

SPECIALIST TEACHERS: A REVIEW OF THE LITERATURE

PREPARED FOR
THE ELEMENTARY TEACHERS' FEDERATION OF ONTARIO



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EXECUTIVE SUMMARY

This literature review sought to examine the connection between specialist teachers and student achievement, with a specific focus on teachers at the elementary school level and in the context of Ontario, Canada.

Specialist teachers can be found in a range of subject areas such as the arts, physical education and teacher-librarians. However, a fully encompassing definition of a specialist teacher remains somewhat elusive and must be considered in relation to factors such as formal qualifications, experience and local context. Similarly, student achievement must be differentiated from student success, and how we define and understand such terms remains important. In Ontario, specialist teachers at the elementary level appear to be facing changes to their teaching assignments and increased workload in recent years. Such concerns also connect to access, equity and the distribution of specialist teachers in schools across the province.

Specialist teachers in the arts (including music) are shown to contribute to the development of students and display greater self-efficacy and ability in arts education compared with generalists. Physical education specialists also appear to provide stronger instruction, improve student performance and display stronger instructional strategies. The importance of such specialists is noted with growing concerns surrounding children's health and wellness in recent years. Teacher-librarians, along with a strong school library program, also appear to positively impact student achievement and success. However, such specialists face growing uncertainty in Ontario regarding their work and the evolution of the school library in the digital age. Specialist teachers in mathematics, science and technology all appear to show promise in being able to improve student achievement and classroom learning. Such findings are significant for Ontario, especially as improved mathematics achievement has been identified as a key priority, by the Ministry of Education. Specialist teachers in auxiliary roles, such as instructional coaches, appear to be an effective professional development model for improving teacher specialist knowledge. Finally, guidance teacher/counsellors also contribute to learning and improved outcomes as well as the socio-emotional health and safety of students. Overall, the literature surrounding specialist teachers in a range of content areas appears to support the claim that specialist teachers can positively impact student achievement and contribute to student success at the elementary level.

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PROLOGUE

In 2014 the Elementary Teachers' Federation of Ontario (ETFO) Annual Meeting passed a resolution proposing a research study to ascertain the effects of specialized teaching on student achievement.

Over the last 10 years there has been increasing pressure on public elementary teachers to be generalist practitioners in all areas of a highly specialized and progressively complex elementary curriculum. Recently, some district school boards have made a conscious move away from specialist teachers in the elementary panel. Some boards have eliminated a majority of rotary timetabling and mandated that homeroom teachers be responsible for a minimum of five subject areas, thus potentially increasing member stress and workload. In many cases, elementary education members are being asked to plan and instruct subjects for which they do not necessarily have the requisite content knowledge.

As the Ministry of Education has introduced initiatives such as differentiated instruction, inquiry-based learning and problem-based experiential approaches to teaching and learning, teachers have been left to figure out how to best instruct students without the proper pedagogical strategies, instructional support and professional learning opportunities. Each new curriculum document release further layers the complexity of expectations faced by Ontario's teachers.

These complexities extend beyond curriculum content and may include, but are not necessarily limited to, learning skills, attitudes toward learning in the 21st Century and the integration of life skills in a technologically proficient and globally driven economy. For example, with the release of the 2015 revised Health and Physical Education elementary curriculum contains numerous pages of reference material for teachers to consider for program and planning. The suggestions included in the document are supplemental to the actual grade level curriculum expectations and are listed in the section *Some Considerations for Program Planning* (Ministry of Education, The Ontario Curriculum, Grades 1- 8; Revised 2015 Health and Physical Education, p. 1-2).

Historically, the model of teaching rotary subjects with various homeroom combinations respected the professional judgment of teachers. This type of model collaboratively met the needs of students by providing effective programming and planning, matching area interest and expertise with teacher skill set. With the recent trend of moving away from specialist teachers, in some smaller boards in particular, teachers may have been asked to teach subjects that they may never have taught before. Even though there were teachers on staff who possessed the extensive knowledge, professional training and passion for the subject that would be better suited for the assignment, often newly revised board policy, which was not grounded on relevant research or effective practice, would take precedent.

The lack of respect for teacher professional judgment and the lack of insight into creating models of instruction, that would best serve the needs of all students, has created and continues to create, learning environments that negatively impact student success and unnecessarily increase teacher workload and stress.

Increasing the number of specialist teachers in elementary schools continues to be a priority for ETFO. This action supports our members' professional needs and improves their working conditions. As stated in the ETFO Building Better Schools platform, "the Ontario curriculum mandates that elementary students receive instruction in the arts and [physical education], but the government does not provide sufficient funding for teacher-librarians or specialist teachers in music, guidance, physical education, visual or performing arts, or design and technology." Being taught by a specialist teacher "enriches the educational experience of students ... and provides the flexibility for regular classroom teachers to have the preparation time they need" (Building Better Schools, 2014).

The objective of the original annual meeting resolution was for ETFO to sponsor a research study attempting to make a connection between specialist teachers and student achievement. However, there were several complications that made such a research report impossible to conduct. Firstly, from a methodological perspective, it is nearly impossible to isolate one factor in the classroom, such as having a specialist teacher, from all of the other variables in a classroom that intertwine to impact student achievement. Other variables include, but are not limited to: class composition, instructional time per subject, teacher years of experience, time in the day a subject is taught, combined grades, gender composition and socio-economic determinants (Day & Qing, 2010). A survey of members focused on self-reporting would not allow a researcher to make any causal links between specialist teachers and student achievement. Additionally, actual student data would be required to draw comparisons between specialist teachers and student achievement. District school boards have rigorous ethical review processes that would prohibit ETFO from being able to access the data (e.g., report card marks) necessary to complete the research. Boards have ethical review panels charged with reviewing all research submissions. Past practice has been to limit or prohibit the use of student data for any research not conducted by either the board itself or the Ministry. Therefore, a literature review was commissioned to provide ETFO with a summary and analysis of the research that exists on the topic of specialist teachers.

The following literature review outlines the findings of the limited research available about specialist teachers.

The Elementary Teachers' Federation of Ontario

PURPOSE

The purpose of this literature review is to provide a comprehensive evaluation and analysis of the existent knowledge base in relation to specialist teachers and student achievement, focusing specifically on the elementary school level and in the context of Ontario, Canada. Beyond examining the relevance and significance of the literature, the review is designed to serve as a resource for the Elementary Teachers' Federation of Ontario, the educational community and the public at large.

Research Questions:

The following research questions guided this literature review:

1. *Who are specialist teachers and what literature exists concerning them?*
2. *What does the literature say about specialist teachers?*
3. *What does the literature say about the relationship between specialist teachers and student achievement?*

The review is organized into three main parts:

- Firstly, we outline the nature of the study and the employed methodology. Subsequently, we define what exactly it means to be a specialist teacher, as well as how we understand student achievement and student success. In addition, the background and contemporary context of specialist teachers in Ontario is outlined and discussed.
- In the second part, we review the literature surrounding specialist teachers. We organize our findings by the key domains in which specialist teachers are found, and attempt to paint a picture of specialist teachers and their connection to student achievement. Attention is given to the national and provincial context wherever possible.
- A concluding section provides an overview of the key findings along with implications for the educational community regarding specialist teachers.

