PROGRESSIVE PEDAGOGIES AND TEACHER EDUCATION: A REVIEW OF THE LITERATURE

GEOFF WEBBER & DIANNE MILLER *University of Saskatchewan*

ABSTRACT. Few studies take up the question of how to teach pre-service or current teachers to practice integrated, interdisciplinary, and inquiry-based methodologies. In this literature review, scholarly research is explored to examine approaches to teacher education based in progressivism. Place- and community-based education is considered as an important approach for heightened student engagement in relation to social justice, rural revitalization, and Indigenous knowledges. Characteristics of strong teacher education programs are also examined. This broad investigation lays the foundation for a deeper inquiry into the organization and development of teacher education programs. Conclusions point to recommendations for teacher education programs with recognition of the potential for critical place-based education within the field of teacher education.

PÉDAGOGIES PROGRESSIVES ET FORMATION DES MAITRES : UNE REVUE DES ÉCRITS

RÉSUMÉ. Peu de projets de recherche s'attardent à la manière dont il faut former les enseignants — en devenir ou en service — à utiliser des méthodologies intégrées, interdisciplinaires et basées sur la recherche. Dans cette revue des écrits, nous analysons des études universitaires dans le but d'examiner les approches de formation des maitres fondées sur le progressisme. L'éducation basée sur le milieu et sur la communauté est perçue comme une approche fondamentale pour augmenter l'implication de l'étudiant en ce qui a trait à la justice sociale, la revitalisation rurale et le savoir autochtone. Les caractéristiques d'une solide formation des maitres sont également examinées. Cette vaste enquête jette les fondements d'une recherche approfondie de l'organisation et du développement des programmes de formation des enseignants. Nous formulons des recommandations pour les programmes de formation des maitres, reconnaissant le potentiel d'une essentielle éducation basée sur le milieu dans le domaine de la formation des maitres.

The genesis of this review arises from tensions in the renewal of a teacher education program, where philosophic understandings of education and pedagogies largely based in social constructivism bump up against discipline-based knowledge and subject-specific methodologies. The focus on collaboration and coherence across university courses and field experiences was superseded by turf protection and the constraints imposed by existing faculty's expertise and pedagogical comfort level. The interdisciplinary, integrated, and inquiry-based design of the new core courses was relatively quickly reconstructed towards a more traditional, and some would argue, a more technical-rational approach to acquiring provincially set outcomes and competencies. In attempting to make sense of a wayward implementation, we turned to the teacher education literature for theoretical models and exemplars of teacher education programs that teach pre-service and practicing teachers how to teach from interdisciplinary, integrated, and inquiry-based perspectives, which take into account the context of learners and recognize the importance of experiential and holistic learning in community and place-based settings.

Teacher education is becoming increasingly recognized as a means to develop capacity for integrating knowledge and creating links between subjects (Heywood, Parker, & Jolley, 2012, p. 90). We reconsider the normative belief that pre-service teachers must rely upon specialized knowledge in subject areas and subject area methodologies in order to effectively teach an integrated curriculum. We recognize that an a priori assumption about the supremacy of subject matter is supported not only by teachers' own experiences growing up in a categorized education system but also by the fact that colleges of education require a field of specialization as a basis for teaching, and proceed by teaching pedagogies aligned with subject areas. Thus content knowledge and methods remain the crux of teacher education. Some have argued that inquiry learning and critical thinking depend on subject matter knowledge (Hattie, 2012, p. 4); however, reliance upon content knowledge and methods has been being questioned as the best way to educate pre-service teachers (see Putnam & Borko, 2000). Studies have shown that teacher educators' predominately perceive themselves as specialist teachers of discipline knowledge and its methods rather than as experts in the skills and pedagogies aimed specifically for teacher education (Goodwin et al., 2014, p. 297). Content specialization ignores more complex conceptualizations needed for creative teacher education. We ask whether this tradition of valuing subject-specific knowledge is necessarily the best way to continue to approach education generally and teacher education specifically. This does not mean the elimination of teaching by subject or discipline-specific methodologies; rather, this review aims to open pathways for integrated, interdisciplinary, and inquiry-based pedagogies to occur in teacher education.

Teacher education effectiveness tends to be conceptualized by curricular outcomes derived from subject-specific standards; however, broader conceptualizations of teaching and learning and a diverse range of pedagogical practices

hold an equal stake in relevance and importance for future teachers. Calls for empirical evidence that connects teacher preparation programs with narrow notions of teacher effectiveness reinforced subject-specific methodologies within teacher education programs (Henry et al., 2013). Conforming to traditional, subject-specific course design may inhibit the creation of the conditions for practicing teachers to be critical of existing processes and systems. While this insight is at least as old as Dewey and assumes even larger dimensions as anti-oppressive and decolonizing pedagogies, how to teach pre-service teachers to practice integrated, interdisciplinary, and integrated methodologies is not taken up in the teacher education literature, or at least not in the straightforward ways we expected. Such methodologies might go a long way towards meeting the goals for teacher education that this special issue envisions. While there is a relatively large literature focusing on the reflective practitioner and some on teaching for various aspects of social justice, subject-specific curricular methodologies are still the norm in teacher preparation programs and are the focus of the majority of studies (Hattie, 2012). We examine teacher education literature to find out what makes for effective teacher education programs and consider that in relation to supporting pedagogies that address real-world problems and concerns, give students the tools to conduct thoughtful and rigorous inquiry, and are grounded in place and community. We realize that there are diverse understandings of what counts as student achievement and teacher success. In the current political climate, discourses of accountability focused on teachers and students meeting state-mandated outcomes and competencies often trump discourses of organic personal growth, holistic learning, and communal responsibility, where success is less tangible and amenable to measurement.

