Investigating the Development of a Functional Curriculum

By:

Heather Ann Ellis

A project submitted to the

Faculty of Education, University of Ontario Institute of Technology

in partial fulfillment of the requirements for the

Master of Education and Digital Technologies Degree

Acknowledgements

This paper is dedicated to my twin sister, Jennifer Lynn Mott- Mifflin (March 13, 1965 – April 16, 2012).

My students were my inspiration to begin my Masters of Education degree. However, this paper would not have been possible without the support of my husband, Floyd, my sons, Taylor and Clarke, and the rest of my family and friends who have cheered me on throughout my degree. A special thank you to my supervisors: Dr. Lorayne Robertson and Dr. Maurice DiGiuseppe. I have learned so much from both of you. Thank you one and all for your support!

Abstract

This retrospective case study explores the development and implementation of a curriculum resource for students with developmental disabilities. This curriculum resource, called the Assessing Achievement in Alternative Areas (A4) document was developed on the basis of an Ontario Ministry of Education initiative to establish more consistent provincial assessment practices for students with developmental disabilities. This study's findings are based on data collected from seven members of a regional writing team who participated in the study. In addition, document analysis of the curriculum resource and documents from planning meetings helped to determine what factors influenced this resource's creation and implementation. The A4 resource development team tended to employ common-sense and practical approaches when developing the A4 resource, and while the resource contained useful strategies for teachers to use in assessing and evaluating their special needs students, the final print version proved difficult to use effectively. This negatively impacted this resource's overall implementation. Some school boards were more successful than others in implementing the A4 resource into their special education programs. While the study's participants' supported the use of technology in general, their vision of using technology with their students was limited. However, the group supported the notion of designing and maintaining a website which would serve as a bank of readily available teaching-learning resources. This website was more widely used than the print A4 resource document.

Table of Contents

Chapter 1: Introduction

The study outlined in this paper is an investigation of the development and implementation of a curriculum resource in a region of Ontario, Canada. The research data were obtained through interviews with some of the curriculum resource authors and through document analysis of materials related to the curriculum resource's development and implementation. This particular curriculum resource was designed to meet the needs of a specific population of students who require a more basic curriculum than the curriculum outlined in Ontario Ministry of Education [MOE] policies for the general student population.

Ontario's Ministry of Education states that one of its priorities is to improve the academic achievement of all students (MOE, 2001). This includes "exceptional" students with special learning needs. According to Ontario's Education Act, an exceptional student is "a pupil whose behavioural, communicational, intellectual, physical or multiple exceptionalities are such that he or she is considered to need placement in a special education program" (MOE, 2001, p. A3). Learning for exceptional students requires specific programming and services. These specialized programs and services may be provided by school boards and outside agencies. In order for the Ministry of Education to honour its commitment to exceptional students' learning, the Government of Ontario's annual education budget includes billions of dollars that are allocated to special education (McCarter, 2010; MOE 2000b, 2004). In the 2009/2010 fiscal year, Ontario's 72 publicly funded school boards received special education grants totaling $2.2 billion. This represented a 54% increase in special education funding from 2001 to 2007 with only a 5% increase in students identified as exceptional. Of the 291,764 Ontario students receiving special education support, 10,406 (3.57%) have a developmental disability, 9,357 (3.21%) have autism, and 9,557 (3.28%) have multiple exceptionalities (McCarter, 2010).

Although there are a significant number of students with developmental disabilities, they lack a formal curriculum which addresses their learning needs.

Over the last several decades, the language used to describe disabilities has changed. No longer is it acceptable to refer to people with developmental disabilities as "mentally retarded". In Ontario, no standard definition of developmental disability exists. Technically speaking, a person can have a developmental disability without mental retardation. Adding to the confusion, the terms developmental disability and intellectual disability are often used interchangeably to refer to the clinical diagnosis of mental retardation. According to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), a person is deemed to have mental retardation if he or she has an IQ of 70 or less, and has limitations in his or her adaptive functioning prior to turning 18 years of age. Those who are diagnosed with mental retardation usually have a developmental disability (Roebuck, Paquet, & Coultes-Macleod, 2009; Surrey Place Centre, 2009).

Outside of the clinical realm, the concept of mental retardation has been replaced with the concept of intellectual or developmental disability. According to the American Association on Intellectual and Developmental Disabilities (AAIDD), developmental disability refers to individuals with "significant limitations both in intellectual functioning and in adaptive behaviour as expressed in conceptual, social, and practice adaptive skills" (Roebuck et al., 2009, p. 47). Adaptive behaviours refer to, "personal skills, social skills, domestic skills, community skills, functional academic skills, and leisure and recreation skills" (Myreddi & Narayan, 2011, p. 232). The purpose of identifying a person's limitations is to ensure the provision of appropriate supports to improve the person's life functioning and well-being (Roebuck et al., 2009).

Students with developmental disabilities have a vast range of learning abilities, strengths and needs. However, their adaptive skills, such as self-help, social interaction, cognitive functioning, and academic aptitude are significantly impaired when compared to their peers in general. Some of the traits students with developmental disabilities demonstrate include delays in language acquisition, delays in gross and fine motor development, the need for assistance in practising socially acceptable behaviour, the need for assistance with personal care, and a variety of specific medical needs. Gaining an understanding of these students' individual characteristics is critical when designing appropriate educational programs for them (MOE, 2002a).

In 2008, James McCarter, Ontario's Auditor General, noted that teachers need to consider the rate at which students acquire knowledge and skills when determining appropriate annual learning goals (McCarter, 2008). This requires teachers to assess the effectiveness of their previously used teaching strategies and accommodations while making changes in learning expectations and goals which the teacher believes will lead to greater student success. However, McCarter (2008) noted that the Ministry of Education and school boards have not provided schools and teachers with the guidance they need to accomplish this goal.

A report by Bennett and Wynne (2006) entitled *Special Education Transformation Report* recognized the need for appropriate assessment measures to be developed which would track the levels of achievement of special education students who have modified or alternative curriculum learning expectations. McCarter (2008) recommended that guidance and support be provided for teachers so they can assess students who are working toward modified or alternative learning expectations effectively. In addition, these learning expectations need to be measurable, so students and parents or guardians may obtain valuable and timely information regarding their students' progress (Bennett & Wynne, 2006).

In response to McCarter (2008), the Ministry of Education (2009) stated it would review the reports of students working toward modified or alternative curriculum expectations. This review would address how student achievement is recognized in the provincial report card and if secondary students are working towards a Certificate of Achievement or some other form of recognition of academic achievement (MOE, 2011b).

In 2009, the Special Education Policy and Programs Branch (SEPPB) of the Ministry of Education, in response to recommendations by McCarter (2008), drafted provincial guidelines and funded regional curriculum development projects to help school authorities address the programming needs of exceptional students who were not being educated in accordance with provincial curricula and not participating in Education Quality and Accountability Office (EQAO) assessments. Additionally, the Ministry initiated the Assessing Achievement in Alternative Areas Project (A4 Project) to support school boards across the province in developing assessment processes that would assist teachers in reporting their exceptional students' academic achievements more accurately (MOE, 2010c). This study focuses on the development of an A4 (Assessing Achievement in Alternative Areas) resource in a region of Ontario.

While the Ministry of Education, school boards, and other organizations have developed resources that may be used by teachers to assist them in educating students with developmental disabilities, a current deficiency is the absence of a "functional curriculum" (MOE, 2007). A functional curriculum is a student-centred curriculum which includes age- and ability-appropriate learning expectations and learning goals designed to help students reach their full educational potential (Bennie, 2005; Functional Skills Action Committee Special School District of St. Louis County [FSAC], 1992). Teachers may use a functional curriculum to design an educational

program which promotes functional skills development in their students. In the Ontario Ministry of Education (2007) document entitled, *Making A Difference For Students with Autism Spectrum Disorders in Ontario Schools*, the expression "functional curriculum" is mentioned and is considered to be one of the "key program elements for students with ASD [Autism Spectrum Disorder] over age 5" (MOE, 2007, p. 21). However, to date, the Ministry of Education has not provided an official functional curriculum.

According to Ulrich and Bauer (2003) the main purpose of a functional curriculum is to assist students in acquiring as many functional skills as possible so they can be as independent as possible in their adult life. Functional skills include survival skills and skills people need to perform tasks on a daily basis, while non-functional skills are skills that students are not likely to use often (Brown, McLean, Hamre-Nietupski, Pumpian, Certo, & Gruenewald, 1979). A functional curriculum addresses the needs of students with a slower rate of learning and promotes integration of the student into his or her community by focusing on character development, independence, and employability. When a student is able to use a cell phone properly, ride a city bus, or perform basic tasks on a computer, the student has demonstrated the ability to transfer academic skills to real-life situations. This increases the student's ability to reach his or her potential (Ee & Soh, 2005). As students develop more functional skills, they may experience increased self-esteem, develop self-advocacy skills, and have fewer social, emotional and financial worries (Myreddi & Narayan, 2011; FSAC, 1991).

Most standard curricula are developed on the basis of "normal" human development models which divide tasks into stages based on the motor, social, and cognitive skills development pattern of independent adults. This creates a significant challenge when designing educational programs for students whose development does not follow these models. Students

using a functional curriculum for their educational needs ought to receive functionally-appropriate and age-appropriate instruction in order to maximize skill development and generalization of skills (Brown et al., 1979). The study outlined in this research project examined the development of an A4 curriculum resource, which could provide the elements of a functional curriculum for a particular region of Ontario.

The primary purpose of the current study is to (a) gain a better understanding of the process involved in creating the A4 curriculum resource, (b) gain a better understanding of how the A4 curriculum resource can assist teachers of students with developmental disabilities, and (c) gain a better understanding of how the authors of the A4 curriculum resource envisioned the use and implementation of digital technology in the special education classroom.

The study's research questions are:

1.   What was the process involved in creating the A4 curriculum resource?

2.   How did the writing team set priorities and make decisions regarding the development and implementation of the A4 curriculum resource?

3.   How did the authors of the A4 curriculum resource discuss the role of technology in helping special education students meet curriculum expectations?

While much of what is discussed in this paper applies to a variety of students with learning challenges, specific reference will be made to educational programming directed towards students with developmental disabilities who are receiving alternative education programming. Thus, unless otherwise stated, the term "student" or "students" will refer to students in this particular student population.