METHODOLOGY

To identify literature on the topic of specialist teachers and student achievement, a systematic search was conducted utilizing several electronic databases and appropriate keywords. The databases included: ProQuest, ProQuest Dissertations & Theses, JSTOR, EBSCOhost, Education Research Complete and Google Scholar. Different combinations of key words were used to search these databases. Initial search terms used to collect and identify potential sources included: specialist teachers, generalist teachers, specialist education, specialist instruction, and student success and achievement. A secondary search was also conducted surrounding rotary and homeroom class schedules. After the initial search, the major domains regarding specialist teachers were identified, which resulted in more refined searches around: arts specialists, dance specialists, drama specialists, music specialists, physical education specialists, teacher-librarians, along with mathematics, science and technology specialists, and finally coaches and guidance/counsellor specialists. In tandem, the keywords teachers and educators along with student achievement, student success and student outcomes were included in the search parameters. The literature search was restricted to English language publications and documents that focused on specialist teachers at the elementary school level. As the search went on, it became apparent that the issue of specialist teachers has been debated for several decades. However, generally, the sources included in this review are approximately 30 years old or less.

For this review, a “wide net” was cast in order to locate a variety of articles that discuss both generalist and specialist teachers in detail. Though the focus of the search was on identifying academic literature, studies published in a variety of sources were sought out for inclusion in this review. Such sources included academics articles and empirical studies, doctoral and master’s theses, and also news reports, government documents, books, background papers, policy publications, review articles and conference presentations, along with “grey literature” including opinion and conceptual pieces. Altogether, 197 such documents are included in this review, all of which can be found in the **References** section. Included are:

- 74 empirical studies which included 36 quantitative studies, 26 qualitative studies and 12 mixed method studies
- 22 literature reviews and 7 books
- 31 policy reviews along with 8 policy documents
- 11 master’s theses and 8 doctoral dissertations
- 29 grey literature including 25 conceptual pieces, 4 opinion articles and 7 news articles

The literature was then subjected to an initial analysis, conducted in three phases. Each phase of analysis involved coding the documents (Merriam, 2001). Phase I involved the collection and organization of articles where initial categories were developed to group the documents based on major themes and subsequently by specialist domains. Phase II evaluated the sources with respect to relevance, quality, reliability, methodology and theoretical framework. Phase III evaluated the major themes and key findings from the literature in order to draw any substantive conclusions for the educational community.

DEFINITIONS

Generalist Teachers

Most elementary school teachers are generalists who teach all subjects; such teachers are expected to deliver a broad and diverse range of subject matter and curriculum to their students (Ardzejwska, McMaugh & Coutts, 2010). Generalist teachers are therefore expected to have sufficient knowledge, or a “base,” in all content areas. In Ontario, elementary school teachers are typically generalists upon receiving their initial teacher certification. Thus, with the standard set by the Ontario College of Teachers (OCT) and under the *Ontario College of Teachers Act, 1996* (Ontario Regulation 176/10, 1996) regarding certification, all elementary school teachers in Ontario’s public schools are qualified, at minimum, as generalist teachers.

Specialist Teachers

As Boscaroli and Neden (2008) note, while the term *specialist teacher* is heard and used regularly, its exact definition is not always clear. Boscaroli and Neden (2008) define a specialist teacher as one who “has training in a specific discipline taken as a major in undergrad studies or taken throughout the university education program” (para 1) preparing them to be able to teach effectively in that area. Yet, the very notions regarding what constitutes training, knowledge and skill remain somewhat ambiguous. Other definitions of specialist teachers refer to a specialist educator as one who has acquired in-depth knowledge about a subject area and, as a result, has possibly developed a better understanding of that subject area (Coles, 1995). Specialist expertise could therefore be acquired through sustained experience, study, and practice (Block & Beckett, 1990). Furthermore, the question remains how and when teachers themselves understand or consider themselves to be specialists. As Fox (2010) outlines, a combination of subjective beliefs, feelings and school culture/community all shape teachers’ identity in regards to whether or not they believe themselves to be specialists. Thus, the idea of the specialist teacher and generalist teacher remains socially constructed and may differ based on context. There appear to be several key areas for beginning to establish a working definition of a specialist teacher: content area knowledge, field experience and credentials. Specialist teachers can be defined as teachers with training within a specific discipline. Such training may be attained at several levels, typically including (but not limited to) undergraduate education, teacher education and additional teacher qualifications. However, such formal training must be considered in tandem with informal learning, such as specialist knowledge garnered through professional development and sustained experience where specialist knowledge can be acquired.

In Ontario, a combination of education, experience and professional development allows teachers to earn a specialist credential. However, experience or knowledge garnered outside of the formal qualification requirements is typically not considered in relation to the formal credentialing process. To be considered a Specialist Teacher in Ontario, teachers must complete formal training requirements. Certified teachers must take three Additional Qualification (AQ) courses (a “three-part specialist”) meeting the requirements set by the Ontario Ministry of Education and standards set by the Ontario College of Teachers to obtain a specialist credential. Part I can be taken immediately after certification, while Parts II and III require one and two

years of teaching experience, respectively. Thus, not all teachers complete such credentials immediately, if at all, since specialist qualifications are not mandatory. However, such credentials are relevant as they directly impact teacher salaries as they directly impact teachers' movement on the salary grid. Finally, specialist credentials (Principal's Qualification Program, Part I and II) are required for teachers who choose to become school vice-principals or principals in Ontario, with the additional requirements of at least five years teaching experience and other additional qualifications.

Teachers may choose to become accredited as specialists in various subjects. The Ministry of Education has minimal guidelines specifying what qualifications a teacher must have in order to act as a specialist at the elementary level. In order to teach in a specific division on an ongoing basis, a teacher must possess a one-part basic qualification for the division in which they teach, e.g., primary, junior or intermediate. Teacher assignments or appointments must be considered in relation to their formal qualifications and area(s) of expertise. A teacher may still be assigned to teach subjects and/or in a division for a limited time period if mutually agreed upon, in certain areas even if they do not hold the required qualifications (Ontario Ministry of Education, 2011).

Outside of formal credentialing, teachers can become specialists by self-directed professional learning through non-credential courses, attending conferences and a variety of other professional learning opportunities. They may become an in-house expert within the school or the broader community. Thus, at the local level, specialist teachers inside of the classroom may be defined or understood as specialists in different ways depending on the school context in which they work and the communities that they serve

It is important to note the current models of additional qualifications as outlined by the Ontario College of Teachers is unique to the province of Ontario. In many jurisdictions, pursuing a Masters' degree is the route for pursuing extensive (specialist) training in a subject or area of interest. Some Ontario teachers may choose graduate level studies over AQ courses as a means of salary grid improvement or specialist professional development.

