachers are engaging in professional learning involving cycles of inquiry.*

Summary:

In this section, we discussed the dimension of quality teaching referred to as Teacher as Engaged Professional. Drawing on Friesen's (2009) principle of teaching effectiveness (Principle 5 – Teachers improve their practice in the company of their peers), two aspects of being an engaged professional are provided as examples: (1) Teachers are engaging in professional learning in the company of peers in physical and digital learning spaces. (2) Teachers are engaging in professional learning involving cycles of inquiry centered around student learning.

Section 3: Teacher as Expert in Pedagogical Knowledge: Intentional Curricular Planning & Purposeful Assessment

In the teaching effectiveness framework, Friesen (2009) describes the work students are asked to undertake is worth their time and attention and assessment practices should improve student learning and guide teaching:

In addition to incorporating disciplinary and interdisciplinary perspectives, the work teachers' design for students is personally relevant and connected to the worlds in which they live, both in and outside of school. . . . In contemporary learning environments, assessment should make up a large part of the school day, not in the form of separate tests, but as a seamless part of the learning process. (p. 5)

Learning designs require deep disciplinary understanding so teachers can make connections between the complexities of the real-world to existing bodies of disciplinary understanding (Scardamalia & Bereiter, 2006; Chen & Hong, 2016). Learning designs also require expertise in pedagogical knowledge. Shulman (1986, 1987) proposed the concept of pedagogical content knowledge as an integration of disciplinary or content knowledge with pedagogical knowledge of the discipline. Research demonstrates there is a positive relationship between pedagogical knowledge and improved student learning outcomes (Guerriero, 2017). For purposes of this review, we will use the OECD definition of pedagogical knowledge as the “body of knowledge of teachers for creating effective teaching and learning environments for their students” (Guerriero, 2017, p. 13) with the understanding that pedagogical knowledge includes deep disciplinary understanding.

Intentional curricular planning. Marzano, Pickering, and Pollock (2001) argue that student success does not just happen organically; teachers' knowledge of the disciplines in which they instruct is critical to knowing how to craft authentic and meaningful learning opportunities for students. Pedagogically, having an awareness of how students learn, their interests, and potential areas for growth can help teachers craft and employ targeted approaches to teaching and learning (Robinson, 2011; Marzano, 2009). Thomas and Brown (2011) assert effective planning for teachers includes not only knowing the curricular outcomes and having a level of mastery within their own disciplines to which they instruct, but also organizing the curriculum into meaningful themes or manageable learning opportunities. The latter can support teachers as they design learning and attempt to implement different instructional methodologies such as problem based learning, discipline based inquiry, cooperative learning, deeper learning, and other similar approaches (Thomas & Brown, 2011). *Teachers design learning intentionally integrating content knowledge and pedagogical knowledge of the discipline.*

Purposeful assessment. The competencies embedded in the Ministerial Order (Alberta Education, 2013a) as well as the Framework for Student Learning (Alberta Education, 2011) all reinforce the importance for teachers to design assessment-for-learning as part of day-to-day practice. Teachers may also utilize other types of assessments, such as benchmarks, to provide a baseline to approach instruction and assessment in a strength based way as well as support

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students more intentionally in working with new knowledge (Stiggins, 2006; Marzano, 2009; Timperley, 2008; Wiliam, 2011). It is important to know how, when, and why to embed assessment strategies to help move the learning forward for students and to help inform the next steps for the teacher (Davies, 2007; Stiggins, 2006; Wiliam, 2011).

Designing assessments should rely on evidence collected from multiple sources working together to inform decisions that both support and verify student learning (Davies, 2007; Wiliam, 2011). Discerning a student's prior knowledge or using baseline diagnostics to ascertain grade level functioning can aid in supporting instruction planning as well as more targeted assessment practices (Hattie & Timperley, 2007; Stiggins, 2006). Embedded assessment that involves ensuring students know the learning goals by making outcomes visible in the classroom can help support learning; the development and usage of a common language around assessment can help students become stewards of their learning (Hattie & Timperley, 2007; Wiliam, 2011).

The following five research-informed strategies are key to designing formative assessment as part of day-to-day practice:

1. Clarifying, sharing, and understanding learning intentions and criteria for success
2. Engineering effective classroom discussions, activities, and learning tasks that elicit evidence of learning
3. Providing feedback that move learning forward
4. Activating learners as instructional resources for one another
5. Activating learners as owners of their own learning. (Wiliam, 2011)

Teachers draw on research-informed strategies to purposefully embed assessment when designing learning.

Summary:

Instructional and assessment practices should be accessible for all different types of learners and pedagogically, the classroom culture needs to reflect a restorative, growth, and achievement focused environment (Hansen & Ringdal, 2018; McCluskey, Gwynedd, Kane, Riddell, Stead & Weedon, 2008; Timperley, 2008). In this section, we discussed the dimension of quality teaching - Teacher as Expert in Pedagogical Knowledge. Drawing on Friesen's (2009) principles of teaching effectiveness (Principle 2 – Work students are asked to undertake is worth their time and attention; and Principle 3 – Assessment practices improve student learning and guide teaching), two aspects of pedagogical knowledge are provided as examples: (1) Teachers design learning intentionally integrating content knowledge and pedagogical knowledge of the discipline. (2) Teachers draw on research-informed strategies to purposefully embed assessment when designing learning.