The rest of this paper is organized as follows: Chapter 2 provides a history of special education in Ontario and the theoretical framework of the study; Chapter 3 describes the study's methodology; Chapter 4 discusses the key findings of the study; Chapter 5 provides a discussion of how the study's findings relate to its research questions and literature review; and Chapter 6 concludes the study and provides some recommendations regarding future curriculum resource development.

Chapter 2: Creating an Education Program for Students with Development Disabilities

The evolution of special education in Ontario has occurred in response to advocacy and social movements which promote the inclusion of individuals with special needs in the life of their community (MOE, 2005). In this chapter, various elements of special education are presented.

Historical Context of Special Education in Ontario

Prior to the early 1950s, educating students with special needs was the responsibility of their parents and caregivers. Between 1950 and 1980, some students with special needs were able to attend regular schools but did not always receive the accommodations they needed to succeed. However, students with significant special learning needs continued to be educated outside of the formal education system (MOE, 2005).

In1968, the Hall-Dennis Report became a catalyst for educational reform in Ontario as it reinforced the right of every person to an education based on a child-centred learning continuum, and by 1969, all school boards were mandated to provide educational services to all students except "the most severe cases of mental retardation" (Zegarac, 2008, p. 7). This practice was based on the belief that the role of public education was to produce individuals who could live independently and positively contribute to their society (Cruikshank & Johnson, 1958). By this time, many school boards provided some form of special education programming which often involved specialized classes. However, there was no consistency on how students' needs were met or whether or not secondary school was available for these students (MOE, 2005; Zegarac, 2008).

During the 1970s, various reports were published which encouraged both parents and educators to question the validity of special education programs (MOE, 2005). Zegarac (2008) indicated that influential lobby groups such as the Ontario Association for Children and Learning Disabilities (OACLD) demanded that the Ministry of Education and school boards place students with special learning needs in regular classrooms where the necessary supports for learning would be provided. By the late 1970s, the Ministry of Education was spending $369 million on special education programs. Special education was now a distinct area of teacher practice, with over 10,000 special education teachers teaching 120,000 students receiving special education services and approximately 15,000 students waiting for special education programming and services.

Special Education Programs in Ontario

In 1980, Ontario's Education Amendment Act, also known as Bill 82, was passed. This act required all school boards to "provide special education programs and services for all students with special education needs" (MOE, 2005, p. 2). In response to Bill 82, many school boards began the practice of placing students with specific learning needs in self-contained classrooms in regular schools (MOE, 2005). Then, in 1982, the Canadian Charter of Rights and Freedoms came into effect. Provisions in the Charter raised the concern that placements in self-contained classrooms could be a violation of a student's equality rights. The Supreme Court of Canada's 1997 decision in the Eaton versus Brant County Board of Education case, however, clearly stated that determining the appropriate educational placement for students with special learning needs involves determining what is in the student's best interest and should occur on a case by case basis (Bowlby et al., 2001; MOE, 2005).

Currently, Ontario's Education Act and various government regulations and policy/program memoranda state that the Ministry of Education is obligated to a) create specific categories and definitions for students with exceptionalities; b) set province-wide curriculum and achievement reporting standards for these students; c) establish Special Education Tribunals when needed; and d) have a provincial "Advisory Council on Special Education" among many other requirements. As a result, every school board and school authority in Ontario is obligated to maintain an education plan outlining the school board's special education programs and a Special Education Advisory Committee (McCarter 2008; MOE, 2000). In particular, Regulation 181/98 of the Education Act outlines the process school boards must follow when identifying and placing pupils with exceptionalities into programs. This regulation states priority should be given to placing exceptional pupils, "in a regular class with appropriate supports, when such placement meets the student's needs and is in accordance with parents' wishes" (MOE, 2005, p. 2).

According to the Ministry of Education, exceptional students are "students formally identified through the IPRC process" (MOE, 2010a, p. 8). These students may also be referred to as "identified" students. An IPRC is an "Identification, Placement and Review Committee", which is created by school boards in accordance with Regulation 181/98 of the Education Act. These committees clearly outline the categories and definitions used in identifying students with exceptionalities; they also ensure that a range of placement options are available when the regular classroom cannot meet a student's special education needs (Bowlby et al., 2001; MOE, 2000b, 2001). Students with developmental disabilities are considered exceptional students as they require formal identification through the IPRC process.

During an IPRC meeting, all available documentation describing a student's social, academic, and psychological profile (MOE, 2005) including a student's specific strengths and needs are reviewed before identification and placement decisions are made (McCarter, 2010). The IPRC's recommendations regarding special education services and programming influence how an identified student's teachers ensure that this student's needs are being met in a manner consistent with parents' or guardians' preferences (Bowlby et al., 2001; MOE, 2000b).

The Ontario Ministry of Education's policy, entitled, *The Individual Education Plan (IEP): A Resource Guide* (MOE, 2004) states that an identified student's education program must be documented in an Individual Education Plan, or IEP. An IEP is a written, personalized education plan which outlines the student's educational strengths and needs, and the specific learning expectations the student must meet to successfully complete his or her program. An IEP also lists the instructional, environmental, and assessment accommodations an identified student requires to learn. Instructional accommodations may include reinforcement incentives, assistive technology, and alternative teaching strategies. Environmental accommodations may include special lighting, preferential seating, and the use of headphones. Assessment accommodations focus on choosing appropriate assessment strategies which may involve the use of assistive technology, scribes, and augmentative communication devices. IPRC recommendations play a key role in the development of the IEP of a student identified as having special learning needs.

The "goals" section of an IEP lists the performance targets a student is expected to achieve in a set period of time based on their strengths and needs (MOE 2001, 2004) and provide the context with which the teacher determines the appropriate learning expectations for the student to achieve. The effectiveness of IEPs is measured by the amount of progress the student

makes during a particular school year. This is done by creating challenging yet achievable learning goals through consultation with parents or guardians (MOE, 2001).

Teachers are expected to use appropriate assessment and evaluation strategies to measure students' learning over time, and teachers then use these data to help students improve their learning. Specific assessment and evaluation strategies are found in the IEPs of exceptional students, and the results of the evaluations are reported to students and their parents or guardians (MOE, 2001).

Programming Considerations

One of the Ministry of Education's goals is improving "learning for all students receiving special education programs and services" (Bennett & Wynne, 2006, p. 8). For this to happen, principals need to ensure that appropriate conditions are present for all students to be successful, and teachers must design education programs which assist students in reaching their full potential. Likewise, all educators need to understand that often, students who have developmental disabilities may be unable to achieve their grade-appropriate learning expectations as outlined in the standard Ontario curriculum policy documents. However, this does not mean they are not able to reach their potential. Reaching their potential and becoming productive citizens involves learning to be as independent as is possible. Embedding literacy and numeracy skills development provides students with opportunities to develop skills associated with daily living, social interaction, and positive behaviour. Incorporating these skills into students' learning expectations ensures that their education program is designed to assist them in reaching their academic and social potential (MOE, 2002a).

According to MOE (2010b), teachers play a crucial role in how their students feel about their own learning. When teachers develop educational programs, they should use their professional judgment in creating positive and respectful learning environments where students feel valued and comfortable. This is essential if learning is to occur. Teaching and learning require assessment and instruction to be planned concurrently so they are seamlessly integrated into the learning cycle. In the classroom, however, it is the relationship between the student, the teacher, and support staff which results in reciprocal feedback that facilitates the gradual release of responsibility from the teacher to the student. This occurs as the student develops the knowledge and skills needed to be more independent. In summary, achieving independence is a key goal for students with developmental disabilities.

Assessment and Evaluation

This study focuses on the development of a regional A4 curriculum resource; a resource for helping teachers to assess the learning of exceptional students.   In 2010, the Ministry of Education published its revised assessment, evaluation and reporting policy document, called *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools* (MOE, 2010b). This government policy states that "the primary purpose of assessment and evaluation is to improve student learning" (MOE, 2010b, p. 6). For exceptional students, assessments will be based on the learning expectations found in their IEP.

Teachers require assessment and evaluation data which are accurate and relevant, especially when designing education programs for students with developmental disabilities. This ongoing, systematic process involves reviewing a student's Ontario School Record (OSR), which contains items such as the student's report cards, IEP, and various board and external

assessments (MOE, 2000a), and can involve the student (when possible) and his or her parents or guardians to assist with decision making. The teacher uses this information to determine instructional strategies and assessment tools that will allow students to independently demonstrate their knowledge and skill (MOE, 2010b).

Over the course of a term or semester, a teacher may determine a student's IEP needs to be adjusted based on the results of various assessments. Possible reasons for changing a student's IEP's can be the speed which the student is acquiring knowledge and skills, or changes need to be made to the equipment or supports which the student uses (MOE, 2005).

According to MOE policy, reporting the achievement of students in alternative programs to parents or guardians involves using anecdotal comments in alternative report cards. These alternative reports accompany the standard provincial report cards. For students in secondary school who are working on alternative learning expectations, a comment stating that the student is working on alternative expectations must be included (MOE, 2001, 2010b).

Alternative learning expectations such as social skill development, speech remediation, or mobility training constitute an alternative program in the elementary grades; however, in secondary schools, these expectations are part of alternative courses, which are non-credit courses. These courses help students develop daily living skills. Examples of these secondary school courses include, KEN: Language and Communication Development; KGL: Personal Life Skills; KHI: Culinary Skills (MOE, 2011b).

The Role of Assistive and Digital Technologies

Teachers in the 21st century need to help their students be productive members of an information and communication technology (ICT)-dominated society (Special Needs Opportunity Window [SNOW], 2012d). Teachers are responsible for choosing appropriate resources which will help their students learn. Technology may take various forms such as computers, audio books, speech to text software, and adaptive keyboards. Use of assistive or adaptive technologies is one way to support students who may have cognitive, physical, communication, and/or behavioural learning needs. Assistive technology (AT) may provide students with the support they need to overcome various barriers to learning and accomplish the required tasks more independently (Hopkins, 2004; MOE 2005). However, incorporating technology into a classroom is dependent on the teacher's beliefs regarding teaching and learning. According to Bai and Etmer (2008), teachers who use a constructivist approach are more likely to incorporate technology-supported student-centred activities, while those who employ a behaviourist approach see technology as a strategy to reinforce skills.