Student Achievement and Student Success

Finally, in our evaluation and analysis of the literature regarding specialist teachers, we consider what is meant by student achievement and success. The importance of education lies not only in the individual development of children, but how such development contributes to democracy and the social good (Bascia, 2014; Gallagher, 2014). As Upitis (2011a, 2011b) and Wilkins, Graham, Parker, Westfall, Fraser and Tembo (2003) point out in relation to specialist teachers and student achievement, the importance of an education in the arts or any other subject area should not be solely concerned with whether the study of such subject correlates to improved grades or test scores. Specialist subject areas may hold many intrinsic and extrinsic rewards and benefits for students in the short and long term, and these are not always easily measurable. As *Achieving Excellence: A Renewed Vision for Education in Ontario* (Ontario Ministry of Education, 2014) highlights, students must be given the opportunity to achieve their full potential. This

includes achieving at high levels in schools, as well as acquiring valuable skills and becoming engaged members of their communities.

In this literature review, we incorporate a broad understanding of student achievement and student success (Winton & Pollock, 2015). This includes both measurable outcomes such as test score results, and more “intangible” features of educating the whole child. Generally, in this review, we use the term *student achievement* to describe: student outcomes such as grades, graduation and retention rates, performance on standardized test scores, meeting standards and other measurable outcomes. In addition, we use the term *student success* more broadly to incorporate: the emotional, physical, cognitive, affective, personal, and social development of students – inside and outside of school, as well as the opportunity to succeed, acknowledging that every student learns in their own ways and brings with them unique backgrounds, strengths and abilities. Such a definition is reflected in the literature in this report, where researchers have tied specialist teachers in the classroom to student achievement *and* student success in a variety of ways.

BACKGROUND

Concerns regarding the specialization of teachers and classroom instruction hold a long history at the elementary school level. In Ontario, the emergence of specialist teachers appears to be rooted to the expansion of public schools, particularly in the post-WWII period. At this time, the consolidation of school boards and the gradual disappearance of the one room schoolhouse into larger administrative units capable of efficiencies of scale allowed for the gradual emergence of specialist teachers inside of schools (Gidney, 1999; Gidney & Millar, 2012). While most teachers at the elementary level teach various subjects, more recently arguments asserting a need for specialist teachers in the primary school setting have been visible in various countries (Ardzejewska, McMaugh & Coutts, 2010).

As a result of bargaining in 2005 and 2008, new funding was provided by the government to increase teacher preparation time, which was meant to hire more teachers with specific expertise in order to enhance educational opportunities for students across the province. Nevertheless, concerns over the actual number of specialist teachers and the nature of their work and employment in Ontario has remained. People for Education (2014; 2013; 2012; 2011; 2010; 2009; 2008; 2007) have been at the center of this debate. Their annual reports, which provide a critical examination of the state of public education in the province, have continually asserted an inadequacy of specialized teachers and specialized instruction throughout Ontario. Other advocacy reports (Toronto Vital Signs Report, 2014) as well as the media (Alphonso, 2013, March; Boesveld, 2011, May; Brown & Rushowy, 2013, December; Campbell, 2014, June; CBC, 2014, January; Hasham, 2013, March) have raised similar concerns. Finally, teacher federations in Ontario, most prominently the Elementary Teachers' Federation of Ontario, have continued to share this position (ETFO, 2011; 2015), which is also evident in other parts of Canada (British Columbia Teachers' Federation, 2012). Overall, it appears as though the discussion of specialist teachers remains tied to educational governance and the equitable allocation of teachers and resources inside of schools.

While the focus of this literature review is on the relationship between specialist teachers and student achievement, this does not assume that there is a problem with generalist teachers at the elementary level. The debate around generalist and specialist teachers may be viewed as one that concerns teacher quality – an area that is complex and multidimensional – and subject specialist knowledge is only a part of what forms a high-quality or effective teacher. The focus on teacher quality is premised on the belief that the classroom teacher can have a significant impact on student learning, achievement and success. Hence, while the connection between effective teachers and student success is well-established (Hattie, 1992, 1993), specialist knowledge is only one measure of what makes a high-quality teacher.

A conceptualization of teacher quality must be viewed in relation to a plethora of factors that influence student learning inside and outside of schools. Teacher quality can be viewed in relation to teacher training, experience, qualification and professional development. In addition, factors typically outside of teachers' control such as classroom size, school size, labour relations and the significant influence of socio-economic status must be considered as well. Again, it is

important to emphasize that specialist knowledge forms only part of what makes a high-quality or effective teacher, and the evidence surrounding specialist subject area knowledge and student achievement remains mixed (Darling-Hammond, 2000).

Another way to view the generalist/specialist debate is in relation to the organization and structure of the school day, and the way in which curriculum is delivered by teachers. Arrangements such as homeroom, rotary and block scheduling are the most common forms of organizing the school day, and influence both the ways student are taught and the number and kinds of teachers needed inside of schools. While studies suggest that the organizational structure of instruction may impact student achievement (Canady & Rettig, 1995, 1996; Fabris, 2001; Gore, 1997; Kramer, 1997a, 1997b; Law, 1989) the evidence remains limited. Again, this consideration underscores the notion that generalist classroom teachers should not be viewed as less effective *a priori* than their specialist counterparts.

The examination of specialist versus generalist teachers can be viewed in relation to the idea that teachers should have both breadth and depth (Betts & Frost, 2010). Are high-quality teachers those who have a wide variety of knowledge, experience and expertise from which to draw? Or are effective teachers those who hold specialist qualifications and in-depth subject area expertise? Such debates have been longstanding in education (Miel, 1966). What a debate on such a topic should highlight is that teacher quality, whether generalist or specialist, remains a complex and contested territory tied to the goals, meanings and purposes of education, as well as how we come to understand and define student achievement and student success.

REVIEW OF THE LITERATURE

The aim of this literature review is to examine the existent evidence surrounding specialist teachers and the relationship between such teachers and student achievement at the elementary school level. In this section, we detail a comprehensive review of the academic literature regarding specialist teachers and student achievement, broadly defined. What emerged as we examined the literature were several specific areas of concentration surrounding research into specialist teachers. This included specialist teachers in: the arts (including music); physical education; teacher-librarians; science, mathematics and technology specialists; and finally specialist teachers in instructional coaching and guidance/counselling roles.

ARTS EDUCATION

According to the Ontario Ministry of Education (2009), the arts play an important role in the primary curriculum and such an education remains essential to students'

intellectual, social, physical and emotional growth and well-being. Experiences in the arts – in dance, drama, music and visual arts – play a valuable role in helping students to achieve their potential as learners and to participate fully in their community and in society as a whole. The arts provide a natural vehicle through which students can explore and express themselves and through which they can discover and interpret the world around them (p. 3).

However, a 2012 report by People for Education points out that less than half of Ontario's elementary schools have specialist teachers for the arts curriculum, while many schools rely extensively on fundraising for arts enrichment. In 2012 the province eliminated Program Enrichment Grants, which had funded the arts and other specialist programming. As Vernon (2014) notes, we do not know how many students in Ontario receive instruction from specialist teachers in drama or dance, nor do we know the number of schools with art specialists. Additionally, according to the Ontario Arts Council (1997), most generalist teachers receive little training in the arts during their teacher education, and arts specialists have been eliminated in many parts of the province.