Those interested in transforming teacher education programs would benefit from a review of the literature that embraces integrated, interdisciplinary, and inquiry-based pedagogies. We approached the literature with the goal of identifying the main philosophic underpinnings and the historical trajectories of these trends in education as they developed in Canada and the United States including place- and community-based education. Since we found very little in teacher education literature that addresses how to teach pre-service or current teachers to use these pedagogies, we turned to studies that analyze what makes for effective teacher education programs. This broad investigation lays the foundation for a deeper inquiry into the organization and development of teacher education programs based in alternative pedagogies. This literature review is not intended to be exhaustive but to capture the essential elements of these pedagogies with a view to how they might contribute to reimagining and reinvigorating teacher education programs.

To select the literature, we primarily searched two databases (OVIDSp and Proquest Education) using both individual (e.g., interdisciplinary, integrated, etc.) and integrated terms (e.g., place-based learning, inquiry-based learning, and teacher education.) We consulted major teaching education journals and

other journals where we anticipated relevant publications (e.g., the *Journal of Environmental Education*, *Journal of Research in Rural Education*) as well as seminal texts such as the *Handbook of Research on Teacher Education*. The analysis involved a synthesis of the important features and developmental milestones in each topic area, the distillation of the key elements of effective teacher education programs, and a discussion of the insights arising from the melding of these ideas and practices. Here we mapped the general terrain of interdisciplinary, integrated, and inquiry-based pedagogies, along with notable intersections with place- and community-based education and related these varied strands to teacher education that is critical, creative, innovative, and engaging to diverse learners.

INTEGRATED, INTERDISCIPLINARY, AND INQUIRY-BASED PEDAGOGIES

Educational research and literature show the longstanding relevance and importance of interdisciplinary, integrated, and inquiry-based approaches. John Dewey laid a philosophical framework for interdisciplinary, integrated and inquiry-based curriculum, which was popularized through what came to be known as the Progressive Movement. Proponents of progressive approaches pointed to the importance of beginning with a learner's situation before proceeding to interact with content based on lived experience: "the educator cannot start with knowledge already organized and proceed to ladle it out in doses…when education is based in theory and practice upon experience, it goes without saying that the organized subject matter of the adult and the specialist cannot provide the starting point" (Dewey, 1938/1997, pp. 83-84; see also, Hansen, 2008, p. 13). Schwab (1973) echoed Deweyan principles to outline an educational milieu of which subject matter is only one aspect of teaching and learning, having argued, "in a consideration of a subject matter as affording materials for curriculum, one vital criterion must be what is best or good or satisfying to the learner as a child, as a human being, as a citizen" (p. 511). For Schwab, curriculum design depended upon the emphasis given to the subject matter, the situation of the learners, the milieus of learning, and the teachers. Integrated, interdisciplinary, and inquiry-based curricula are premised upon the philosophy of progressive education as the framework for teaching and learning.

Integrated, interdisciplinary, and inquiry-based approaches

Integrated curriculum is loosely defined as a process of connecting forms of knowledge as well as exploring relationships between various aspects of reality (Brady, 1996). Middle-years educators have heralded the capacity of integrated curriculum to engage youth, particularly those who are less likely to succeed in the prevailing school culture. (Beane, 1997; Erlandson, 2000; Jacobs, 1989; Shriner, Schlee, & Libler, 2010). Beane (1997) described one facet of integration as the process of focusing the curriculum around the reflective questions

of learner. Blending curriculum with life outside the classroom better prepared learners for the complexities found outside subject-specific knowledges: "integrating the curriculum is a renewed approach to teaching and learning that more closely resembles how people learn and work in the real world" (Kotar, Guenter, Metzger, & Overholt, 1998, p. 43). An integrative curriculum has been likened to real-world situations: "when you are out walking, nature does not confront you for three quarters of an hour only with flowers and in the next only with animals" (Elvin, 1977, p. 29, as cited in Jacobs, 1989, p. 1). Dividing learning experiences into subject-specific time slots creates barriers between different spheres of knowledge, which is incongruent with how we perceive reality and participate in meaningful learning. When the curriculum is organized around issues of personal and social significance, learners create a "real application of knowledge, thus increasing the possibility for young people to integrate curriculum experiences into their schemes of meaning *and* to experience the democratic process of problem solving" (Beane, 1997, p. 9). Because integrative curricular approaches include the context of learners, student lived experiences becomes the starting point for inquiry.

While the terms "integration" and "interdisciplinary" both offer alternative approaches to the curriculum, they are not synonymous. The very notion of integration incorporates the idea of unity between forms of knowledge and their respective disciplines (Loepp, 1999). Interdisciplinary refers to the use of more than one discipline in pursuing a particular inquiry (Pring, 1973, as cited in Erlandson, 2000, p. 22). Nissani (1995) offered helpful definitions and examples of combining, mixing, and integrating disciplines of knowledge: a discipline can be defined as "any comparatively self-contained and isolated domain of human experience which possesses its own community of experts" (p. 122). The term interdisciplinary involves bringing together distinctive components of two or more disciplines. Interdisciplinary education then "combines distinctive disciplinary components in a single course or program of instruction" (p. 124). Drawing across disciplinary boundaries can also allow for new perspectives and approaches to facilitate creativity and flexibility (Mei, 2009). Exploring the isolation between subjects, Jacobs (1989) explained that interdisciplinary practices go beyond merely dividing the day into time blocks: "it is not that schools should avoid dealing with specific disciplines; rather, they also need to create learning experiences that periodically demonstrate the relationship of the disciplines, thus heightening their relevancy" (p. 2). Interdisciplinary and integrated curriculum has also been represented as a revision of disciplinary education, "knowledge in interdisciplinary studies is a repackaging, and, perhaps, enhancement of discipline based knowledge" (Kain, 1993, as cited in Loepp, 1999, p. 21). Interdisciplinary education does not mean renouncing disciplinary approaches; rather it is bringing the knowledge-base and tools of academic disciplines to a problem in ways that potentially open new ways of seeing, understanding, and seeking alternatives.