According to Lesar (1998), assistive technology refers to any device that increases, maintains or improves the functional capabilities of persons with disabilities. Assistive technology does not refer to medical equipment such as glasses, wheelchairs or hearing aids which a student may require and also does not refer to technologies such as projectors, computer assisted instruction, or the Internet, because all students benefit from their use (Gold & Lowe, 2010; MOE, 2005). Low-tech examples of AT include adaptive spoons, highlighters, manipulative learning tools, colour-coded systems, pencil grips and slant boards for writing. Mid-tech AT includes battery operated devices such as visual timers, devices to play audio

books, lighted handheld magnifiers, and calculators. Finally high-tech devices include mobile

computerized devices, standard and specialized computer hardware and software and

augmentative communication devices (Hopkins, 2004).

Assistive technology becomes a viable solution when a student with special learning

needs is repeatedly unsuccessful at completing a task. Initially, students would be provided

remediation or extra instruction in order to assist them in performing a particular task. However,

when remediation fails, compensatory measures need to be considered. Depending on the

performance problem the student is experiencing, classroom teachers will consult with the

special education teacher regarding the next steps on how to assist the student (Gold & Lowe,

2010). For example, a student may be encouraged to use a calculator during math class.

Students with developmental disabilities often have several areas of need. In order to

maximize the value of assistive technology in supporting a student's learning, choosing

appropriate software is critical. This involves focusing on the student's learning expectations and

the student's barriers related to completing assigned tasks, as well as the student's age and

developmental level. Ideally, the AT assessment should be done in the environment in which the

student will be using the technology so the device's functionality may be determined (Lesar,

1998). Then, using the student's individual learning profile, the appropriate computer program

can be chosen to promote student achievement (MOE, 2005).

The greatest benefit of AT for students is their sense of independence and access to their

school community (SNOW, 2012a). According to Gold and Lowe (2010), AT allows students to

take responsibility for their own decision making and to have increased opportunities to interact

with their peers. This can lead to increased self-esteem, which increases student achievement.

Increasing students' self-esteem could increase their motivation to learn and to demonstrate their knowledge. This translates into increased achievement. Assistive technology can also promote greater on-task behaviour, which can help reduce the amount of energy required to complete tasks (MOE, 2005; SNOW, 2012a).

According to Hopkins (2004), the lack of a Canada-wide kindergarten – grade 12 educational strategy for making AT accessible to students with special learning needs has resulted in inconsistent implementation of assistive technology for students who need it. Matching appropriate AT to specific students requires the educational team to consider a) the student's learning environment; b) the learning goals AT is supposed to support; and c) the student's age, preferences, and abilities. Successful implementation of AT also requires students to possess prerequisite skills or to be given opportunities to be trained on how to use the technology (Gold & Lowe, 2010; Hopkins, 2004). Table 1 describes key strategies for implementing AT in the special education classroom.

Table 1: Strategies for Effective Implementation of Assistive Technology into Daily Classroom Activities

Strategy	Teachers	Students
Training	➤ require ongoing training in use of AT in the classroom	➤ provided with multiple opportunities to use AT and develop their skills
	➤ receive training from the manufacturer or the representative who sold the school the equipment	➤ receive training from the manufacturer or the representative who sold the school the equipment
Equipment Visibility and Accessibility	➤ determines an accessible storage place for the equipment	➤ helps teacher determine best location to place equipment for maximal accessibility
Student-Centred Plan	➤ work collaboratively with support staff to determine how the equipment can be integrated into as many classes as is possible	➤ provided with opportunities to use AT in self-directed ways

Technical Support	➢ ensure that equipment is maintained and order repairs when needed	➢ develop troubleshooting skills and knowledge of when to seek assistance
	➢ seek assistance when equipment malfunctions	➢ trained to seek assistance when equipment malfunctions
Work Collaboratively with Home	➢ keep parents or guardians aware of the AT child will be using at school	➢ continue use of technology to promote generalization of skills *
Staying Current with AT Practices	➢ researches best practices on ways to integrate AT into the curriculum	➢ provided opportunities to develop self- advocacy skills
Professional Learning Communities	➢ collaborate with other teachers using ATs to learn additional strategies	➢ may act as facilitators of teacher visits
		➢ may help evaluate new strategies being suggested

(Adapted from Gold & Lowe, 2010)

* Generalization of skills is a term used to describe the development of skills to the point where a student may performed the skill over time, in various settings, and around different people or stimuli (Bellovin, 2011).

Teachers face many barriers in terms of implementing AT in their classrooms, including becoming proficient in their knowledge of the AT (Gold & Lowe, 2010; Lesar, 1998; MOE, 2005; SNOW, 2012a).   In a report by Chmiliar (2007), teachers listed barriers to implementing AT, in order of most to the least significant, as 1) inadequate AT training of pre-service teachers; 2) lack of ongoing professional development related to AT; 3) insufficient funding for equipment; 4) opportunities to try the equipment prior to purchase; and 5) lack of access to expert support. Table 2 lists some of the barriers and solutions for implementing AT in the classroom.

Table 2: Barriers and Possible Solutions to Implementing Assistive Technology in the Special Education Classroom

Barriers	Reasons for Barriers	Possible Ways To Reduce The Barriers
Situational	➢ Teachers' limited knowledge of AT and lack of professional development opportunities	➢ Assess teacher's AT prior knowledge
		➢ Share AT strategies at professional development sessions
		➢ Include AT professional development in the school boards' education plans
		➢ Allow teachers to attend AT workshops
		➢ Participate in AT research projects with universities and colleges
	➢ Teachers' limited ability to effectively integrate AT into a student's education program	➢ Create an AT consultant position in school board
		➢ Provide regularly scheduled workshops which focus on AT implementation and assessment strategies
		➢ Establish mentoring programs for staff
		➢ Create expert teams to support faculty and staff
	➢ Lack of teachers' time to learn about their student's AT equipment	➢ Provide release time for teachers
		➢ Provide opportunities for teachers to work collaboratively to learn best practices
	➢ Lack of available resources (related to the equipment and funding)	➢ Create a web-based reference list of available resources for staff to access
		➢ Recycle equipment when the student no longer requires it (e.g., graduates)
		➢ Find less expensive equipment which will provide the same results

Institutional	➢ Absence of AT specialists	➢ Obtain support from vendors or professionals prescribing the technology
		➢ Designate and train individuals within the board to become AT specialists
	➢ Unreliable technology	➢ Person responsible for recommending the equipment needs to provide troubleshooting resources
		➢ Customer service information needs to be readily available, especially when the need for troubleshooting arises
	➢ AT design features are too complicated	➢ Have a trial period where the student has an opportunity to work with the equipment to assess how effectively the equipment aids the student's learning and the student has the prerequisite skills prior to purchasing the equipment
		➢ Customizing the equipment to the student's needs should make the equipment easy to operate
Dispositional	➢ Teachers' reluctance and/or attitudes to integrating AT	➢ Address Teachers' concerns and provide the support they need to acquire the knowledge and skills needed to implement AT into their classroom program
	➢ Students' attitudes toward the AT chosen for them	➢ Design activities which promote success when using the AT

(Adapted from Chmiliar, 2007; Gold & Lowe, 2010; Messinger-Willman & Marino, 1994)

When working with students who require assistive technology, it is important that teachers receive appropriate training, including troubleshooting skills, as soon as possible in order to overcome barriers to the successful implementation of AT in the classroom.

Development of a Regional A4 Curriculum Resource

On January 27, 2000, Ontario's Minister of Education announced the government's plans for improved special education programs and services. These provisions, contained in the Standards for School Boards' Special Education Plans document (MOE, 2000b), outlined new provincial standards designed to make school boards more accountable to students, parents, and other stakeholders, while ensuring that Ontario's students with special needs receive the best education possible. Since 2001, publicly funded school boards have been submitting special education plans to the Ministry of Education for review. The Ministry reviews these plans to ensure they comply with provincial standards and that the board's special education services are meeting the learning needs of students with exceptionalities (MOE, 2000b).

The Special Education Transformation Report by Bennett and Wynne (2006), states, "Improved learning for all students receiving special education programs and services" needs to occur (p. 8). Special education programs need to be designed to assist students in reaching their academic and social potential. Ideally, this will occur in a regular classroom with the necessary supports. However, other placement options may be considered, as required (Bennett & Wynne, 2006).

McCarter (2008) identified that determining appropriate annual learning goals requires teachers to consider the rate at which students acquire knowledge and skills. This rate of

knowledge and skills acquisition is measured by comparing the level of knowledge and skills a student has at the start of a specific time period (e.g., semester or school year) with their knowledge and skills level at the end of that specific time period. This allows teachers to assess the effectiveness of their teaching and assessment strategies and the accommodations they have made. Teachers may then use this information to replace strategies and accommodations which are not working. Determining rates of knowledge and skills acquisition requires accurate measures if they are to be effective in helping students with special needs achieve their learning goals.

McCarter (2008) also noted that a lack of guidance was being provided to teachers by the Ministry of Education and school boards. He recommended teachers be provided support and guidance regarding how to assess their students who are working toward learning expectations which are not part of the standard curriculum. In response, the Ministry of Education pledged to review reports of students working toward modified or alternative learning expectations.

In the fall of 2009, the Special Education Policy and Programs Branch of the Ontario Ministry of Education established the Assessing Achievement in Alternative Areas Project (A4 Project) in response to the McCarter (2008) report. The A4 Project provided funding and guidelines to groups of school boards in Ontario to assist them in developing curriculum resources which specifically addressed the educational needs of this specific group of students. One of the A4 Project's aims was to provide consistency in special education programming across the province and, in particular, to enhance the assessment and evaluation practices used to determine the achievement levels of students working towards alternative learning expectations (McCarter, 2010; MOE, 2009a, 2010c).

In 2009, in response to the Ministry of Education's call for the development of special education curriculum resources, one Ontario region began developing a resource entitled "Assessing Achievement in Alternative Areas" (A4). This region's A4 curriculum resource (Ontario Region [pseudonym], 2010) states that the document is a starting point in helping teachers create classroom activities for assessing student learning. This resource may also be used in the development of alternative learning expectations for a student's IEP.

The key components of the A4 resource are the *Student Profile* section and the specific skills section. The *Student Profile* section provides a template for recording useful student information. When completed, the *Student Profile* section provides educators with information to determine when previous assessments were conducted; the student's personal equipment and assistive technology needs; relevant medical concerns; a description of the student's sensory needs; and the student's preferred methods of communication (Ontario Region, 2010). When a student transitions to a new class or school, the information in the *Student Profile* section can help ensure that all necessary supports for learning are in place prior to the student's arrival. When such a transition plan is executed well, a smooth and positive transition is more likely to occur (MOE, 2002b).