A comprehensive review of the benefits of art education is provided by Uptis (2011a). In her report (prepared for ETFO), she argues that arts education results in significant positive outcomes for students, including intrinsic benefits such as creativity, imagination and personal enrichment, as well as extrinsic benefits such as increasing engagement in learning, self-confidence and metacognition. Furthermore, she asserts that "Elementary teachers – both generalist classroom teachers and arts specialists – can blend roles and skills to provide exceptional arts opportunities to reach all of the children they teach" (p. iii). Below, we review several studies that have linked arts education with specialist teachers and student success and achievement.

A key portion of the literature focuses on the issue of teacher confidence or efficacy in the classroom. Such studies typically discuss issues regarding teacher education and professional development, and suggest ways in which generalist teachers may receive support in developing their artistic abilities and pedagogies (Hennessy, Rolfe & Chedzoy, 2001; Russell-Bowie, 2012). Thus, teacher "confidence" or "self-efficacy" and the challenges for generalist teachers with curriculum and instruction in arts education remains another area of concern and critique in the literature. Here, it appears that generalist teachers lack the confidence necessary to provide effective arts instruction (Wilson, Macdonald, Byrne, Ewing & Sheridan, 2008). Vernon (2015) asserts that to date, research regarding specialist teachers does not capture the experience of non-specialist teachers teaching the performing arts to their students, and little research considers teachers' attitudes towards these subjects, their preparedness to teach these subjects and their ability to guide students through specialized process and content knowledge (p 4).

Generalist teachers may nevertheless have rich backgrounds in the arts in both formal and informal learning environments.

According to Uptis (2011a, 2011b), the evidence linking arts education to achievement in other subject areas remains mixed at best. The evidence from other studies appears to support this claim. Hetland and Winner (2001) conducted a review of the literature surrounding arts education and academic outcomes. While they found some evidence indicating arts education improved student achievement in some areas, no reliable casual links were found in others. Their review also does not mention the role of specialist teachers in such outcomes. Nevertheless, research from the United States suggests positive academic and social outcomes for students engaged in the arts, particularly for at-risk students from lower-SES backgrounds (Catterall, Dumais & Hampden-Thompson, 2012; Catterall, Chappleau & Iwanaga, 1999). However, such research remains correlational and does not mention the explicit role of specialist teachers in developing positive outcomes. A large quantitative study of 547 elementary schools in the United States (Wilkins, Graham, Parker, Westfall, Fraser & Tembo, 2003) found no correlation between instructional time spent on “non-core” subjects (such as art) and standardized test scores. The authors determined that the allocation of classroom time to non-tested subjects such as the arts would not negatively affect student achievement. As Uptis (2011a) concludes: “It is a blend of true partnerships between generalist teachers, specialist teachers, arts subjects and art-makers that is most likely to yield the richest arts education” (p. 4).

Thus, arts education by specialist teachers may benefit students with respect to achievement as well as other measures of development and success such as creativity and critical thinking. However, beginning with the literature on the topic of arts specialists, a common theme emerges surrounding specialist teachers in Ontario: that schools at the elementary level face growing challenges with providing adequate funding, time and support in specialist subject areas (People for Education, 2013). Support for the arts should not come solely from claims that arts education improves student achievement in other areas, but should itself be grounded in a broader understanding of student success and development.

MUSIC EDUCATION

While music education remains central to the arts curriculum in Ontario, it appears that there are growing challenges for music education in the province. According to People for Education (2014), only 43% of Ontario elementary schools have a specialist music teacher, which is the lowest proportion of any province in Canada. In contrast, for example, in Quebec and the Atlantic provinces, most schools have a specialist music teacher (87% and 86%, respectively) (p. x). Much of the Canadian literature on the topic of music education points to similar concerns regarding the availability of music specialists. In the first pan-Canadian study of music education, the Coalition for Music Education in Canada (2005) found that music education in Ontario may not be as well-supported as official documents implied, with non-specialist teachers facing difficulties in accomplishing advanced curricular music expectations. This was particularly concerning for elementary schools and smaller schools, which were more likely to have a non-specialist music teacher in the classroom. More recently, the Coalition for Music Education in Canada (2010) reports that 58% of elementary music teachers have no music background at all. They further assert that “The strongest music education programs have appropriate funding, student interest and time, a strong specialist teacher, appropriate instruments and space, as well as a supportive principal and parents” (p. 2). Fitzpatrick (2013) suggests that school music programming appears to be in decline. Earlier evidence presented by Beatty (2001a, 2001b) indicated a trend in Ontario’s elementary schools where non-specialist teachers were increasingly taking the place of music specialists. Overall, it appears as though there is a growing trend in both Canada and the United States towards fewer music specialists being employed in schools (Beatty, 2014; Wiggins & Wiggins, 2008; Willingham & Cutler, 2005).

The issue of generalist teacher confidence and efficacy in comparison to specialist teachers is noted in music education in a similar fashion to arts education (de Vries, 2011; Hallam, Burnard, Robertson, Saleh, Davies, Rogers & Kokatsaki, 2009; Hash, 2010; Hennessy, 2000; Hewitt, 2002; Holden & Button, 2006; Mills, 1989; Russell-Bowie, 2009). Wiggins and Wiggins (2008), utilizing a questionnaire and school visits in the US, found that generalist music teachers lacked confidence and specialist knowledge in comparison to specialists. Hewitt (2002) also found higher levels of confidence and self-efficacy among specialist music teachers in the composition process as compared to non-specialists. Such themes prevail throughout the literature, where those who argue for music specialists often point to the substandard manner in which music is often taught by generalist teachers (Bresler, 1993; deVries & Albon, 2012; Giles & Frego, 2004). Reasons for such criticisms include inadequate teacher training and time devoted to music education by generalist teachers, along with the challenge of there being no guarantee that students will receive consistent music instruction from one year to the next. (Griffin & Montgomery, 2007; Downey, 2007; Seddon & Biasutti, 2008). As the Coalition for Music Education in Canada (2010) notes, schools with strong education programs appear to have higher numbers of specialist teachers who provide more musical opportunities for their students. However, it is unclear how such opportunities translate directly into student achievement.

The literature remains limited regarding music instruction inside of the classroom by music specialists in relation to student achievement. Fitzpatrick (2013) points to three main concerns regarding elementary music education in Ontario: music programs being taught by non-specialists, elementary schools not having any music instruction and elementary specialists not teaching music. Other researchers highlight such [concerns](#) as well (Beatty, 2001a, 2001b, 2014; Bolden, 2012; Willingham & Cutler, 2005). Sazabo (1989) conducted a study that directly compared generalist and specialist music teachers in the Canadian context. A music competency test was administered to 1,265 students in grades 2 through 5 in Edmonton, Alberta. Students whose teachers were music specialists and had received in-service training scored significantly higher than students whose teachers were not specialists. Thus, Sazabo claimed that in-service training might be a useful model for professional development and ensuring generalist teachers are able to gain competency in music instruction. People for Education (2013, 2014) asserts that in elementary schools where a specialist music teacher is present, students are much more likely to have opportunities to learn an instrument, sing in a choir, play in a band or see live performances. However, such concerns are restricted to issues of access and equity rather than student achievement specifically.