Inquiry- and problem-based education is often associated with interdisciplinary and integrated curriculum because they are based in the belief that education should answer genuine questions and address issues that matter to students. One principle driving interdisciplinary and integrative curriculum is the belief that the current system of discipline-based schooling is less effective in addressing "real-world" problems (Loepp, 1999). When students engaged in learning to answer their own questions, they were more likely to "work harder, and achieve their goals" (Melaville, Berg, & Blank, 2006, p. 31). Inquiry-based approaches can identify relevant learning that subject-specific methods can help solve. For example, questioning how waste may be turned into an asset, students may launch inquiries into local governance and policy (social studies), reducing materials to basic elements for re-use (science), as well as studying area and volume (mathematics, Loepp, 1999, p. 23). Railsback (2002) defined project-based instruction as a model or strategy "in which students plan, implement, and evaluate projects that have real-world applications beyond the classroom" (p. 5). Place-based education (PBE) is drawing practitioners wishing to enact integrated, interdisciplinary, and inquiry-based approaches. While the term *place-based education* may not be familiar to teachers in the field, they may incorporate it or aspects of it in their teaching practice. We turn to place-based literature to follow the trajectory of integrated, interdisciplinary, and inquiry-based approaches to curriculum in this field.

COMMUNITY AND PLACE-BASED EDUCATION

Smith and Sobel (2010) discussed place- and community-based education as a "common framework for curriculum thinking and school design aimed at deepening students' connection to their communities in ways that make those communities better places to live" (p. 21). Likewise, in an earlier work, Sobel (2004) defined PBE as the "process of using local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science, and other subjects across the curriculum" (p. 7). Pedagogies of place exposed teacher candidates to the local community and environment consistent with the "hands-on, real-world" (Sobel, 2004, as cited in Smith & Sobel, 2010, p. 23) experiences that they and their students face outside of school. Taking learning outside traditional classroom settings couples curricular content with the best place to learn the content, taking into account the context of learners and broader considerations of knowledge. Arguments for place-based education are fourfold: it involves direct experience that is more engaging; it promotes civic participation that contributes to democratic institutions; it promotes an ethic of environmental stewardship and sustainability; and it responds to local economic, social, and environmental pressures (Smith & Sobel, 2010, p. 32).

Place-based pedagogies have developed in the past two decades predominantly from the fields of rural and environmental education, which have long advocated for students to learn outside of the classroom: "efforts to prepare students for the real world shouldn't ignore the learning environments that lie just beyond the schoolhouse gate" (Curtiss & Theobald, 2000, p. 1; see also Knapp, 1996). Gruenewald (2003a) examined five dimensions of place, ranging from the sociological to the ecological, and seeks to erase the barrier between school and community (p. 640). He argued that current school-centric models of education disconnect learners from life around them and he advances place-based pedagogies as a reengagement with the "cultural and ecological contexts of human and nonhuman existences" (p. 645). The social construction of places, place identity, place attachment, and a "sense of place" are developing topics evolving from place-based literature. Woodhouse and Knapp (2000) characterized place-based curriculum and instruction when it was gaining popularity among practitioners as inherently multidisciplinary, experiential, and aligned with cultural and ecological sustainability. Drawing on a broad range of theory and practice, PBE promotes knowledge of communities and holistic, relational models of education.

Lieberman and Hoody (1998) highlighted the positive effects of locally-based curriculum to show how using the environment as an integrating context bolsters student achievement and ameliorates behavior. While these authors quantify achievement by standardized measures, they nonetheless reinforced the intuition of many educators practicing PBE. Amy Powers (2004) evaluated four PBE programs as part of the Place-based Education Evaluation Collaborative (PEEC), which invests in the development of PBE models through evaluation. She found

> existing evaluations of place-based programming show strong promise for improving student learning and community engagement, and closely related research has demonstrated that students who are engaged in real-world learning are more likely to succeed than are those who learn equivalent material from more abstract textbooks. (Powers, 2004, p. 18)

While PBE promotes outcomes related to real-world issues, it also serves as a starting point for curricular objectives. It recognizes a spectrum of learning styles and promotes accessibility for students to engage with material. Being inside, sitting, reading, and writing are examples of a "hidden curriculum," which has privileged one form of understanding and expression (Beames, Higgins, & Nicol, 2012, p. 17). PBE connects inquiry with the fabric of community, prompting meaningful and impactful ties to the students that goes beyond content knowledge and informs learning of empathy, relationships, and community. In the 1990s, The Orion Society, a non-profit organization that publishes resources to inspire cultural approaches to community and nature, began using the term "place-based" to broaden its approach to environmental education. The term was adopted to examine both natural and built environ-

ments near schools, and was "characterized as the pedagogy of community, the reintegration of the individual into her homeground and the restoration of the essential links between a person and her place" (Sobel, 2004, p. ii).

Directions of place-based education

Place-based educators and researchers have written about PBE in relation to social justice, rural revitalization, and Indigenous knowledges. Gruenewald (2003a) made two observations about place that serves to align PBE with inquiry-based methodologies for all students. First, "people are capable of perceiving places and learning from that direct experience" (p. 625). The various dimensions of place can serve as a starting point for inquiry. Second, the ability to perceive can be either thwarted or fostered by educational practices (p. 625). Gruenewald recognized the potential to foster political-cultural interpretations of place to examine marginality and its links with oppression. For Gruenewald (2003a), margin is both metaphor and material space "from which relationships of oppression might be reimagined and reshaped" (p. 631); thus marginality is a site of radical possibility and as a place for counter-hegemonic practices (pp. 632-633). Dewey's (1938/1997) observation of students being "one of docility, receptivity, and obedience" is similar to Freire's (1989) description of a banking method of education. Gruenewald (2003b) later proposed a critical pedagogy of place, which merged Freirean notions of critical pedagogies with the environmental aims of PBE. Echoing Freire's notion of praxis, critical pedagogies of place can be seen to adopt a transformative role in the learners' capacity to engage with the cultural and ecological realities of the world. A critical pedagogy of place envisions critical pedagogies and place-based pedagogies to be mutually supportive:

> a critical pedagogy of place aims to (a) identify, recover, and create material spaces and places that teach us how to live well in our total environments (reinhabitation); and (b) identify and change ways of thinking that injure and exploit other people and places (decolonization). (Gruenewald, 2003b, p. 9)

Bowers (2008) critiqued such a merger, citing the failures of critical pedagogies to elicit transformation in light of underlying complicity with cultural assumptions that degrade and destroy existing cultural and ecological traditions. Bowers posited that critical thinking always leads to overcoming oppression with environmentally destructive practices (pp. 325-326). While debate exists about the merit of merging critical dimensions with PBE (Greenwood, 2008; Nespor, 2008; Stevenson, 2008), political and critical notions of PBE offer alternative avenues through which to value local knowledge, processes, and issues in curriculum making to transform oppression. McInerney, Smyth, and Down (2011) described two specific studies[1] to consider how teachers can develop curriculum "that fosters a spirit of critical inquiry into communities and landscapes" rooted in social justice (pp. 12-13).

Rural education is another context through which PBE has been transforming the educational system (Shamah & MacTavish, 2009). Paul Theobald (1997) used the term "place-conscious" in his work *Teaching the Commons* as "the lens for disciplinary engagement" through community-oriented approaches in rural and urban schools (pp. 132-137). Corbett (2009) made the connection between formal schooling and migration out of rural areas to acknowledge a common issue for rural places: the departure of young people and consequences upon rural society and rural places. Curtiss and Theobald (2000) envisioned PBE as a way to connect young people to rural communities: "so what is to be done? The answer is simple: use schools as a source of community renewal rather than a cause of community disintegration" (p. 106). With an aim to cultivate creative thinkers, Curtiss and Theobald articulated constructivist understandings about the formative and powerful learning happening in a community which makes place potentially the teacher and the topic. The Harvard Graduate School of Education for the Rural Trust (1999a, 1999b)

> conclude[d] that as schools and communities work together to design curricular goals and strategies, students' academic achievement improves, their interest in their community increases, teachers are more satisfied with their profession, and community members are more connected to the schools and students. (p. 18)

The Canadian context of education is preceded by thousands of years of traditional Indigenous approaches to holistic, integrative, and interconnected education (see for example, Barnhardt, 2008; Barnhardt & Kawagley, 2005; Cajete, 1994). Kirkness (1998) noted the role of community and the natural environment played in holistic traditional education. Efforts to decolonize education occur through acknowledging Indigenous languages, cultures, and traditional worldviews in mainstream education, which to date has been primarily based in Eurocentric knowledge and colonial understanding (Battiste, 2013; Smith, 2012; Wilson, 2008). Scholars also explicitly interconnect place-based and Indigenous education.

Tracy Friedel (2011) examined how Native youth understand non-formal, place-based learning to show the processes by which Native youth can embrace Indigenous pedagogies and cultural traditions (p. 542). Scully (2012) examined the place-based themes of reinhabitation and decolonization to posit that PBE fosters Indigenous / non-indigenous understandings of shared histories and contemporary realities. Madden (2015) synthesized 23 studies that analyze educators' approaches to Indigenous education. Alongside traditional models of learning, decolonizing pedagogies, and anti-racist education, Madden cited PBE resources that intersect with Indigenous education to show four pedagogical pathways for Indigenous education. Such a review highlighted the innovative possibilities as well as the divergences and potential tensions that guide teacher educators' inclusion of Indigenous pedagogies.

Land-based education (LBE) approaches offers important parallels for the field of place-based education. Built upon Indigenous scholarship, LBE premises that all places were once (and continue to be) Indigenous. It follows that Indigenous worldviews and cosmologies are "many times [the] most viable knowledge systems related to place-based goals of critical sustainability, community building, and addressing issues of territoriality" (Calderon, 2014, p. 27). As such, land is a common ground central to identity formation that can draw upon Western and Indigenous frameworks to decolonize understandings of places. Calderon (2014) defined decolonization as uncovering how settler colonial projects are maintained and reproduced. Education models and curriculum, including many place-based models, continue to produce colonial understandings of settler identity and need to be decolonized (p. 25). Calderon discussed key categories of settler identity construction in social studies curriculum and shows how settler nationalism, White supremacy, and territoriality are the dominant features of settler colonialism. Adopting a land education framework within the context of settler ideology will disrupt such settler identities (p. 33). Where many PBE scholars premise starting with the local (Smith & Sobel, 2010; Sobel, 2004), Calderon (2014) argued that PBE must start with a decolonization of the local (p. 28). Tuck, McKenzie, and McCoy (2014) noted the need for post-colonial, Indigenous voices in regards to PBE. They stated that, "though earnest in attempts to acknowledge colonial histories of particular places, the place-based and broader environmental education literature has replicated some of the very problematic assumptions and imperatives of settler colonialism" (p. 15; see also Bang et al., 2014).

EFFECTIVE TEACHER EDUCATION PROGRAMS

Weilbacher (2001) interviewed four middle school teachers for their rationale in stopping or reducing curriculum integration within their practice in favour of more traditional forms of curriculum planning. A common underlying ethos was that they were teachers of students, not of disciplines or subject areas. The data suggested that this kind of progressive philosophy was not valued nor understood by peers or by a society that tends to reduce the educational process, and the children it is designed to serve, to itemized standards and scores on batteries of state-mandated tests (Weilbacher, 2001, p. 25).

While the teachers were mostly able to draw upon integrated curriculum on a part-time basis, they all diminished or abolished integrated curricular approaches eventually. Some of the rationale cited was time management, working environments, as well as the loss of teaching partners. Weilbacher (2001) highlighted the need for teacher education to build capacity for this progressive education to exist "while they [teachers] understand and believe in the benefits of curriculum integration, the time it requires to plan, implement, assess, and defend takes its toll in emotional and familial ways" (p. 25). Teacher education programs must tackle these issues if it is to enable teachers capable of being creative in the ways they shape their pedagogy and utilize resources.