The specific skills sections of the A4 curriculum resource address the development of a student's functional math skills, personal life management skills, social skills, independent life skills, community skills, personal/self-care skills, and gross and fine motor skills. Each skills section includes sub-sections which describe specific skill categories and provide various examples of learning expectations which may be included in a student's IEP (Ontario Region, 2010). Beside each of the skills and learning expectations examples, there is space for the teacher to record his or her assessments using the terms: "emerging", "developing", "mastery" or

"generalization". Supports which were required when assessing a student's specific skills can also be recorded in the appropriate *Notes* section. At the end of each section is blank space for teachers to record specific expectations that are not already in the document (Ontario Region, 2010). Therefore, the A4 curriculum resource was created to assist teachers as they design individualized educational programs for students who require a functional curriculum.

Theoretical Framework: Curriculum Theory

A primary function of the A4 resource described above was to assist in assessing and evaluating students with special needs, and as such, to act as a supplement to the student's curriculum. The term "curriculum" has been in common usage since 1820. Its traditional meaning refers to a course of study. The root of the term "curriculum" is "currere" which in Latin means "to run the course" (Wiles & Bondi, 2011, p. 3). Thus, its traditional meaning refers to a course of study. However, over time the meaning has changed to reflect a broadening of our understanding of education and the place of schools in society (Wiles & Bondi, 2011).

In 1988, the Ontario Ministry of Education stated the purpose of the curriculum "is to ensure that each student has a relevant education suited to his or her needs and abilities ... in the context of the community in which they live" (MOE, 1988, p. 10). In this sense, curriculum refers to all human interactions which occur in schools, and reflects the school community's aims, values, and objectives (MOE, 1988). Compulsory courses allow governments to spread what they consider to be the important beliefs, values, knowledge, and skills young people need to ensure the country's and individuals' well-being (Walker, 2003).

Walker (2003) outlined the following three main levels where curriculum is employed: (a) the instructional level (classroom) where teachers plan lessons and activities which influence the knowledge and skills students learn; (b) the institutional level (school or school system) whose the system-wide policies and procedures reflect the government's mandate for education and provide teachers with guidance on how to achieve this mandate; and (c) the government level (Ministry of Education) where educational professionals and government officials plan and legislate, "official" curriculum. The government is responsible for managing its educational policies through consultation with various agencies, professional associations, interest groups, and research institutions like universities.

According to Wiles and Bondi (2011), by the 1800s, the main purpose of North American education was literacy and knowledge acquisition through the social process of teaching children how to function in the community. According to this view, individual student growth was not considered to be very important. Subject matter became the building block, and systematic lessons delivered the information. However, Wiles and Bondi (2011) indicate that by the late 19th century, new and progressive educators believed that each child was unique and that education's purpose was to address social and personal development. Some educational trends, such as the belief that schooling was a state responsibility, that public education was a social need, and that education was a right not a privilege continued throughout the 20th century.

During the modern era (1800 - 1999), a common assumption was that schools were the only places where curricular learning occurred and where most of the values taught were based on Western beliefs (Wiles & Bondi, 2011). Curriculum helped to promote traditional ideals which included "academic excellence, social relevance, social change, individual well-being, educational equality and religious training" (Walker, 2003, p. 57). Each ideal had its purpose.

However in the 21st century, earlier ideals which encouraged social stability, national pride, and unity, made way for multiculturalism and service learning as globalization and new technologies began to redefine the meaning of education (Walker, 2003; Wiles & Bondi, 2011).

Wiles and Bondi (2011) noted, in particular, that the transformation from an industrial to an information society, which is dominated by global interdependence and technology, requires curriculum planners to understand the dynamic and interdependent relationship between social changes and education. Some of the factors influencing the 21st century classroom include: a) changing family dynamics, b) increased participation in leisure activities means assigned work may not be completed, c) access to television and Internet mean students are coming to school with more information, and d) how the curriculum material that was presented in the past is not engaging for today's students (Walker, 2003). Since 1995, widespread Internet access has resulted in unlimited access to information. Computer chips, digitized information, and voice recognition technology are all examples of how technology has changed our understanding of what knowledge is and how knowledge is accessed. Today, we understand that knowledge is fluid and that everyone has more knowledge than can be used at any given time. However, in these early years of the 21st century, many teachers continue to educate within a 19th century paradigm where education primarily involves the transmission of knowledge (Wiles & Bondi, 2011).

Walker (2003) suggests that globalization of business and communication requires employees to have more sophisticated skills and knowledge, which influence the types of skills students need to be taught. More specifically, Wiles and Bondi (2011) argue that students in the 21st century need computer skills development as part of their curriculum. Students need to be aware of what a computer is and learn how to use basic computer applications. Focusing on the

new technology's characteristics will help curriculum planners redefine education in the context of the information society.

According to Wiles and Bondi (2011), knowledge of human development has resulted in various educational philosophies and learning theories which are used by educators to plan their programs including (a) Jean Piaget's developmental theory and (b) behaviourism. Jean Piaget's developmental theory provides a model which explains the continual and progressive changes in behaviour and thinking that children experience at certain stages in their development. This model aids some educators in choosing and designing developmentally appropriate activities for their students. The behaviourist model, on the other hand, views learning as the product of a teacher's actions on the behaviour patterns of students. Behaviour modification is a product of this approach. The educational planner's choice of learning theory significantly impacts decisions made about the classroom's layout, the materials that will be used in the classroom, and the roles of people in the classroom.

Miller and Seller (1990) indicated that Edward Thorndike, an American educator and psychologist, believed that repetition is a key component of transmitting facts, skills and values to students in order for mastery learning to occur. Using this competency-based educational model, students are passive receptors of knowledge teachers share with them.

During the 20th century, social forces were changing education and curricula were being developed and diversified based on the works of philosophers such as John Dewey. Dewey believed the goal of education was to "organize and activate knowledge" (Wiles & Bondi, 2011, p. 13) by teachers creating activities or problems which require students to use their prior knowledge and experiences to solve problem and construct knowledge. In this way, education

was being transformed from an agency of social reproduction to an agency of social reform

(Westbrook, 1999).

Smith's curriculum typology. According to Smith (1996, 2000), curriculum can be

a body of knowledge; a product; a process; or as praxis. Each curriculum model has its unique

characteristics. Table 3 identifies the various models and their key components.

Table 3: Smith's (1996, 2000) Curriculum Typology

Curriculum as	Key Points
Body of knowledge	➢ Traditional teaching methods ➢ Traditional curriculum documents (e.g., textbooks)
Product	➢ A set of guidelines ➢ Performing specific tasks ➢ Behavioural objectives ➢ Student voice is minimal
Process	➢ Teacher/student interaction is important ➢ Teachers choose essential curriculum components ➢ Students discuss ➢ Active learning
Praxis	➢ Is an outcome of an active learning process ➢ Includes action and reflection ➢ Teachers reflect on the values in the curriculum and consider who is represented or missing in a curriculum ➢ Has an emphasis on emancipation

Smith (1996, 2000) argued that the "curriculum-as-a-body-of-knowledge" model results

in the most efficient method to transmit knowledge to students and suggests traditional teaching

methods to teach traditional subjects. A syllabus is often equated with this curriculum model

because a syllabus provides a clearly detailed explanation of what the student is expected to learn

over a set period of time. A syllabus' format is similar to a textbook's layout and, as such, does

not clearly identify the importance of the various topics or the sequence in which the topics

should be studied. In this way, a syllabus represents a body of knowledge or content.

Miller (1988) suggested that learning based on this form of curriculum is a one-way process where students are expected to learn certain skills, values, and knowledge. This form of curriculum uses a traditional academic approach where teaching systematic and core content involves using textbooks which contain proven information. This demonstrates teachers believed that young minds could be controlled and shaped. This model's mechanistic view of learning is largely based on Thorndike's view that teachers, and programmed text, provide the content which students passively acquire.

Smith (1996, 2000) states that when curriculum is considered a product then the content is often viewed as a set of guidelines used to implement technical exercises. Franklin Bobbitt's and Ralph Tyler's models dominate this theoretical and practical model where human life involves performing specific tasks. These models are based on scientific management principles and management thinking and practice. One of the advantages of this curriculum model is that it includes detailed analysis of what people need to know in order to live, work, and play. Bobbitt's model, in particular, promoted rationality, relative simplicity, and behavioural objectives.

In Smith's (1996, 2000) product model, it is the program which is important; the students' voice is minimal or absent. The teacher using a technical approach to thinking becomes a technician who implements the program. This educational program involves diagnosing what needs to be learned, then creating appropriate learning expectations by selecting and organizing appropriate content, and appropriate assessment and evaluation strategies.

Evaluation is also an important part of this curriculum model (McNeil, 1996) which focuses on measurability of small units of concepts or skills which need to be learned. This

means the curriculum focuses on the trivial and not the significant. Education and assessment becomes a checklist of skills. When learning is focused on pre-specified goals, there is a risk that social learning may be missed, unless it is a clearly stated objective (Smith, 1996, 2000).

According to Smith (1996, 2000), in the process model of curriculum, the interaction between the teacher, students, and knowledge is of critical importance. Constant interaction leads to active processing and practical reasoning. Teachers who are critical thinkers understand their role and what is expected of them so they can design programs which address essential components of the educational experience. Teachers practicing the process curriculum model engage their students in conversations and activities which promote thinking and action. Continually assessing the process requires teachers to reflect-in-action and to make modifications (as needed) in order to ensure that learning outcomes are achieved.

Sheehan (1986) suggests the process curriculum model uses a holistic approach when creating programs where students gain knowledge by assessing, planning, implementing, and evaluating strategies that help simplify complex situations or problems. The implementation phase of this curriculum model is based on the premise that learning is an active process of problem-solving. Students may either be assigned, or allowed to choose the problem. Teachers provide guidance as their students develop problem solving skills. This process model encourages students to take control of, and responsibility for, their learning. Evaluation in this model involves reflection and review.