Section 4: Teacher as Cultivator of Quality Learning Environments: Culturally Responsive Instruction & Positive Classroom Culture

In the teaching effectiveness framework, Friesen (2009) describes effective learning environments where teachers foster a variety of interdependent relationships:

Pedagogical (teacher to student); peer (student to student); community (student to others outside of school); and, student to the subject disciplines they are learning about.

Relationships are critical in educating students not only for skills needed in the work place, but also in building social cohesion and producing minds that thirst to build knowledge throughout the course of their lives. (p. 6)

Culturally Responsive instruction. Today's classrooms are increasingly diverse and it is important for teachers to consider student diversity by providing culturally responsive instruction. Culturally responsive instruction is defined as "a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes" (Ladson-Billings, 2009, p. 20). Authors recognize culturally responsive instruction is not about using different teaching methods for students with different backgrounds (Routman, 2014). Culturally responsive instruction calls on teachers to pay attention to the classroom culture and attend to student differences by making instructional decisions that are responsive to the learners (Ritchhart, Church & Morrison, 2011; Tomlinson, 2014). This view aligns with Dewey's earlier arguments of basing work on students' interests and connecting instruction to students' lives. In other words, teachers need to include student perspectives for culturally responsive instruction and need to anticipate and be responsive to student learning needs (Tomlinson, 2014). *Teachers design learning with attention to providing culturally responsive instruction.*

Positive classroom culture. As a designer of learning, the physical, socio-emotional, and structures within the classroom are all a part of cultivating a positive classroom culture (Marzano & Pickering, 2011). Classrooms are learning spaces; their essence needs to reflect the purpose(s) as well as the consideration of how students learn in relation to the space they need (Barrett, Zhang, Davies & Barrett, 2015; Robinson, 2011). A classroom should reflect active learning, areas for collaboration, multiple furnishing mediums for sitting and standing, quiet spaces as well as elements of the external environment (Barrett et al., 2015; Robinson, 2011). Learning designs that promote exploration and collaboration can occur in this type of learning space (Anderson, Hamilton & Hattie, 2004; Robinson, 2011).

In accordance with the physical classroom, teachers can mindfully construct a positive culture by co-creating classroom norms with students which reflect positive citizenship, respect, a positive communication, and collaborative environment as well as constructs that help students see the classroom as a true learning community (Borba, 2001; Marzano & Pickering, 2011). Hansen and Ringdal (2018) identified principles that should help shape a positive classroom

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culture and instruction which included considerations of student engagement in the learning process, supporting emotional connections when learning (i.e. empathy), and the importance of building in opportunities for students to understand other perspectives in accordance with academic processes. Furthermore, social learning is an important construct for teachers to consider as they create learning environments in their classrooms and throughout the school (Borba, 2001; Anderson et al., 2004). Social learning can also correspond to student resilience: the ability for students to weather setbacks, failure, and personal challenges (Masten, 2011; Shanker, 2013) and building moral capabilities, such as empathy, conscience, self-control, respect, kindness, tolerance, and fairness (Borba, 2001). Classroom cultures which focus on relationship development, confidence building, trust, safety, and positivity can provide the needed supports for students that would otherwise feel marginalized (Shanker, 2013). This type of environment can also provide a culture where students can learn from mistakes and see failure as an opportunity to develop as a learner (Dweck, 2008; Lee et al. 2013; Long, 2012; Masten, 2011). This also connects to the district's continued focus on supporting Indigenous populations (NGPS, 2017). *Teachers design learning to promote a positive classroom culture and safety in taking risks for learning.*

Summary:

In this section, we discussed the dimension of quality teaching referred to as Teacher as Cultivator of Quality Learning Environments. Drawing on Friesen's (2009) principles of teaching effectiveness (Principle 4 – Teachers foster a variety of interdependent relationships), two aspects of quality learning environments are provided as examples in relation to interdependent relationships: (1) Teachers design learning with attention to providing culturally responsive instruction. (2) Teachers design learning to promote a positive classroom culture and safety in taking risks for learning.

Section 5: Summary

In the first section of the review, we discussed the dimension of quality teaching referred to as teacher as designer. In this section, we linked to Friesen's (2009) principle of teaching effectiveness, Principle 1 – Teachers are Designers of Learning.

In the second section of the review, we discussed the dimension of quality teaching referred to as Teacher as Engaged Professional. In this section, we linked to Friesen's (2009) principle of teaching effectiveness, Principle 5 – Teachers improve their practice in the company of their peers.