So far, we have asked how interdisciplinary, integrated, and inquiry-based frameworks with a focus on place- and community-based education best capture the wider dimensions of education while promoting student engagement and achievement. This literature review now highlights three main currents of teacher education. Clues as to how best to teach integrated, interdisciplinary, and inquiry-based curriculum are found in both teacher education literature and educational reform literature. Three broad characteristics are present in effective teacher education programs. Organizational coherence, a strong relationship between theory and practice, as well as self-study or the "reflective teacher" all emerge as facets of substantial teacher education programs.

Organizational coherence deals with the structural, conceptual, and organizational level of programs. Hammerness (2006) detailed how learning may be enhanced when students encounter consistent ideas across learning experiences. This might include aligning courses and experiences around a "particular conception of teaching and learning in an effort to construct an integrated experience, or trying to create courses that build sequentially on one another and reinforce one another" (Hammerness, 2006, p. 1243). This may mean faculty and staff reaching across ideological boundaries in order to achieve best practice for teacher education courses, consistent with the larger aims of departmental and regional goals.

Concurrently, Zeichner (2010) sought to accomplish coherence by "bringing academic, practitioner, and community-based knowledge together in teacher education process rather than insisting on a structural change in teacher education institutions" (p. 92). Zeichner's insights bolster programmatic difference and plurality instead of calling for prescribed organizational re-structuring. This takes the emphasis away from accountability structures, concerned with compliance and standardized requirements, and directs resources towards school, university, and community connections (Zeichner, 2010, p. 96). Establishing coherence between field experiences and university-based courses is another hurdle for organizational coherence. Zeichner (2010) echoed Darling-Hammond (2009) in reference to the lack of connection between campus courses and field experiences as the Achilles heel of teacher education (Zeichner, 2010, p. 91). Organizational coherence, often characterized as a priority in educational reform, can be operationalized by drawing upon community resources to alter the status quo of a patchwork of disparate programming. The development of common goals amongst the partners in education offers opportunities to develop a coherent set of pedagogical courses and field experiences that inform one another.

The relationship between theory and practice is another aspect of strong teacher education programs. Darling-Hammond (2006) noted that, "traditional versions of teacher education have often had students taking batches of front-loaded course work in isolation from practice and then adding a short dollop of student teaching to the end of the program" (p. 307). Although a lot of discussion

about the structure of teacher education programs has emerged, largely along "traditional" or "alternative" lines, there has been little talk "about how the experiences [that] programs design for candidates cumulatively add up to a set of knowledge, skills, and dispositions that determine what teachers actually do in the classroom" (Darling-Hammond, 2006, p. 303). The "application of theory" model (Korthagen & Kessels, 1999, p. 4) calls for teacher educators to re-think the stance of the university as a source of expert knowledge.

Relying on an a priori choice about the knowledge that should be transferred to student teachers has been termed the "transfer problem" and typically weakens a capacity to promote innovative teachers. Isolated, theoretical knowledge of teaching developed during pre-service teacher education is often described as being "washed out" during field experiences and early work experiences (Zeichner & Tabachnik, 1981, as cited in Brower and Korthagen, 2005, p. 154). The washout effect on student teachers exposes a need to conjoin theory and practice in teacher education programs "in such a way that it leads to integration within the teacher" (Korthagen & Kessels, 1999, p. 4). Brower and Korthagen (2005) expanded on the socialization of student teachers and point to research that "supports the conclusion that integrative approaches in teacher education, in which student teachers' practical experiences are closely linked to theoretical input, strengthen graduates' innovative teaching competencies" (p. 156).

Another dimension of teacher education is self-study, which called for "an ongoing process of experiencing practical teaching and learning situations, reflecting on them under the guidance of an expert, and developing one's own insights into teaching through the interaction between personal reflection and theoretical notions offered by the expert" (Calderhead, 1989, as cited in Korthagen & Kessels, 1999, p. 6). The term "reflective study," along with "action research," "narrative inquiry," "life-history," are labels that overlap and have been captured in the realm of teacher education by the term "self-study" advanced by John Loughran (Loughran, Hamilton, LaBoskey, et al. 2004, as cited in Pithouse, Mitchell, and Weber, 2009, p. 43). It involves inquiry into one's practice through a cycle of inquiry, reflection, and action (Clarke & Erickson, 2004, p. 201). Self-study is research, "a systematic and rigorous process designed to explore and inform teacher knowledge and practice...and to make aspects of this process public in some manner" (Loughran, 2003, as cited in Clarke & Erickson, 2004, p. 201). Organizational coherence, integrating theory and practice, and self-study are necessary foundations for implementing integrated, interdisciplinary, and inquiry-based curriculum in teacher education.

Elaborating on the need for teacher education programs to be closely linked to the interplay of curricula, Smith and Southerland (2007) asserted:

> It is important to recognize that teachers tend to perceive standards only in terms of content; they do not look to these documents for description of *how* that content should be taught...these misconceptions about curriculum standards must be explicitly dealt with in our work with teachers. (p. 418, emphasis added)

Smith and Southerland (2007) highlighted the potential of teacher education programs to imagine differently how subject matter is interpreted. Given that knowledge of learning, teaching methods, and curriculum is more frequently found to influence teaching performance than subject-matter knowledge (Darling-Hammond, 2000, p. 167), teachers' perceptions of the role of curriculum standards can be transformed in working alongside pre-service teachers. In the wake of No Child Left Behind, Gordon Vars (2001) touched upon teacher confusion amidst standardization and sought solutions to curriculum design that was both integrative and standards-based. Vars (2001) stated, "few teachers have experienced curriculum integration themselves as students, and, with few exceptions, teacher preparation programs give it scant attention" (p. 12). Vars regarded teacher education as a vital point for teachers to learn curriculum integration if it is to survive an era of standardization.