Smith (1996, 2000) views the curriculum as praxis model as a product of the process model. This model is the result of the dynamic interaction of action and reflection. Planning, acting, and evaluating are key components which are integrated into the curriculum. Curriculum

as praxis requires educators to look at the whole student as well as the curriculum in order to assist students in developing as many skills as possible in order for them to participate as fully as possible in their society. In this way, theory provides the boundaries for thinking, and praxis refers to the planning and action component of this curriculum model (Doyle & Ponder, 1977).

Curriculum development: Walker's approaches. Walker (2003) contends that curriculum development is often viewed as a means of articulating a certain social or educational vision in a curriculum. Curriculum designers understand that curriculum problems are practical in nature and that deliberation is a critical component of resolving the problems. Effective curriculum designers need a vast array of skills such as collaboration, understanding social and institutional contexts, and the ability to conduct appropriate research.

Walker (2003) suggests that during the first meeting of a team in a curriculum development project, it is important that group members agree on a set of shared values and beliefs which will provide the foundations for deliberation. Resolving problems or issues as they arise is necessary to ensure the group stays focused. The group may then decide which approach they will use to create the curriculum. The three approaches include: the common sense approach, the theoretical approach, and the practical reasoning approach. Table 4 provides a summary of the key components of these various approaches.

Table 4: Walker's (2003) Approaches to Curriculum Development

Approaches	Key Points
Common Sense	➢ Decisions are made based on intuition or judgment ➢ End product may lack coherence
Theoretical	➢ Provides consistent language during deliberations ➢ Allows for generalizations to be made ➢ More than one theory needed if multiple issues are being addressed
Practical	➢ Problem has to be clearly defined ➢ Deliberation is a critical component of this approach ➢ Practical solution determined for the defined problem

According to Walker (2003), the common-sense approach is the most commonly used approach for school and classroom curriculum improvement. It involves identifying an area of curriculum improvement need which has broad support. When using this approach, committee members may not have the same ideas or concerns but that, in the end, having a satisfactory working agreement based on compromise is acceptable. While this approach is direct and straightforward, it is often difficult to implement. One of the drawbacks of this approach is that the resulting curriculum may lack coherence and organization.

Walker (2003) maintained that curriculum theory is a critical component of deliberations because it provides the principles, values, terminology, and additional data the curriculum writing team can use to construct and ask the insightful and probing questions needed to analyze the problem's origins and causes. Using a theoretical approach begins with ideas which are applied to specific issues and developers are able to provide explicit support for their curriculum choices. By basing issues on curriculum theory, abstractions and generalizations can be made. However, this approach is not without limitations. Curriculum issues are multi-faceted and curriculum theories can only represent one concern related to the curriculum issue being worked on. Therefore, more than one theory is needed if all concerns are to be addressed theoretically.

The third approach to curriculum development, according to Walker (2003), is practical in nature, as it addresses the actions required to effect change. The practical approach uses practical reasoning to help resolve a curriculum problem. The core component of practical reasoning is deliberation. It involves identifying the problem(s) in order to design a course of action to resolve the problem(s). This involves looking at the pros and cons of each course of action being considered to find the solution, and using evidence to substantiate the claim.

This section has summarized Walker's (2003) belief that if a curriculum development team is going to be able to design an effective program, a thorough analysis involves comparing alternative concepts and models of the problem by using various sources such as literature, field research, and group members' experiences. Good deliberation takes time, and demands study and practice, which leads to informed, well-considered decisions.

Curriculum review, development, and implementation cycle (CRDI). Since the late 1990s, the knowledge-based curriculum has been challenged because of social changes and increased technological access. Curriculum designers need to understand how the computer age has significantly impacted school planning. In the 21st century, globalization and new technologies are redefining education. Factors influencing curriculum development today include a) how knowledge is viewed, b) our understanding of human growth and development, and c) our understanding of learning as a process (Wiles & Bondi, 2011).

According to Walker (2003), effective curriculum developers are able to: a) find or develop effective curriculum which promotes learning, b) ensure that curriculum implementation is authentic, widespread, and lasting, c) instill public confidence in public education, and d) collaboratively network and work with various educational team members. Throughout the curriculum writing process, curriculum developers attempt to balance how students, teachers, subject matter, and society influence the framework used during the development process.

Wiles and Bondi (2011) suggest that curriculum developers need to understand influencing factors such as social perspectives, and also why the program exists, when developing a curriculum. Curriculum development is a logical process whereby deductive reasoning is used to refine a clear set of goals until the intended curriculum content is designed.

Figure 1 outlines the stages involved in the curriculum review and development process, and the groups or institutions that are responsible for those stages.
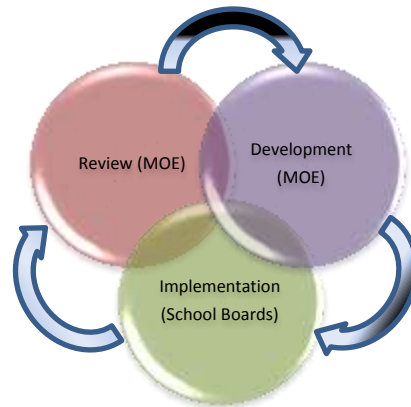
Figure 1. The curriculum development process (adapted from MOE, 1988)

The curriculum review, development, and implementation cycle represented in Figure 1 is a fundamental, yet dynamic, process where considerable overlap can occur. This process requires cooperation and communication between the Ministry of Education and the school boards. The Ministry is responsible for the review and development phases and the school boards are responsible for the implementation phase. The Ministry of Education's review refers to "monitoring and assessing policy, related practice, and outcomes" (MOE, 1988, p. 12), which allows the Ministry of Education to assess various programs and determine how policies are being implemented. The Ministry's regional offices play a key role in the review process.

During the development phase, the Ministry of Education establishes the policies to be embedded in the curriculum as well as producing resource documents as they are needed. Committees are created to produce draft materials which are circulated to educators throughout the province. Educator feedback is critical to the revision process, which occurs prior to the final

draft of the curriculum being published. The implementation phase involves the Ministry of

Education's regional offices interpreting new policies. Regional offices provide support to their

assigned school boards during the implementation process, and monitor how the school boards

implement the new policies.

In the board-level implementation phase, supervisory officers ensure that their school

boards' programs a) support Ministry of Education policy rationales, and b) reflect the local

needs and priorities of the communities they serve. It is implied that continuous effort at the

local level will be made to promote professional development, changes to classroom practices,

and the promotion of strong school-community relations (MOE, 1988).

Curriculum development: Glatthorn's (1994) model. According to Glatthorn

(1994), effective curriculum development involves a) dynamic shared leadership at all levels of

education in order to ensure quality curriculum work, b) problem solving and decision making

which is based on sound child development research and learning theories, c) cooperation and

teamwork if the development and implementation of the curriculum are to be successful, and d)

systematic professional development, especially during the implementation phase.

Glatthorn (1994) outlines a process of curriculum writing as follows. Members of

curriculum task forces are chosen based on their subject matter knowledge, time management

skills, curriculum development knowledge, and the ability to influence classroom teachers.

When a curriculum is being written or revised, its writing team may develop a curriculum

framework or a set of written statements which identify a) the student population the curriculum

is being created for; b) which level the curriculum is focusing on (elementary, secondary or

both); c) how the knowledge is represented; and d) how learning and learners are viewed.

During its initial meeting, the curriculum's writing team ought to agree on what the purpose of their task is. Research should be conducted based on teaching and learning, child and adolescent development, and referencing other curriculum projects, available educational resources and materials such as samples from teachers. Analyzing various guidelines or frameworks which are available, as well as understanding the provincial government's goals and visions of the curriculum are important to the success of the project. Prior to developing the actual curriculum, the team should establish if there are commercially available curriculum materials which may be included, with permission, in their document. The team also needs to conceptualize and identify the categories or curriculum organizers which will be used. This curriculum writing team may decide that the learning expectations should be presented sequentially based on level of difficulty. Outlining this feature may assist teachers during the educational program design process. It is at this point that differing views of the writing tem can result in conflict. This conflict should be resolved as quickly as possible to minimize damage to the group's cohesiveness and to prevent delays in the creation of the finished product.

In this model, evaluating the curriculum is an important step in ensuring that the curriculum is of high quality. One form of evaluation involves having several groups of teachers using an evaluation guide with specific criteria to review the draft curriculum in order to provide feedback to the writing team. A second type of evaluation involves a pilot process where a small group of teachers implements a section of the curriculum or resource and keeps detailed notes about students' responses and teachers' responses.

Distribution questions regarding the final curriculum may include: a) Will the document be available in print or digital form or both? b) Which teachers should have access to the curriculum? c) Where will people be able to access the document? and d) How will future

teachers receive student-specific copies of the curriculum? In one possible scenario, a school board may decide that the curriculum will only be available through a secure link on the school board's website. All teachers will have access to the curriculum or resource and will either only print pages which pertain to their specific students' documentation and save these documents in a secure electronic folder. As students move from school to school, their individual curriculums will be forwarded accordingly.

Factors regarding a functional curriculum. Societal perspectives regarding individuals with severe disabilities influence what the focus of curriculum should be. Bouck and Flanagan (2010) identified that in 1938, a document produced by the National Education Association outlined the use of a functional curriculum. The functional curriculum model reached its peak of popularity in the late 1970s and early 1980s. During the 1990s, functional curricula were not commonly used.

According to Browder, Flowers, Ahlgrim-Delzell, Karvonen, Spooner, & Algozzine, (2004), a dramatic paradigm shift began in the mid-1970s when students with developmental disabilities started being educated in the regular school system. However, the services being offered often lacked the appropriate resources to meet the students' needs. Lack of appropriate curriculum materials designed to address the whole individual with developmental disabilities resulted in teachers using the developmental curriculum model mentioned earlier to create resources. Using the developmental curriculum model required teachers to adapt pre-existing infant and early childhood curriculum for students in all grades based on students' mental age and not their chronological age. A student's mental age is determined using information found in the student's psycho-educational assessment which is located in his or her Ontario Student

Record (OSR). As students with developmental disabilities progressed through the educational system, the gap between their mental age and chronological age increased.