As with the arts, music education faces challenges to ensuring that specialists are available inside of all schools in Ontario. Fewer music specialists in schools increases the likelihood that children will not have access to the same opportunities, presenting challenges for equity and student success in music education. Specialist teachers in music appear to be better prepared and exhibit higher levels of confidence, and bring both passion and experience with them into the classroom. Such considerations highlight the concerns presented by those who believe in the importance of high-quality music education.

HEALTH & PHYSICAL EDUCATION

In Ontario, recent debates regarding specialist physical education (PE) teachers have emerged in relation to the health and well-being of students and the importance of health promotion inside of schools (Ferguson & Power, 2014). As Alphonso (2013) argues, the lack of PE teachers in Ontario's elementary schools connects directly to challenges surrounding increasing obesity rates among school-aged children. Hutchinson (2013) discusses the issue of specialist teachers in relation to health, well-being and increasing instances of obesity in the Canadian context. He cites evidence from an Australian study (Telford, Cunningham, Fitzgerald, Olive, Prosser, Jiang & Telford, 2009), which found that specialized teaching in health education produced gains in both health and academic performance.

According to People for Education (2014), "47% of elementary schools have a specialist health and physical education teacher, either full- or part-time, an increase from 30% of schools in 2004" (p. 7). In addition, People for Education claim that health and physical education teachers ensure students have more hours of PE, as well as provide higher quality physical education. Such claims are extremely important when viewed in relation to findings that support the connection between activity, health and well-being. Rasberry, Lee, Robin, Laris, Russell, Coyle and Nihiser (2013) reviewed the literature surrounding school-based physical activity and student achievement. They found that such activity is either positively related to academic performance or that there was no clear relationship between the two. Nevertheless, this indicates that physical activity clearly does not have any negative effects on student achievement. Wilkins, Graham, Parker, Westfall, Fraser and Tembo (2003) make similar conclusions in their study, noting that time spent on subjects such as physical education did not affect standardized test scores. Other research, such as Lasala (1993), found stronger student outcomes in both fitness and academic achievement as a result of physical education. Jenkyns (2001) notes similar findings in her analysis of grade 5 students regarding activity and academic achievement. Additionally, PE in schools is likely to have other positive outcomes, such as promoting physical activity and well-being. Hunt (1995), researching in British Columbia, found that students involved in daily education programs at their schools were more active than students in non-daily physical education programs.

Research in Canada appears to support the claim that specialist PE teachers provide stronger instruction and can improve student outcomes. In Quebec, PE by specialist teachers correlated to improved mathematics test score achievement (Sheppard, Labarrea, Volle, Jéquier, Lavallée & Rajic, 1982). Coles' (1995) qualitative study in the Canadian context found that specialist and non-specialist physical education teachers shared many similar experiences, however, a notable difference was found regarding the enthusiasm and confidence displayed by specialist teachers versus their non-specialist peers, specifically regarding the planning and implementation of PE programs. In Ontario, Faulkner, Dwyer, Irving, Allison, Adlaf and Goodman (2008) claim that their research "supports the position that specialists are the preferred providers of physical education in elementary (primary) school settings" (p. 407). Their results cite similar positive effects regarding PE specialists in Alberta (Spence, Melynchuk, Mandigo, Marshall, Schwartz, Thompson & Dunn, 2004) where PE specialists were more prepared, devoted more time and

exhibited more enjoyment than PE non-specialists. Decorby, Halas, Dixon, Wintrup and Janzen (2005) provide a case study of two schools in Manitoba, one taught by PE specialist and one by generalists. They found notional support for higher quality instruction by the specialists while the generalist school teachers faced more challenges delivering PE instruction.

Additionally, the literature out of the United States appears to support the assertion that PE instruction by specialists is of higher quality than that performed by generalists (Jenkyns, 2001). In their own review of the literature surrounding specialist PE teachers Faucette and Hillidge (1989) note several key positive differences in relation to student achievement and engagement when taught by specialists (p. 52). Moreover, they claim that PE taught by specialists resulted in improved physical fitness measures in comparison to generalists – however, their evidence is now quite dated and relies mainly on smaller studies and doctoral dissertations (Clarke, 1971; Hallstrom, 1965; Henessy, 1984; Nestroy, 1978; Ross, 1959; Smith, 1981; Workman, 1964; Yeatts & Gordon, 1968; Zimmerman, 1959). In another study, Faucette, McKenzie and Patterson (1990) found that students were more likely to exhibit higher levels of skill and fitness as a result of receiving PE instruction by specialists rather than generalists who focused largely on games or free play activities. Placek and Randall (1986) outline similar results, as specialist teachers in their study focused on skill development and practice. Such findings are also supported by other studies, which note that in PE lessons taught by specialists, children were more active, had more practice, and provided more feedback to students compared to generalists (Behets, 1994; McKenzie, et al., 1995; Zeng, Leung & Hipscher, 2010).

Teacher confidence and self-efficacy also appears in the PE literature just as in other specialist domains reviewed. According to Breslin, Hanna, Lowry, McKee, McMullan, Haughey and Moore (2012), PE specialists held significantly higher levels of intrinsic motivation and took part in more activity than generalist teachers. In addition, PE specialists were more proficient in both instructional strategies and classroom management. Moreover, Morgan and Bourke (2008) found that non-specialist PE teachers who recalled more negative experiences were less likely to be involved in school PE and held lower levels of PE teaching confidence than those with more positive experiences. Moreover, such teachers held only moderate levels of confidence in their PE teaching abilities.

The literature appears to indicate that specialist teachers in health and physical education can positively impact student achievement and other measures of positive student development such as the enhancement of healthy and active lifestyles. This finding is important and timely, as concerns regarding both physical and mental health have come to the forefront and Ontario is preparing to introduce a new health and physical education curriculum (Ferguson & Power, 2014; Ontario Ministry of Education, 2015b). The curriculum specifically focuses on several timely topics including mental health, positive relationships, sexual health and well-being.

TEACHER-LIBRARIANS

The challenges facing teacher-librarians with respect to employment appears to be the most pressing contemporary issue for this group. People for Education (2007) indicated that only 57% of elementary schools in Ontario had a full- or part-time teacher-librarian, down from 80% in 1997/1998. According to Klinger, Lee, Stephenson, Deluca and Luu (2009), the number of school librarians in the province has been declining in recent years. They further highlight that libraries have been particularly vulnerable to funding cuts, and declines in educational funding directed towards school libraries have been prevalent. Thus, it appears as though deteriorating collections and declining levels of staffing in Canadian and American schools are common (Haycock, 2003; People for Education, 2009). In addition, it is not unusual to see school libraries staffed by parent volunteers or students, with limited hours of operation (Klinger, Lee, Stephenson, Deluca & Luu, 2009). Coish (2005), in reviewing the literature surrounding teacher-librarians in Canada, pointed to a deterioration in the resources available for libraries in many Canadian schools. Boesveld (2011) noted that teacher-librarians appeared to be disappearing in Ontario's schools, citing that in Ontario only 56% of elementary schools have a teacher-librarian, with 80% of these working on a part-time basis. More recently, Rushowy (2015) discussed the decision by the Toronto Catholic School Board to eliminate teacher-librarians in its elementary schools. She also noted that the Windsor Catholic School Board no longer employs teacher-librarians.