Shriner, Schlee, and Libler (2010) envisioned integrated curriculum for improving teacher quality at the pre-service and in-service levels (p. 52). Tracing the literature on the effects of curriculum integration helps point to more quantifiable and verifiable outcomes of this mode of teaching and learning. For example, a meta-analysis of 30 studies examining the effects of integrated curriculum programs on student achievement found "overwhelming evidence" to conclude that students involved in integrated curriculum programs "do better on standardized and program-developed assessments of achievement than students in traditional classrooms" (Hartzler, 2000, as cited in Shriner, Schlee, & Libler, 2010, p. 52). Despite attempts to prove its capacity to foster student achievement, teachers lack institutional support for implementation. While we were encouraged by this study, which employs traditional measures of success, we note that many potential benefits such as student engagement in relation to social justice, rural revitalization, and Indigenous knowledges are not necessarily reflected in these valuations. In debating how best to teach integrated, interdisciplinary, and inquiry-based curricula, place- and community-based education invite explorations of the connections and interconnections of subject matter knowledge in relation to real-world issues and problems.

IMPLICATIONS FOR TEACHER EDUCATION

Integrated, interdisciplinary, and inquiry-based approaches embrace broader conceptualizations of teaching and learning that are critical, creative, innovative, and engaging to diverse learners. This review has pointed to the necessity for teacher education to envision its role beyond the transmission of content and subject-specific methods in order to prepare new professionals to engage with meaningful experiences, ideas, and ways of learning. Moreover, the material conditions of teaching need to be such that teachers and teacher educators have the energy to innovate and try new ideas. This format of learning appreciates the importance of mentoring and supportive communities of practice in enabling and creating innovative education. Currently, emphasis placed upon

discipline-based knowledge and subject-specific methodologies reduces the ability for creatively forming alternative curricular approaches. Zeichner (2010) warned that the current accountability mechanisms in place for teacher education institutions will eventually lead to fast-track teacher education programs capable of transmitting content but little else: "this will be to the detriment of both teacher and pupil learning because the expanded learning opportunities that are created through the interplay of different sources of knowledge will not be realized" (p. 96). PBE offers pedagogical pathways to strengthen community connections, engage learners, and satisfy curricular outcomes, which affirms the contexts of learners and incorporates knowledge from communities into teacher education. If teacher education is going to flourish in the future, a more robust vision that embraces the complex realities of a changing planet must present itself (Greenwood, 2010).

Schleicher (2014) noted that "educational success is no longer about reproducing content knowledge, but about extrapolating from what we know and applying that knowledge to novel situations" (para. 9). As curricular renewal is happening across Canada, there is an opportunity for education programs to make explicit the connections across subject areas in order to develop the organizational coherence, theory-practice integration, and self-study required to support integrated, interdisciplinary, and inquiry-based methodologies. For example, curricular renewal in Saskatchewan (Saskatchewan Ministry of Education, 2010) contains a high degree of flexibility for teachers to enact alternative curricular approaches; however, the challenges of working within dominant educational structures and practices makes the commitment from teacher education programs even more critical to build capacity in new teachers to transform the educational system they will be working within (see Zeichner & Conklin, 2008). As teachers integrate renewed curriculum into teaching materials, including methodologies and assessment strategies, innovative teachers in the field serve as guides and will continue to strengthen this form of education outside teacher education programs. Research into their experiences in formulating and implementing integrated pedagogical approaches can usefully inform teacher education (see Demarest, 2015; Rosenthal, 2011).

We suggest that teacher education programs need to rethink their commitment to subject-specific content and methodologies if we are to advance a vision of education that gives new and practicing teachers the capacity to be critical of the status quo, to develop pedagogies that engage available resources and include diverse ways of learning, to be supple in responding to changing environments and educational needs, and to prepare students for lifelong learning and civic engagement. This review indicates that PBE holds promise to achieve student engagement and success through integrated, interdisciplinary, and inquiry-based approaches to teaching and learning. To be effective in implementing such approaches, teacher education programs must take seriously the issues of organizational coherence, theory practice integration, and

self-study. To achieve an exemplary degree of effectiveness, we speculate that teacher educators will need to leave their disciplinary silos and work towards a fluid, reciprocal relationship with multiple partners in education, including the provincial ministries and traditional stakeholders as well as practicing teachers, parents, students, and community groups. We believe that ultimately this is a matter of "sustaining dialogue on the values and purpose" of teacher education, one that moves beyond maintenance of the social order and which will not end with some "final agreement," but will remain a "vibrant, dynamic, and consequential" conversation in which all participate, acknowledging the "distinctive, complex, and indispensable tasks that society sets before [teachers]" (Hansen, 2008, pp. 23, 24).

NOTES

1. Hattam & Prosser (2006) and Tlusty & Rhoades (2006) as cited by McInerney et al. (2011); see also Hattam, Brennan, Zipin, & Comber (2009).

REFERENCES

Bang, M., Curley, L., Kessel, A., Marin, A., Suzukovich, I., & Strack, G. (2014). Muskrat theories, tobacco in the streets, and living Chicago as Indigenous land. *Environmental Education Research*, *20*(1), 37-55.

Barnhardt, R., & Kawagley, A. O. (2005). Indigenous knowledge systems and Alaska Native ways of knowing. *Anthropology and Education Quarterly*, *36*(1), 8-23.

Barnhardt, R. (2008). Creating a place for Indigenous knowledge in education. In D. Gruenewald & G. Smith (Eds.), *Place-based education in the global age: Local diversity* (pp. 113-133). New York, NY: Taylor & Francis.

Battiste, M. (2013). *Decolonizing education: Nourishing the learning spirit.* Saskatoon, SK: Purich.

Beames, S., Higgins, P., & Nicol, R. (2012). *Learning outside the classroom: Theory and guidelines for practice*. New York, NY: Routledge.

Beane, J. (1997). *Curriculum integration: Designing the core of democratic education.* New York, NY: Teachers College Press.