During the 1980s, individuals with developmental disabilities were leaving residential institutions (Browder et al., 2004) where they had been placed, often on the advice of physicians to be protected from daily life stresses and being judged by society (Ministry of Community and Social Services [MCSS], 2009), and living in alternative settings within their community (Browder et al., 2004; MCSS, 2009). Residential institutions for individuals with developmental disabilities in Ontario had been in existence since the 1800s (MCSS, 2009). According to Browder et al. (2004), this significant change necessitated the curriculum's focus to address specific life skills needed for them to participate in their communities as adults. Textbooks and resource documents tended to incorporate content specific only to domestic, community, vocational, and recreation/leisure functional domains. Professional consensus by the end of the 1980s supported the belief that the curriculum needed to be both age-appropriate and functional. Resource planning guides also acknowledged that not all skills would be developed for each student. Teachers prioritized which skills needed to be developed, and then designed appropriate tasks which would assist students in learning these skills.

Traditionally, important skills are taught in artificial and simulated (e.g., decontextualized) settings even though it is known that individuals with developmental disabilities often find transferring skills to new situations challenging. For a functional curriculum development model to be successfully implemented, substantial changes to our current educational programs are required. This includes scrutinizing the current curriculum and service delivery model being used (Brown et al., 1979). According to Myreddi and Narayan (2011), in order for this to happen, a functional assessment of students' adaptive behaviours

needs to occur. This assessment identifies skills students need develop in order to participate in various community environments. A functional curriculum can provide age- and ability-appropriate activities which assist students in developing their personal, social, domestic, community, functional academic, and leisure and recreation skills. If the ultimate educational goal for students with developmental disabilities is to live as independently as possible in their community with their non-disabled peers, then implementing a more community-referenced curriculum may assist the student in reaching this goal.

A model for development of a functional curriculum: The six-phase functional curriculum development model. The functional curriculum development model suggested by Brown et al. (1979) consists of six phases: Phase 1 addresses curriculum domains; Phase 2 addresses the learning environment; Phase 3 addresses sub-environments; Phase 4 addresses topics and activities; Phase 5 addresses skills; and Phase 6 addresses the instructional program.

Phase 1: curriculum domains. Domains describe types of skills students need to develop in various areas of their lives. Domains should include instructional objectives which encourage the development of key skills such as communication, cognitive, social, and gross and fine motor skills, and reflect activities non-disabled adults perform. Writing an email to a friend is an example of an activity some students may be able to perform. Four possible curriculum domains are domestic/independent living, recreational/leisure activities, employability, and community.

If the functional curriculum had a domestic domain, this domain would provide various learning expectations which focus on developing the student's life skills. A student`s long range plan may focus on learning expectations and activities designed to develop skills needed to live

in an apartment. The same process can be used for other domains and involves identifying the

environments in which specific skills can be developed (Brown et al., 1979). These learning

expectations would be recorded in the student's IEP (Myreddi & Narayan, 2011).

Phase 2 addresses the various natural environments in which students may function. For

example, natural environments are real-life settings. These settings can be places where a

student should function or wants to function. A twenty-year old student may be able to eat lunch

in the cafeteria. A student may want to participate in the football program but has never played

on a sports team. Anticipating real-life situations that students may encounter in their lives could

provide opportunities for them to develop social and communication skills. When these learning

experiences are new, encouraging success requires appropriate support to be offered. Teachers,

using their knowledge of each student, may then design programs which assist their students in

developing skills needed to function as independently as is possible (Brown et al., 1979).

Providing authentic and contextual learning opportunities may help students generalize their

knowledge so they are able to function as independently as possible in various situations (MOE,

2005; Myreddi & Narayan, 2011).

Phase 3 addresses the sub-environments in which students function. Sub-environments

are drawn from the domains described in Phase 2. For example, the domestic domain may be

divided into a number of sub-environments such as the various rooms and areas in a home.

Ideally sub-environments are locations in which students with and without disabilities will

function.

Phase 4 focuses on determining appropriate learning activities based on the various sub-

environments chosen in Phase 3. Teaching hygiene may involve creating activities related to

helping students learn to pick up their belongings or clean a kitchen. It is important that teachers think about students' current and future abilities as well as appropriate activities associated with the specific sub-environment to promote the development of skills that may be used in a large variety of situations.

Phase 5 addresses the skills students need to engage in the selected learning activities. Skills that could be included are social skills, literacy skills, numeracy skills, communication skills, and motor skills. Once the learning activities are chosen, the teacher should determine ways of assessing which components of an activity the student is able to perform as well as the level of independence with which the student is able to perform it.

Phase 6 addresses the design and implementation of an instructional program that helps ensure that students may master the specific skills. The instructional program needs to be created in such a way that students may successfully perform as many identified skills, in as many of the natural settings, as is possible. For students who are nearing the end of their secondary school programs, learning activities should include experiential learning. This could require direct instruction in actual vocational settings (e.g., job coaching). If this aspect of a functional curriculum were implemented, older students would spend less time in classrooms and more time in non-school settings.

In general, the A4 Project in Ontario is an attempt by the Ministry of Education to address the Auditor General's 2008 recommendations (McCarter, 2008) and to demonstrate their commitment to improving all students' achievement. Draft guidelines were developed by the Special Education Policy and Programs Branch of the Ministry of Education. The Ministry's various regions were provided funds in order to create alternative assessment tools for students,

"Who do not follow the standard Ontario curriculum and do not participate in Ontario's

Education Quality and Accountability Office (EQAO) assessments" (MOE, 2012a, p. 3).
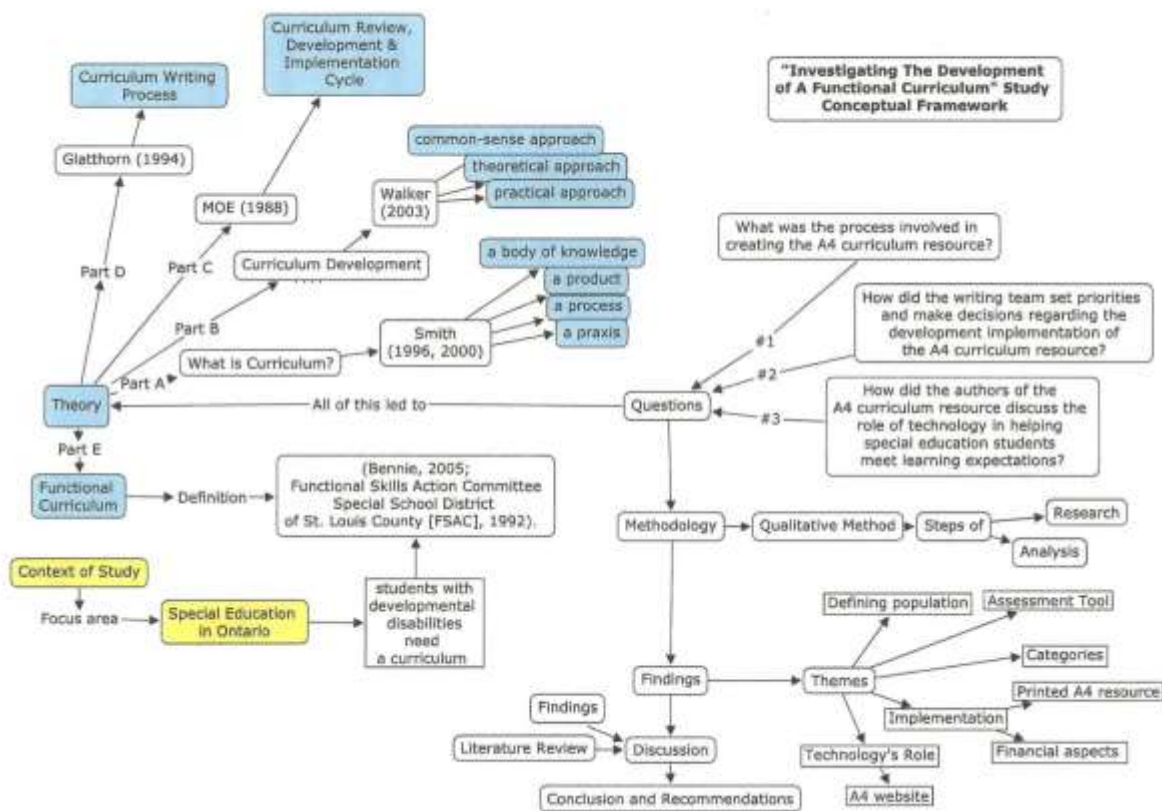
Conceptual Framework

Figure 2. My Conceptual Framework

In summary, this chapter reviewed models for how individualized educational curricula

and resources for students with developmental disabilities may be developed. It also introduced

the A4 curriculum resource that was developed by one of the regions in Ontario, and whose

development is the focus of this study.

Chapter 3: Methodology and Methods

Research involves studying the world for the purpose of increasing human knowledge. The

strategies, processes, and procedures used in conducting research depend on the researcher's

epistemology; his or her beliefs in the nature of knowledge and reality. This research project is a

case study of the process of development and implementation of a curriculum resource. The data

were gathered through interviews and document analysis.

Methodology

Quantitative and qualitative methods research. When conducting educational

research, two commonly encountered research paradigms are the positivistic paradigm and the

naturalistic paradigm. The topic being studied and the researcher's beliefs regarding how reality

is understood and knowledge is produced determine which research paradigm is chosen. Ethical

considerations, including voluntary participation, confidentiality, anonymity, and protection of

the study's participants from potential harm are common to both paradigms. As both these

paradigms share some approaches and methods, some researchers will decide to use a mixed

methodology paradigm (Bruton, Brundrett, & Jones, 2008).

The positivistic research paradigm. Quantitative research is associated with natural

science and uses a fixed research design which occurs in controlled settings. Clearly defined

parameters and/or pre-set procedures are followed in order to ensure that the researcher's

observations are uncontaminated. Reality is objectively and rationally discovered and is external

to, or independent of, the observer. Objectivity requires researchers to negate their personal

values in order demonstrate their objectivity and impartiality (Bruton et al., 2008; Glesne, 2011).

In positivistic studies, theories and hypothesis-testing influence how the studies are designed. As

the creator of knowledge, the researcher determines the measurable and observable parameters

which will be used to empirically test and verify or reject a hypothesis and thus validate

knowledge and establish truth. Good quantitative research has external validity, statistical

significance, and allows for generalizations to be made based on measurable data (Bruton et al.,

2008; Glesne, 2011).

   The naturalistic research paradigm. According to Bruton et al. (2008) and Glesne

(2011), qualitative research is undertaken to understand participants' views of a process or event.