Such challenges for school libraries and librarians may be unfortunate, particularly if school librarians can assist students and positively influence student achievement. Klinger, Lee, Stephenson, Deluca and Luu (2009) claim that school libraries act as hubs where teaching and learning can occur simultaneously, while teacher-librarians collaborate with other teachers and engage with the community to support children's learning. According to Blackett and Klinger (2006), research dating back as far as the 1960s supports the link between school libraries and increased student achievement. For example, Blackett and Klinger's (2006) own study examined the relationship between teacher-librarians and Educational Quality and Accountability Office (EQAO) test results in Ontario. Three key findings from this study included:

- Grade 3 and 6 students in schools with teacher-librarians are more likely to report that they enjoy reading.
- Schools with trained library staff are more likely to have a higher proportion of grade 6 students who attained level 3 or higher on reading tests.
- Schools without trained library staff tend to have lower achievement on the grades 3 and 6 EQAO reading tests (both in terms of average achievement and attaining level 3 or higher) (p. 5).

However, Blackett and Klinger note that such correlations do not necessarily mean that librarians were directly responsible for improved results in achievement. Lance and Lietzau (2010) examined standardized test scores in Colorado, and noted that students in elementary schools with at least one full-time librarian averaged better scores. Such findings are supported by Haycock (2011), who asserts that "More than 20 studies in the United States and Canada

[have] examined the role and presence of the teacher-librarian in high-performing schools, concluding that teacher-librarian time, schedules and collaboration with teaching colleagues were associated with higher test score outcomes” (p. 38). His own study, conducted in British Columbia, found similar results between school librarians and achievement, concluding that “an easily accessed, well-funded, well-staffed, well-managed, well-stocked, integrated and heavily used school library correlated to higher student achievement” (p. 40).

Other studies from the United States have also noted a positive connection between libraries and student achievement (Lance, 2001; Lance & Hofschire, 2011; Lance & Russell, 2004; Lance & Schwarz, 2012). Lonsdale (2003) provided a review of the research regarding the impact of school libraries on student achievement. Her findings are similar to what has been discussed thus far: that an effective library program with a full-time library professional, support staff, and a strong online network which connects the library's resources to the classroom leads to higher student achievement regardless of the socioeconomic or educational levels of the adults in the community (p. 30). Such achievement is not only linked to student scores on standardized tests, but to learning and success more broadly. Thus, while the role of the teacher-librarian specialist has not been particularly thoroughly studied, school librarians, generally, do appear to have some positive impacts on student learning, literacy, and achievement.

Finally, the role of the teacher-librarian has shifted in recent years with the emergence of new technologies and digital literacies (Ontario School Library Association, 2010). This shift concerning technology, the changing role of the teacher-librarian, and the emergence of the idea of the learning commons is discussed below (page 22).

With the tightening of school budgets, some school boards have chosen to eliminate teaching positions outside of the classroom such as teacher-librarians. The research points to a strong correlation between teacher-librarians and student achievement as well as other measures of student success such as positive orientations towards reading and access to library resources (Klinger, Lee, Stephenson, Deluca & Luu, 2009). While the role of the teacher-librarian appears to be in a state of flux, as educational specialists they do appear to play a role in improving student achievement and student success.

MATHEMATICS, SCIENCE AND TECHNOLOGY

In this section, we review the literature concerning specialist teachers in three distinct but overlapping fields: mathematics, science and technology.

Mathematics

Brown and Rushowy (2013) highlight that a “growing worry over falling mathematics scores has Ontario educators scrambling to solve the problem, with calls for everything from putting a mathematics specialist in every elementary school to making the subject mandatory to grade 12” (para 1). Similarly, the CBC News (2014) quotes education minister Liz Sandals as stating: “There is a particular need to increase the number of mathematics specialists within the elementary system where many teachers have educational backgrounds in other subjects” (para 4). Such views have translated into renewed calls for improved mathematics education and teacher training. Ontario has offered a mathematics subsidy for teacher training to improve subject area expertise in mathematics and emphasized this with the Mathematics Action Plan (Ontario Ministry of Education, 2015a). However, such efforts still do not ensure that a mathematics specialist will be available in every classroom or school

In 2015, the Ministry of Education, provided funds through teacher federations, for teachers to take additional qualification courses or university mathematics courses in an effort to support teachers learning and professional development. The program was voluntary and does not ensure that there is a mathematics specialist in each school. Traditionally, this area of the curriculum is one, where elementary teachers may experience high-levels of stress and a phobia to the subject (McAnallen, 2010).

Some studies have linked improved mathematics achievement with teacher subject area knowledge and preparation. Utilizing longitudinal student data, Monk (1994) found that teachers’ preparation, measured by coursework, positively relates to student achievement. Another study of middle-school mathematics teachers found that students of fully certified mathematics teacher displayed greater achievement gains than those taught by non-certified generalists (Hawk, Coble & Swanson, 1985). Likewise, the final report produced by the National Mathematics Advisory Panel (2008) recommends more research be done on mathematics specialists in elementary classrooms, especially in light of the fact that coaches are becoming more common in schools. In their review of 114 pieces of literature, they found only one study that explored the effect of mathematics specialists on student achievement in elementary schools. Based on a lack of research, the Advisory Panel indicated that there is no high quality evidence to show that the use of mathematics specialists improves student achievement directly.

Mathematics teachers’ self-efficacy and confidence to teaching mathematics has also been noted in the research. The International Association for the Evaluation of Educational Achievement (2011) indicated that lack of confidence in teaching mathematics by generalists may negatively impact student engagement. Teachers with higher levels of self-efficacy in mathematics appear to have more content area knowledge and the ability employ stronger

pedagogical strategies (Kahle, 2008; Swars, 2005; Wilkins, 2008). Such self-efficacy can then translate into improved student achievement in mathematics (Roettinger, 2013; White, 2009); however, the exact relationship between such teacher characteristics and student achievement remains unclear (Wayne & Youngs, 2003).

While the Ministry of Education funding provided to teachers, through their federations, allowed for the opportunity to enhance their mathematics knowledge and skills, it did not provide specific funding for 'mathematics' specialist positions/roles in schools. Gaps still exist between curriculum demands, content knowledge and teacher comfort level with the subject of mathematics (Ontario Ministry of Education, 2015a).