In the third section of the review, we discussed the dimension of quality teaching referred to as Teacher as Expert in Pedagogical Knowledge. In this section, we linked to Friesen's (2009) principles of teaching effectiveness, Principle 2 – Work students are asked to undertake is worth their time and attention; and Principle 3 – Assessment practices improve student learning and guide teaching.

In the fourth section of the review, we discussed the dimension of quality teaching referred to as Teacher as Cultivator of Quality Learning Environments. In this section, we linked to Friesen's (2009) principles of teaching effectiveness, Principle 4 – Teachers foster a variety of interdependent relationships.

Section 6: Implications for Teachers and Leaders

Implications for teachers

Teachers play a crucial role in creating quality learning environments that support all students. The following section outlines some of the key recommendations for teachers from the literature addressing the aforementioned dimensions for quality teaching:

Teacher as designer

- Design learning that fosters both intellectual and academic engagement (Friesen, 2009)
- Create opportunities for students to work collaboratively (Barrett et al., 2015)
- Provide multiples ways for students to engage, express and represent their learning (Al-Azawei, Serenelli & Lundqvist, 2016; National Center on Universal Design for Learning, 2017)
- Design inquiry based tasks that focus on deep understanding and engage students in authentic tasks that reflect the work of that discipline (Friesen, 2009; Thomas & Brown, 2011)
- Find ways to integrate technology effectively into the classroom; encourage students to use technology for knowledge creation (Benade, 2015; Fullan & Langworthy, 2014)

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- Use a balanced approach to assessment where assessment is woven through the learning design that involves both the student and the teacher (Friesen, 2009; Wiliam, 2011)

Teacher as engaged professional

- Join and/or form a professional learning community or work with existing teaching teams and engage in ongoing inquiry into teaching practices and their impacts on student learning
- Examine evidence of student learning to evaluate the impact of teaching practices and make any necessary adjustments (Timperley, 2011)
- Access expertise when required (Fogarty & Pete, 2009)
- Engage in evidence-informed conversations with leadership and colleagues to maintain a student-centered focus (Earl, 2008; Timperley, 2011)

Teacher as expert in pedagogical knowledge

- Gain mastery in (content/teaching) discipline to design authentic and effective learning experiences for students (Guerriero, 2017; Thomas & Brown, 2011)
- Use Wiliam's (2011) five strategies for formative assessment to facilitate a day-to-day balanced approach to assessment

Teacher as cultivator of quality learning environments

- Make instructional decisions that are responsive to student needs (Ritchhart et al., 2011; Tomlinson, 2014)
- Provide active learning spaces in the classroom including areas for collaboration, different furnishing, quiet spaces, range of materials (Barrett et al., 2015; O'Donnell Wicklund & Peterson, 2010; Robinson, 2011)
- Design learning that promotes exploration and collaboration (Anderson et al., 2004; Robinson, 2011)
- Co-create classroom norms with students (Marzano & Pickering, 2011)
- Focus on relationship development, confidence building, trust, safety and positivity to provide needed supports for students that would otherwise feel marginalized (Long, 2012; Lee, Nam, Kim, Kim, Lee & Lee, 2013)

Implications for leaders

Leaders play a critical role in supporting the professional practice of teachers where an environment for optimal learning for all students is fostered. However, this aspect was beyond the scope of this literature review. The following provide some brief examples of literature-informed ways leaders can support teachers in designing for quality learning environments:

- **Shared Leadership:** Promote shared and distributed leadership that supports learning at all levels of leadership so that leaders are not doing things to people but learning alongside teachers (Timperley, 2011)
- **Collective Responsibility:** Shift the focus in the workplace from individual to collective responsibility (Hargreaves & Shirley, 2011; Yuan & Zhang, 2016) and goal setting
- **Modify Schedules:** Modify and rearrange schedules to allow for collaboration (Yuan & Zhang, 2016) with frequent opportunities (Penuel, Sun, Frank & Gallagher, 2012) for teachers to engage in ongoing inquiry (Timperley, 2011) into their teaching practice and for teachers to work together so they can design intellectually engaging learning experiences for students (Friesen, 2009)
- **Focused Collaboration:** Provide time for focused collaborative professional meetings with expectations (Robinson, 2011); use the time purposefully and effectively (Timperley, 2008); find strategies to improve the efficiency and effectiveness of collaboration (Berlin & White, 2012); emphasize the critical examination of teaching practices (Yuan & Zhang, 2016)
- **Access to Expertise:** Make sure expertise is available to support teachers in getting help when they need it (Fogarty & Pete, 2009); this can be provided through a variety of forms (i.e. coaching, mentorship, learning leaders, teacher leaders, external expertise/consultants)
- **Evidence Informed Dialogue:** Facilitate evidence informed conversations (Earl, 2008; Timperley, 2008) with teachers and use these to challenge existing assumptions and reflect on teaching practices to inform instructional decisions about learning design
- **Small Changes:** Start with small changes to facilitate the implementation of new practices recognizing that teachers are making changes while doing their day-to-day normal routines (William, 2016)

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