The naturalistic research paradigm is a lens adapted by the researcher who sees reality as

contextualized. It employs a naturalistic approach where reality is socially constructed, and

often, the research participates in the study. The chosen variables provide multi-dimensional and

diverse perspectives which are interwoven and difficult to measure. The purpose of the research

allows for a specific phenomenon to be contextualized and interpreted so that a deeper

understanding is achieved. Qualitative research is inductive in nature, searches for patterns,

seeks complexity, and could result in the creation of a hypothesis or theory.

   Validity in qualitative research refers to whether or not the data collection method used

provides a lens on the phenomenon to be studied. Reliability is connected to trustworthiness of

the data. Trustworthiness is increased when the researcher attempts to obtain detailed

information through the voices of the participants. More confidence can be built in the accuracy

of the study's data by using triangulation of various data collection methods, sources, and/or

theoretical perspectives, which promotes internal validity. The subjectivity of the qualitative

researcher needs to be declared. Acknowledging the researcher's biases is important because it may explain how the research statements were created; why certain questions were being asked; and why certain research tools were used (Bruton et al., 2008; Glesne, 2011).

Case study research. Case study research when conducting a qualitative inquiry refers to, "the intensive study of a case," (Glesne, 2011, p. 22) where case can represent a person, place or event. It is the researcher who determines what the boundaries will be (Glesne, 2011). Case studies focus on specific details in order to gain a deeper, more detailed knowledge of the context or phenomena being studied (Bruton et al., 2008).

The current project was conducted as a retrospective case study because the research focused on the development of a specific curriculum resource developed by a group of educator authors in the past, in a particular location, and in a limited period of time.

Methods

As a case study of the development of a curriculum resource, this research project employed several qualitative research methods, including the analysis of referential documents, a survey questionnaire, and personal interviews of educators who were directly involved in the resource's development.

Setting and participants. This study primarily involved the analysis of the contents the A4 curriculum resource and interviews of the resource's authors. While the A4 curriculum resource was freely available on the Internet, permission for authors to participate in the study was sought from the participating district school boards. There were a total of seven participants who were interviewed for this study. Participants included four elementary educators, two

secondary educators, and one educator who worked in both elementary and secondary panels.

Participants had between 3 years and 23 years of teaching experience and were all working in an

administrative capacity during the data collection period; one was a principal, two were vice-

principals, and four were special education consultants with various assignments and

responsibilities. Only one of the participants was a classroom teacher at the time the A4 resource

was being created. Four of the participants work for publicly-funded school boards and three for

Catholic school boards.

Sources of data. This research project involved the collection of data from the following

sources:

1.   A brief online survey asking for demographic information,

2.   Documentary analysis of the A4 resource document and other documentation related to

        the A4 resource's development, and

3.   Semi-structured personal interviews of the A4 resource authors.

        Prior to being interviewed, each of the study's participants signed a consent form and

completed the online survey. Permission to conduct the study was also obtained from pertinent

officials of the participants' school boards. Interviews were conducted either on-line using

Adobe Connect or face-to-face, and were audio recorded and transcribed.

        The study began in March 7, 2012 with the Research Ethics Boards (REB) application

and revision process. Upon receiving REB approval, completing the various research application

processes for the organizations began. Interviews began in July, 2012 and were completed in

December, 2012.

Participant recruitment process. Upon receiving the University's REB approval, emails of invitation to participate were sent to various school organizations. A package containing the interview guide, the survey guide, email of approach to the organization, letter of approach to the writing team, letter of consent, consent form, thank you letter, a copy of both approvals by the REB, and an electronic copy of the A4 resource document were sent to the appropriate personnel within each organization. A formal research application package was completed and submitted as required.

Six of the participating organizations approved this study. Staff who participated in writing the A4 resource was notified of this study. Standard information shared with the potential participants included, the letter of approach, letter of consent, and consent form. An email containing the link to an online survey was also sent to potential participants.

The interview process. Semi-structured personal interviews were conducted online using virtual meetings in Adobe Connect and face-to-face meetings. Four of the interviews were conducted in Adobe Connect and three were conducted face-to-face. All interviews were recorded using a digital recording device and were transcribed. All interviews were conducted on the basis of an interview protocol containing several open-ended lead questions (Appendix A). During the interviews, the researcher read each question to the participant and the participant provided his or her response. Based on the participant's answer, additional questions were asked by the researcher to probe more deeply and clarify participants' responses.

The participants were told when they would receive a transcript of their interviews and were requested to return the transcripts to the researcher if they made any changes to the

document. Participants were also informed that if there was no reply from them in three weeks' time, it would be assumed that the transcript was accurate.

Data Analysis

Qualitative data analysis was conducted by reviewing all of the collected data, including results of the online questionnaire, A4 Project documentation, and personal interview transcripts. Each interview transcript was printed on colour-coded paper, which allowed for open coding and the organization of select quotes on the basis of tentative conceptual categories. Resulting codes and categories were recorded on sheets of paper that acted as a code book. Following this initial open-coding process, the data were re-analyzed and emergent themes identified. Axial coding resulted in minor revisions to the original categories and a clearer understanding of some of the underlying factors associated with the development and implementation of the A4 curriculum resource became apparent (Hoepfl, 1997).

    Limitations of the study. Qualitative analysis requires the researcher to creatively analyze raw data into meaningful themes which help represent, describe, and better understand the phenomenon being studied (Hoepfl, 1997). Credibility and trustworthiness is improved when various perspectives and sources of data are combined in order to answer the study's research questions (Bruton et al., 2008). In this study, credibility and trustworthiness were improved by the triangulation of survey, interview, and document data, and through member checking (clarifying the meaning of an interpreted statement with the participant who made the statement) and peer review. However, generalization of the study's findings is not possible as the findings are based on qualitative methods which include inherent participant and researcher biases. However, this study provides a reasonable account of the development of one region's A4

resource, which could be used by others seeking to learn from particular cases how curriculum resources may be developed.

In my role as a special education teacher who was working exclusively with secondary school aged students with developmental disabilities, creating educational programs for students who were often not able to employ the standard Ontario curriculum was challenging. As I began to use the A4 resource, I wanted to know more about how the resource was created. This led me to conduct this study with the hope of answering my research questions and learning more about curriculum resource development as I have no experience creating curriculum.

Chapter 4: Findings

In this chapter, the key findings of the study are discussed. The findings address how the A4 curriculum resource was developed and implemented, how the various components of the resource were determined, and how the writing group envisioned the role of technology in the resource.

Initiating the Development of the A4 Curriculum Resource

Analysis of the data in this study indicated that in late November, 2009, a regional planning group was assembled by the Ontario Ministry of Education in one Ontario region to review the Ministry's draft A4 Project guidelines. This group of school principals, board administrators and consultants learned that these draft guidelines were created in response to the 2008 Auditor General's recommendations (McCarter, 2008) to provide teachers with greater guidance and support regarding assessment processes used to report the academic achievement of students with developmental disabilities.

The development group shared a planning document they created to record the proceedings of their first meeting. This document, called the "Reporting Plan" indicated that during this meeting, the regional planning group learned that the ultimate purpose of the province's regional A4 projects was to develop resources that could help produce more consistent assessment practices within the province for students with disabilities. The group was tasked with developing a regional assessment tool. To facilitate this process, the group consulted with the school boards and school authorities. Site visits allowed the group to consult with stakeholders such as superintendents, principals, consultants, and teachers in order to learn about

current assessment tools and practices (including commercially available tools). They also identified gaps and needs which were impacting the educational programs being provided. Parents were also consulted in order to recommend the focus for this regional project.

While the Ministry of Education's draft A4 guidelines stated that the purpose of the A4 Project was to create a consistent approach to assessment throughout the province, this regional group identified various areas which would determine how consistency could be achieved. Some of these areas included addressing the target student populations' characteristics and challenges, determining consistent terminology, defining what an alternative curriculum is, and creating a model where consistent assessment practices could occur throughout the region. The group needed to address these areas if, as Joan, a vice-principal in the group emphasized, they were to achieve their ultimate goal of putting a curriculum resource, "in the hands of the regular classroom teacher."

The A4 Resource Development Process

After discussing current practices, especially in terms of the absence of an appropriate curriculum and the lack of consistent, accessible assessment tools for students with developmental disabilities, the group agreed to collaboratively develop a resource which supports student achievement and improves teachers' abilities to accurately and effectively report each student's achievement to parents and guardians. This decision was supported by Brenda, a school board coordinator in the group, who asserted, "We really, desperately need to develop some consistency within this discipline of special education."

At a follow-up meeting in December, 2009, the group defined the project's targeted student group as "students that require alternative curriculum, program, and assessments." This included students who were not following the standard Ontario curriculum and students whose functioning abilities were at a much lower developmental level than their age or grade level.

Jackie, a principal and member of the regional planning group, acknowledged that this group of students included "a broad, broad range." Jackie felt it was paramount that the group didn't "lose sight of the big picture" during deliberations about what needed to be included in the resource. According to Jackie, teachers needed to think long range and remember that "when you look at a 4 year old, you still have to see that child as a 21 year old." This long- range view requires teachers to address their students' current needs, but to also remember that "independence, self-reliance is absolutely key and essential."

Joan, in her comments later concurred, stating, "Some kids … are not accessing curriculum but they are not in a systems' class … Some parents don't want them in the systems' class, they want them mainstream." Systems' classes, also known as regional classes or self-contained classes, are classes that usually have only students with developmental disabilities assigned to them. In these classes, instructional programming usually focuses on life and social skills development. These classes are more commonly found in secondary schools (Bennett, Dworet, Weber, 2008). In her comment, Joan was raising the point that, "A regular teacher in a regular classroom might use this document … very different than how a system teacher with 10 kids and a lot of support would use this document."

Understanding that learning essential life skills is a long process for these students requires educators to promote independence, self-reliance and self-advocacy skills as early as

possible for each student. According to Jackie, the group "decided to focus on … students in the [grade] 7 and 8 and secondary level … who needed to have a skill set that would provide … as much independence as possible and … facilitate transition to adulthood ."

At this meeting, the group chose literacy/communication and numeracy/life skills as focus areas as it was believed most of the functional learning goals would be addressed within these areas. By the end of the meeting, the group settled on the following specific goals for their project: a) Develop a student profile to provide current achievement data based on literacy/communication and numeracy/life skills, b) Develop a scope and sequence tool to assist teachers with identifying their students' current achievement levels, and c) Develop a bank of resources that include information regarding programming, curriculum, and teaching in order to support the scope and sequence tool.