Bowers, C. A. (2008). Why a critical pedagogy of place is an oxymoron. *Environmental Education Research, 14*(3), 325-335.

Brady, M. (1996). Beyond interdisciplinary: Preparing teachers for new curriculum. *NASSP Bulletin, 80*(580), 1-8.

Brower, N., & Korthagen, F. (2005). Can teacher education make a difference? *American Educational Research Journal, 42*(1), 153-224.

Cajete, G. (1994). *Look to the mountain: An ecology of Indigenous education.* Skyland, NC: Kivaki Press.

Calderon, D. (2014). Speaking back to manifest destinies: A land education-based approach to critical curriculum inquiry. *Environmental Education Research, 20*(1) 24-36.

Clarke, A., & Erickson, G. (2004). Self-study: The fifth commonplace. *Australian Journal of Education*, *48*(2), 199-211.

Corbett, M. (2009). Rural schooling in mobile modernity: Returning to the places I've been. *Journal of Research in Rural Education, 24*(7), 1-13.

Curtiss, J., & Theobald, P. (2000). Communities as curricula. *Forum for Applied Research and Public Policy, 15*(1), 106-11.

Darling-Hammond, L. (2000). How teacher education matters. *Journal of Teacher Education, 51*(3), 166-173.

Darling-Hammond, L. (2006). *Powerful teacher education: Lessons from exemplary programs.* San Francisco, CA: Jossey-Bass.

Darling-Hammond, L. (2009). *Teacher education and the American future.* Paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education, Chicago, IL.

Demarest, A. (2015). *Place-based curriculum design: Exceeding standards through local investigations.* New York, NY: Routledge.

Dewey, J. (1997). *Experience and education.* New York, NY: Kappa Delta Pi. (Original work published 1938)

Erlandson, C. (2000). *Voices from the middle years: Student views of integrative curriculum* (Unpublished master's thesis). University of Saskatchewan, Saskatoon, SK.

Friedel, T. (2011). Looking for learning in all the wrong places: Urban Native youths' cultured response to Western-oriented place-based learning. *International Journal of Qualitative Studies in Education, 24*(5), 531-546.

Freire, P. (1989). *Pedagogy of the oppressed.* New York, NY: Continuum.

Goodwin, A., Smith, L., Souto-Manning, M., Cheruvu, R., Tan, M. Y., Reed, R., & Taveras, L. (2014). What should teacher educators know and be able to do? Perspectives from practicing teacher educators. *Journal of Teacher Education, 65*(4), 284-302.

Greenwood, D. (2008). A critical pedagogy of place: From gridlock to parallax. *Environmental Education Research, 14*(3), 336-348.

Greenwood, D. (2010). A critical analysis of sustainability education in schooling's bureaucracy: Barriers and small openings in teacher education. *Teacher Education Quarterly, 37*(4), 139-154.

Gruenewald, D. (2003a). Foundations of place: A multidisciplinary framework for place-conscious education. *American Educational Research Journal, 40*(3), 619-654.

Gruenewald, D. (2003b). The best of both worlds: A critical pedagogy of place. *Educational Researcher, 32*(4), 3-12.

Hammerness, K. (2006). From coherence in theory to coherence in practice. *Teachers College Record, 108*(7), 1241-1265.

Hansen, D. T. (2008). Values and purpose in teacher education. In M. Cochran-Smith, S. T. Feiman-Nemser, & D. J. McIntyre (Eds.), *Handbook of research and teacher education: Enduring questions and changing contexts* (pp. 10-26). New York, NY: Routledge.

Harvard Graduate School of Education for the Rural Trust. (1999a). *Living and learning in rural schools and communities: A report to the Annenburg Rural Challenge*. Cambridge, MA: Harvard Graduate School of Education.

Harvard Graduate School of Education for the Rural Trust. (1999b). *Living and learning in rural schools and communities: Lessons from the field.* Cambridge, MA: Harvard Graduate School of Education.

Hattam, R., Brennan, M., Zipin, L., & Comber, B. (2009). Researching for social justice: Contextual, conceptual and methodological challenges. *Discourse: Studies in the Cultural Politics of Education, 30*(3), 303-316.

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning.* New York, NY: Routledge.

Henry, H., Campbell, S., Thompson, C., Patriarca, L., Luterbach, K., Lys, D., & Covington, V. M. (2013). The predictive validity of measures of teacher candidate programs and performance: Towards an evidence-based approach to teacher preparation. *Journal of Teacher Education, 64*(5), 439-453.

Heywood, D., Parker, J., & Jolley, N. (2012). Pre-service teachers' shifting perceptions of cross-curricular practice: The impact of school experience in mediating professional insight. *International Journal of Educational Research, 55,* 89-99.

Jacobs, H. (1989). *Interdisciplinary curriculum: Design and implementation*. Available from http://www.ascd.org/publications/books/61189156/chapters/The-Growing-Need-for-Interdisciplinary-Curriculum-Content.aspx

Kirkness, V. (1998). Our peoples' education: Cut the shackles; cut the crap; cut the mustard. *Canadian Journal of Native Education, 22*(1), 10-15.

Korthagen, F., & Kessels, J. (1999). Linking theory and practice: Changing the pedagogy of teacher education. *Educational Researcher, 28*(4), 4-17.

Knapp, C. (1996). *Just beyond the classroom: Community adventures for interdisciplinary learning*. Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools.

Kotar, M., Guenter, C. E., Metzger, D., & Overholt, J. L. (1998). Curriculum integration: A teacher education model. *Science and Children, 35*(5), 40-43.

Lieberman, J., & Hoody, L. (1998). *Closing the achievement gap: Using the environment as an integrating context for learning*. San Diego, CA: State Education and Environmental Roundtable.

Loepp, F. (1999). Models of curriculum integration. *The Journal of Technology Studies, 25*(2). Retrieved from https://scholar.lib.vt.edu/ejournals/JOTS/Summer-Fall-1999/Loepp.html

Madden, B. (2015). Pedagogical pathways for Indigenous education with/in teacher education. *Teaching and Teacher Education, 51*, 1-15.