Science

According to Schwartz and Gess-Newsome (2008), most elementary classroom teachers in the United States hold limited experience with science, scientific investigation and content area knowledge. This then translates into a lack of emphasis on science in the classroom (Gess-Newsome, 1999; Ramsey-Gassert, Shroyer & Staver, 1996; Schwartz, Abd-El-Khalick & Lederman, 2000; Smith & Anderson, 1999; Tilgner, 1990). Teacher preparation is also an issue, with only 25% of classroom generalists in one large-scale survey classifying themselves as well-prepared to teach science (Marx & Harris, 2006). Thus, advocates for science specialists argue that such teachers – those holding more pedagogical and content area knowledge in their field – will improve student achievement and student success in science (Abell, 1990; Gess-Newsome, 2008; Hounshell & Swartz, 1987; Jones & Edmunds, 2006; Nelson & Landel, 2007; Neuman, 1981; Osborne, Simon & Collins, 2003; Schwartz, Abd-El-Khalick & Lederman, 2000; Williams, 1990). In the Canadian context, similar findings have been reported regarding low teacher confidence with science instruction and low self-efficacy and enthusiasm which may result in less time spent on science in the classroom (Hanson & Akerson, 2006; Hodson, 2002). Other research has found that learning to teach across all subject areas often left science content knowledge underdeveloped for primary teachers, which resulted in a lack of confidence to teach science (Ronan, 2014).

However, the relationship between specialist teachers in science and student achievement in the research literature remains underdeveloped. Druva and Anderson (1983) found that student science achievement was positively related to the teacher preparation and previous coursework undertaken. Schwartz, Abd-El-Khalick and Lederman (2000) provide one empirical study that compared instructional planning and student achievement between science specialists and generalists. They found that students taught by the elementary science specialists were more engaged in inquiry-oriented activities and demonstrated critical thinking abilities. However, when compared to students taught by non-specialists on state science tests, there was no significant difference. Jones and Edmunds (2006) found similar results regarding instructional approach employed by science specialists. These results were consistent whether the specialist was the sole deliverer of science instruction or the specialist was a curriculum leader who worked with the classroom generalists on science instruction (Schwartz & Gess-Newsome, 2008).

Technology

A search of the literature surrounding technology and teachers primarily located documents that emphasized the need for technology in schools and how to teach with technology rather than focusing on the role of the technology educator specifically (Froese-Germain, 2013; Riel & McGahey, 2013; Mumtaz, 2000; Wozney, Venkatesh & Abrami, 2006). However, a growing segment of the literature surrounding specialist teachers and technology discusses librarians and the changing nature of their work (Scheirer, 2000). As mentioned in the previous section, the role of the school library has increasingly shifted toward utilizing technology and digital literacy. Such a shift in the work of school librarians into digital classrooms and media specialists has also brought the emergence of the “learning commons.”

The idea of the learning commons understands libraries as places where teaching and learning can occur with teacher-librarians providing instructional support. Distinct from the traditional library setting, the learning commons is a place without traditional boundaries, where learning can occur physically and virtually (Ontario School Library Association, 2010). With an emphasis on student-centered strategies and collaboration, the learning commons is a new conceptualization of the school library (Loertscher & Koechlin, 2012). While studies surrounding the link between teacher-librarians, the learning commons and student achievement remain underdeveloped as the field is relatively new, what literature does exist points to positive relationships between teacher-librarians and student success (Ekdahl & Zubke, 2014; Loertscher, Koechlin & Reenfeld, 2012; Sykes & Koechlin, 2014).

At a time when teaching and learning appear to be evolving specifically in relation to emergent technologies and other modalities, students need teachers who are capable of understanding increasingly complex information literacy. As the research indicates strong links between student achievement and a robust library program, as well as the growing importance of technology, technology experts and teacher-librarians should remain integral to schools today and in the future.

INSTRUCTIONAL COACHES AND COUNSELLORS

While the earlier sections of this review have examined specialist teachers, typically with respect to classroom teachers, this final section deals with two other types of specialist that contribute to teaching, learning, and student success: coaches and counsellors.

Instructional Coaches

The term “coach” refers to a broad range of education specialists who may be known as learning coaches, literacy coaches, mathematics coaches, teacher-leaders and learning resource teachers, among other terms. While coaches in education and their role in influencing student achievement are not necessarily a new phenomenon (Ross, 1992), in recent years Ontario has witnessed an increase in the number of instructional coaches. As Lynch and Ferguson (2010) note, literacy coaching is a relatively new professional development initiative in Canada. In Ontario, since 2003 with the creation of the Literacy and Numeracy Secretariat, several documents describing the importance of literacy coaches have appeared, and such coaching has become common practice in schools (Campbell, Fullan & Glaze, 2006).

In the United States, there appears to be a growing emphasis on mathematics coaches as subject specialists. Campbell and Malkus (2013) explored the impact of mathematics coaching specialists in 36 schools in the United States, finding that:

in all three grades (grades 3, 4, 5), on average, the mathematics achievement scores of those students in the schools where an elementary mathematics specialist was placed for three years were significantly higher than the achievement scores of students in the control schools. However, this was not the case in the schools that had a specialist for only one year. Elementary mathematics specialists who were in a school for only one year did not significantly affect the mathematics achievement scores of the students in their schools at any grade 3–5, as compared to the scores of the student in the control schools (p. 200-201).

Other studies surrounding mathematics coaches point to the utilization of mathematics specialists as teachers, teacher leaders or coaches as a means to improve the ability of non-specialist mathematics teachers and to support effective mathematics instruction (Rigelman, 2010). Researchers have also noted that mathematics coaches were able to improve teachers’ mathematics understanding and ability to teach mathematics in the classroom (Becker, 2001; McGatha, 2008). In an Ontario qualitative case study of mathematics coaches, Larsen (2012) found that coaching resulted in a notable change in teachers’ classroom practices, as well as changes in student learning as a result of coaching. However, McGatha (2009) also wrote a review of the research on mathematics specialists and coaches for the National Council of Teachers of Mathematics in the US and found only seven studies that focused on mathematics coaching. Thus, while mathematics coaching may be beneficial for teachers and students, the evidence to date remains limited.

In an Ontario study completed for the Simcoe County District School Board, Sangster (2008) noted that schools with literacy coaches showed greater gains in grade 3 and 6 EQAO test scores (both in mathematics and literacy). Lynch and Aslop (2007) from Ontario provide a review of studies surrounding literacy coaches, stating that the literature indicates several positive effects of utilizing literacy coaches, including improved student achievement on standardized tests, as well as the “opening of classroom doors to create more collaboration and a greater sense of community among teachers in a school” (p. 2). Other research studies appear to support such claims, indicating positive results for student achievement in literacy and reading (Bean, Cassidy, Grumet, Shelton & Wallis, 2002; Bean, Swan & Knaub, 2003; Casey, 2006; Denton, Swanson & Mathes, 2007; L’Ailler, Elish-Piper & Bean, 2010; Lockwood, McCombs & Marsh 2010). Thus, instructional coaches appear to hold potential for improving student learning and achievement.

While the literature on coaching indicates that instructional coaches typically engage in a variety of activities and assume various roles (Bowman & Feger, 2006; Hall, 2004; Knight, 2007; O’Connor & Ertmer, 2003; Steckel, 2009), coaching does appear to be an effective model of professional development for imparting specialist knowledge to other teachers which can contribute to improved student achievement. With an emphasis on coaching in Ontario by the Literacy and Numeracy Secretariat, the role and place of coaches as learning specialists may hold promise in terms of positively impacting student learning and school success.