McInerney, P., Smyth, J., & Down, B. (2011). "Coming to a *place* near you?" The politics and possibilities of a critical pedagogy of place-based education. *Asia-Pacific Journal of Teacher Education*, *39*(1), 3-16.

Mei, L. (2009). Bridging disciplinary boundaries. *Education Canada, 49*(3), 40-43.

Melaville, A., Berg, A., & Blank, M. (2006). *Community-based learning: Engaging students for success and citizenship*. Washington, DC: Coalition for Community Schools.

Nespor, J. (2008). Education and place: A review essay. *Educational Theory, 58*(4), 475-489.

Nissani, M. (1995). Fruits, salads, and smoothies: A working definition of interdisciplinarity. *Journal of Educational Thought, 29*(2),121-128.

Pithouse, K., Mitchell, C., & Weber, S. (2009). Self-study in teacher and teacher development: A call to action. *Educational Action Research, 17*(1), 43-62.

Powers, A. (2004). An evaluation of four place-based education programs. *The Journal of Environmental Education, 35*(4), 17-32.

Putnam, R., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher, 29*(1), 4-15.

Railsback, J. (2002). *Project-based instruction: Creating excitement for learning*. Portland, OR: North West Regional Educational Laboratory.

Rosenthal, J. (2011). *Stories of transformation: Place-based education and the developing place-consciousness of educators along the Hudson River* (Doctoral Dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3450409)

Saskatchewan Ministry of Education. (2010). *Renewed curricula: Understanding outcomes*. Retrieved from https://www.edonline.sk.ca/bbcswebdav/library/curricula/English/Renewed_Curricula.pdf

Schleicher, A. (2014). *The case for 21st-century learning*. Retrieved from http://www.oecd.org/general/thecasefor21st-centurylearning.htm

Schwab, J. (1973). The practical 4: Translation into curriculum. *The School Review, 81*(4), 501-522.

Scully, A. (2012). Decolonization, reinhabitation and reconciliation: Aboriginal and place-based education. *Canadian Journal of Environmental Education*, *17*, 148-158.

Shamah, D., & MacTavish, K. A. (2009). Rural research brief: Making room for place-based knowledge in rural classrooms. *The Rural Educator, 30*(2), 1-4.

Shriner, M., Schlee, B., & Libler, R. (2010). Teachers' perceptions, attitudes and beliefs regarding curriculum integration. *The Australian Educational Researcher, 37*, 51-62.

Smith, G., & Sobel, D. (2010). *Place- and community-based education in schools*. New York, NY: Routledge.

Smith, L. K., & Southerland, S. A. (2007). Reforming practice or modifying reforms? Elementary teachers' response to the tools of reform. *Journal of Research in Science Teaching, 44*, 396-423.

Smith, L. (2012). *Decolonizing methodologies: Research and Indigenous peoples*. London, United Kingdom: Zed Books.

Sobel, D. (2004). *Place-based education: Connecting classrooms and communities*. Great Barrington, MA: Orion Press.

Stevenson, R. (2008). A critical pedagogy of place and the critical place(s) of pedagogy. *Environmental Education Research, 14*(3), 353-360.

Tuck, E., McKenzie, M., & McCoy, K. (2014). Land education: Indigenous, post-colonial, and decolonizing perspectives on place and environmental education research. *Environmental Education Research, 20*(10), 1-23.

Vars, G. (2001). Can curriculum integration survive in an era of high-stakes testing? *Middle School Journal, 33*(2), 7-17.

Weilbacher, G. (2001). Is curriculum integration an endangered species? *Middle School Journal, 33*(2), 18-27.

Wilson, S. (2008). *Research is ceremony: Indigenous research methods*. Winnipeg, MB: Fernwood.

Woodhouse, J., & Knapp, C. (2000). *Place-based curriculum and instruction: Outdoor and environmental education approaches*. Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools.

Zeichner, K. (2010). Rethinking connections between campus courses and field experiences in college- and university-based teacher education. *Journal of Teacher Education, 61*(1-2), 89-99.

Zeichner, K. H., & Conklin, H. G. (2008). Teacher education programs as sites for teacher preparation. In M. Cochran-Smith, S. Feiman-Nemser, & D. John McIntyre (Eds.), *Handbook of research on teacher education: Enduring questions in changing contexts* (pp. 269-289). New York, NY: Routledge.

GEOFF WEBBER is a Master's student in the Department of Educational Foundations, College of Education, University of Saskatchewan. His thesis examined place-based education. He currently lives in Calgary. giw361@mail.usask.ca

DIANNE MILLER is a Professor in the Department of Educational Foundations, College of Education, University of Saskatchewan. Her research has focused on educational biography and the history of teaching, teachers, and teacher education. More recently, her research interests have turned to land- and place-based education, food education, and rural revitalization. In the pre-service program, she teaches a core course entitled "Pedagogies of Place." She acknowledges that she lives and works on the traditional territories of Indigenous peoples. dianne.miller@usask.ca

GEOFF WEBBER est étudiant à la maitrise au Department of Educational Foundations du College of Education de l'Université de la Saskatchewan. Son mémoire porte sur l'éducation basée sur le milieu. Il réside présentement à Calgary. giw361@mail.usask.ca

DIANNE MILLER est professeur au Department of Educational Foundations du College of Education de l'Université de la Saskatchewan. Ses recherches ont porté sur la biographie éducationnelle et l'histoire de l'enseignement, les enseignants, ainsi que sur la formation des maitres. Plus récemment, elle s'intéresse aux concepts d'éducation basée sur le territoire et sur le milieu, l'éducation alimentaire et la revitalisation rurale. Au sein du programme de formation des futurs enseignants, elle enseigne un cours de base intitulé « Pedagogies of Place ». Elle reconnait vivre et travailler sur les territoires traditionnels des populations autochtones. dianne.miller@usask.ca