Guidance Teachers/Counsellors

The role of the guidance teacher or guidance counsellor (in Ontario formally referred to as Guidance and Career Specialists) appears to be shifting in schools. With renewed emphasis on school safety, mental health, and career building and planning, guidance teachers form an important component of education and student success in Ontario (Ontario Ministry of Education, 2013; Ontario Ministry of Education, 2015b). Thus, while not always directly involved in teaching and learning inside of classrooms, guidance specialists play an important role in supporting students. As People for Education (2015) discusses:

Although guidance counsellors in Ontario traditionally focused on helping students select courses and plan for post-secondary education and career opportunities, their work in schools today has become more multidimensional, revolving around not only life and career planning, but also academic skills development, social-emotional development and mental health (p.1).

Levi and Zielgler (1991) in a report for the Ontario Ministry of Education, argued that effective school guidance counselors help 11-14 year old students plan for their futures and are individuals who spend their time with “teachers, students and others outside the Guidance department walls, and who are a resource to staff and students, bringing them knowledge about and contacts with community agencies, career centers, other educational institutions, work sites and employers” (p. 63). While the research concerning school guidance specialists and student achievement is limited, some evidence does point to positive effects of counsellors in reducing student discipline issues and possibly increasing test scores (Carrell & Hoekstra, 2014; Carrell & Carrell, 2006; Reback, 2010ab). Lapan, Gysbers and Petroski (2001) found that

schools with more comprehensive school counselling programs reported that students felt safer, along with other positive measures of success and higher grades. Overall, there appear to be a significant number of studies which link counselling specialists to positive student outcomes and achievement (Boutwell & Myrick, 1992; Brigman & Campbell, 2003; Cook & Kaffenberger, 2003; Dahir & Stone, 2003; Fitch & Marshall, 2004; Lapan, Gysbers & Petroski, 2001; Lapan, Gysbers & Sun, 1997; Lee, 1993; Poynton, Carlson, Hopper & Carey, 2006; Sink, 2005; Sink & Stroh, 2003; Whiston & Sexton, 1998; Whiston & Quinby, 2009).

Nevertheless, despite such importance, it appears as though guidance teachers and counselors remain relatively few inside of Ontario's elementary schools. In Ontario, schools are mandated to have only one counsellor for every 5,000 students at the elementary level, with many working in itinerant roles between schools (Pearce, 2012). Indeed, only 14% of elementary schools have at least one guidance counselor, while only 10% have one who is full-time (People for Education, 2015). The limited presence of guidance-teachers and counsellors should be concerning as school safety, bullying and mental health remain key priorities for educators in Ontario (Ferguson & Power, 2014).

CONCLUSION

This literature review sought to answer three key questions:

1. *What are specialist teachers and what literature exists concerning them?*
2. *What does the literature say about specialist teachers?*
3. *What does the literature say about the relationship between specialist teachers and student achievement?*

Significance

In Ontario, the curriculum mandates that all elementary students receive instruction in specialized subject areas. However, due to limitations in funding and the provision of specialized teaching staff across the province, many students do not have access to specialist teachers. The allocation of time and resources to subject-specific areas such as art, music and physical education, along with coaches and guidance specialists has been traditionally premised on the notion of educating the whole child and understanding that engagement in such subject areas and expertise can positively contribute to the learning and development of students. Whether understood for their possible intrinsic or extrinsic rewards, many would argue that specialized subject areas should be taught for their own sake and be taught by the best possible teachers available (Winner & Hetland, 2000). Finally, the fact that some schools have greater access to specialist teachers than others poses concerns for equity and the commitment to a full and enriching education for every child across Ontario.

What are specialist teachers and what literature exists concerning them?

A fully encompassing definition of a specialist teacher remains somewhat elusive. Teachers bring a wide range of both formal qualifications as well as informal learning and experiences to their classrooms. While there is a formal definition for what constitutes a specialist teacher by the Ontario College of Teachers, in practice, specialist teachers may be understood in other ways. How specialist teachers are employed in Ontario must be viewed in context, whereby funding as well as different arrangements by school boards across the province result in differentiated access to specialists in a wide array of subject areas.

In Ontario, as People for Education (2011, 2012, 2013, 2014) have noted consistently, the number of specialist teachers appears to be declining, particularly at the elementary level. Moreover, there continues to exist a disparity between urban and rural schools in relation to the availability and access to specialist teachers in a variety of subject areas. Finally, the issue of specialist teachers relates to concerns regarding teacher preparation time, and the challenges inherent in the limited time teachers have to prepare for classes across the curriculum. Thus, the role, place and purpose of specialist teachers must also be understood in relation to the administration and organization of education and the allocation of resources.

What does the literature say about specialist teachers?

The need for specialist teachers is also grounded in a constructivist understanding that as students progress into higher grades, subject area content increases in complexity, and thus the skills and content area expertise required by teachers also increases (Schiro, 2013; Walker, 2002). Such a premise is noted in the literature reviewed, which, overall, finds that specialist teachers appear to be better equipped to understand, interpret and deliver curriculum to students than generalists. Much of the academic literature surrounding specialist teachers explores the ways in which such teachers teach – the manner of pedagogy, expertise, motivation, instructional strategies and delivery of curriculum inside of the classroom. What the literature appears to reveal is that there is support for the claim that specialist teachers do provide more effective pedagogical strategies, student engagement and student success. Such instruction may then, in turn, lead to improved student achievement.

The issue of teacher confidence, enthusiasm and engagement is also quite common in studies surrounding specialist teachers. Such research points to specialist teachers not only holding advanced credentials, but feeling more capable and being better prepared to teach in their specialist field compared to generalists. While such attributes and characteristics may not translate into student achievement gains *per se*, it would appear as though such teachers do provide high-quality instruction and contribute to student success. The significance of a well-prepared, passionate and confident teacher in the classroom cannot always be measured.

What does the literature say about the relationship between specialist teachers and student achievement?

The findings of the limited number studies available surrounding specialist teachers and student achievement bring us to the conclusion that specialist teachers are able to instruct students in a high-quality and effective manner. However, the evidence regarding the impact of specialist teachers on student achievement is more ambiguous and remains, overall, inconclusive. The literature which does exist surrounding specialist teachers remains rather limited, particularly empirical work regarding specialist teachers and causal links to student achievement. Specialist teachers, perhaps somewhat self-evidently, appear to be better equipped to teach students within their respective specialist fields. However, whether such instruction leads directly to improved student achievement is not certain. More research examining the relationship between specialist teachers and student achievement is needed to establish causal links and make any substantive claims in any of the subject areas reviewed.

Nevertheless, the literature does appear to quite clearly indicate that specialist teachers are important within the context of ensuring that there are high-quality and effective teachers inside of classrooms. Ensuring that teachers are continually well qualified, well prepared and participate in professional development along with other forms of learning should be a priority of any successful education system. More specialist teachers inside of elementary classrooms would likely serve to support students positively and contribute to their social, emotional and cognitive development, including improving student achievement and other measures of success.

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