On January 7, 2010, the focus of this A4 Project initiative and the highlights of planning meetings were shared with a newly-formed working group. This working group included representatives of each of the participating boards or school authorities who had experience working with students with developmental disabilities. It was at this meeting, amongst much discussion and brainstorming that the group decided that the resource document would only apply to students who were not using the standard Ontario curriculum. The A4 curriculum resource they would produce needed to be accessible and easy to use, especially for those teaching grades 7 – 12 students in integrated classrooms.

Defining curriculum for the target student population. The participants in this study reported that traditionally, students with developmental disabilities never had a curriculum resource that teachers could use as a guide when designing their students' educational programs.

Jackie claimed that, in general, teachers had to significantly modify the standard curriculum

expectations so they were, "geared to where the student was at and [create] a program which

would best suit that student."

Members of the newly formed group grappled with their understanding of curriculum as

it related to their work in developing the curriculum resource. Brenda explained:

Everyone was super clear on what [the Ontario curriculum] was in terms of expectations

... When we started to look at alternative curriculum, that's when we all had different

visions, depending on what board you're from; depending on the programs that are

available; depending on experience with kids that may have needed alternative curriculum.

Brenda clarified the meaning of the expression "alternative curriculum", stating,

"Alternative is Ministry language for functional." According to Jackie, "It was extremely

challenging to define the curriculum." In an effort to clarify the group's understanding of the

expression "functional curriculum", Dawn, a special education consultant, noted that, according

to the group, "[A] Functional Curriculum …. was anything that was missing out of Ontario

curriculum that we felt was necessary for students to learn."

Another key discussion area was related to linking learning expectations to assessment.

Joan stated, "If this is really curriculum, you need it to be tied to assessment. Otherwise, really

what good is it? It is a list of things to teach." According to the participants, the group reviewed

assessment tools from the various boards as well as commercially available tools such as the

Brigance Skills Inventory and British Columbia's Functional Curriculum in an attempt to

establish some consistency between classes and school boards.

The curriculum resource as an assessment tool. During the January, 2010 meeting, the group decided that students' achievement of curriculum expectations was not going to be assessed using levels. Instead, the group felt that assessing a student's skill development on a progressive scale leading to mastery better reflected a student's achievement. Therefore, the skill levels were identified as *emerging*, *developing*, *mastery*, and *generalization*. In the final version of the A4 curriculum resource, *Emerging* is defined as requiring direct support at all times; *Developing* means requires less direct support and/or less frequent support some of the time; *Mastery* is defined as performs skill consistently with level of independence appropriate for that student; and *Generalization* refers to the student's ability to transfer the skill to other situations and environments.

The group understood that mastery is different for each skill and each student being assessed. For example, mastery of safety skills requires more consistently accurate execution of the skill than other skills. Knowing the student is a key factor when evaluating his or her achievement. Jennifer stated that for some students, "Mastery for them would always only be at the emerging level, or … like for them, the best they may ever get is to mastery, but not to generalization."

According to the group, "task analysis" was commonly referred to as a way to effectively assess a student's level of skills acquisition because this process breaks the skill down into smaller components which are easier to assess. A task analysis is, "a method of breaking down a general concept or skill into its component parts. The component parts are then presented in a logical sequence" (Bennett et al., 2008, p. 162). In this way, the teacher is able to assess where the student is struggling in mastering a specific skill. Task analysis also provides the teacher with a starting point.

Jackie believed it was absolutely critical to have tools which could be used to assess a student's progress over time. According to Joan, teachers who work with students with developmental disabilities understand that learning for them, "can be a slow process. The gains can seem so little sometimes, but really they are big. For what would be a really baby step for your average student sometimes is a really huge step for these students."

The resource document was also a way to provide concrete evidence of student learning to parents and guardians. Joan believed the tracking portion of the document would allow teachers to, "Show them that, a) you are working on something … and b) they are having success. They are learning skills and here is the proof. Here's where they were in September and here's where they are now in June."

Establishing categories. The next significant decision the group made was regarding the categories which would be contained in the resource. The goal was to create learning expectations which promote independence and employability. Tom, a principal, described the group's struggles in determining the scope of the resource, stating, "It was really tough to decide what's important to cover … Because there is so much. Basically it's the whole world for those kids." Brenda noted that a lot of time was allocated to the selection of categories, stating, "Probably the biggest bulk after we got past defining the population and defining what Alternative Curriculum or Functional Curriculum was, then it was deciding on the categories."

In the meeting, the group discussed whether the resource should focus on functional literacy or life skills, and after much deliberation, decided that the resource would address the broad category of "Life Skills" because this category is commonly found in these students' IEPs and also because life skills are important learning objectives in all subjects. The group further

subdivided the category "Life Skills" into "Community Skills", "Safety Skills", "Personal Care Skills", "Functional Math Skills", "Social Skills", "Independent Living Skills", and "Gross and Fine Motor Skills". Each of these sub-categories was assigned to smaller working groups with expertise in those areas. Jennifer explained the rationale for the group deciding to focus the resource on life skills as follows:

> We came up with those seven that we thought sort of covered mostly everything … And we wanted this to be something … teachers would use and reference. So we just thought we couldn't do literacy justice by having it be one small section within this and that's why we decided to leave it out.

By the end of this meeting, the smaller working groups were tasked with creating a short document containing sample expectations and task analysis to be shared and reviewed by the main working group. Also, the original "student profile" component that the main working group had developed was revised. The student profile would be a quick reference tool which would provide a comprehensive outline of a certain student's communication, medical, and physical needs as well as key information found in various assessment reports provided by outside agencies. It was felt that this profile would provide new staff, such as teachers and educational assistants who work with these students, vital information which would be used when designing a student's educational program.

Dawn suggested that when a teacher has a new student, looking through this student's profile, the student's IEP, and the student's previous report card could quickly provide the teacher with important information regarding the student. As was noted during the large group meetings, this student population tends to be transient, frequently moving between schools and

school boards, and having an A4 document with a completed student profile section was seen by the participants to be invaluable to the receiving teacher and school.

Another important consideration the working group had to address was the age group of the target student population especially because these students often remain in school until they are 21 years of age. Based on this information, functional tasks which were appropriate for high school students and tasks which could be assessed using task analysis to measure change over time were designed. Tasks were chosen that enhance independence for individuals who were capable of living on their own. These tasks included practical daily living activities as well as basic math skills.

Over the next several months, much work was accomplished via email, group meetings, and larger monthly meetings. Some key decisions were made regarding the end product. David, a classroom teacher, mentioned that the group began "to sort the skills and make sure we weren't overlapping," which led to skills being assigned to other categories. The original "Safety Skills" category was deleted from the document when it became apparent that safety needed to be embedded into most of the other categories. Joan mentioned that one group agreed "to make electronic copies of everybody's work and kind of consolidate it …. and merging it and then fine tuning so there wasn't so much overlap."

In the end, the curriculum resource took on the form of a series of fill-in charts. David describes the format as,

Exactly what my board designed … Some boards came back with a format that was so not

practical at all for the document. So that is why when we went to put the finishing touches

on the whole document, they asked two specific boards to get together and put everyone else's sections into this [chart] format.

A few of the participants shared how determining what the final document would look like was challenging because it had grown so large. David mentioned he was part of the team assigned to design the final layout and that the team had tried to keep the document to 40 pages. However, some individuals strongly advocated for the inclusion of a "Notes" section. According to David, "The document basically doubled in size but not in content like it just gave us more space." It was Joan who explained why the group believed it was so important to include the "Notes" section: "We wanted room …. to add skills that were not necessarily there ... at the end of every section … and it would all be in one place." While David and Joan had different views about the importance of a "Notes" section, the decision to add this section indicates how the team deliberated and worked collaboratively to create the final resource.

Another example of differences of opinion about how each section was to be formatted related to how each section's expectations, which are found in specific sub-sections, may have been listed in a sequential order. Joan, for example, stated: "We started to develop some kind of continuum and a sequence. All of the other groups did that as well." Regarding the *Geometry and Spatial Sense* section of the resource, Joan explained that if a student could not do the first skill, then that is where his or her lessons would focus on. However, others believed the sections should not be formatted sequentially so that when teachers would be trained to use the resource, the teachers would understand they could choose whatever expectations they felt were appropriate for their students. According to Jennifer, "The sections weren't set up to be sequential…. this skill doesn't have to be taught before this skill down here."

All members of the working group understood the challenges of writing appropriate IEP expectations, primarily because of their experience working with students with developmental disabilities. They believed the tasks outlined in the various sections could be taken and modified to meet each student's specific needs. In this way, the IEP expectations would have measurable tasks. Brenda, a special education consultant on the team, praised the flexibility of the design, stating that the resource "gives you lots of leeway, if you want to dig into it deeper and be a little bit more specific."

During this time, key deliberations occurred regarding the naming of the curriculum resource as well as how to create the assessment tool portion. Dawn mentioned, "Even discussing what the title was going to be for the document was a lengthy process." They deliberated quite a bit on this point, and just couldn't think of a name for the resource they were creating. Eventually, they decided to use the name of the project "A4" as the name of the resource.

The Role of Technology in the A4 Resource

Analysis of the A4 curriculum resource indicates that the document lacks a dedicated section on technology for helping students with disabilities improve their learning. A specific section on technology was not incorporated into the A4 resource because, according to Jennifer, "We discussed technology as being its own pillar, but … [in the end] … saw it being more integrated amongst every area." A common idea shared by group members regarding the representation of technology in the resource was that technology should be integrated with other learning goals, such as safety. According to Tom, "Technology was embedded again just like safety was because it was specific to whatever the area was." Brenda echoed this sentiment, stating, "The

general consensus was you embed it   … in each of the sections … as best you could." She then elaborated further on this idea, stating, "We knew it was important. We figured we would embed it and boards would embed it however they could, whichever way it fit in with the process they already had."

The most common reference in the resource to technology for student use related to equipment purchased using Special Education Allotment (SEA) grants. According to Jennifer, "There's a spot for SEA equipment and the different technologies and software that the students might use." Brenda wasn't sure if technology was included, but indicated that it was discussed during the planning process: " I can't remember why we didn't include that because I know we did have a fair amount of discussion about it…Technology can be low tech [and] high tech."

When asked how they saw technology being used in the resource, various participants referred to technology-related equipment purchased using SEA grants. One board purchased interactive whiteboards for specific students. While this provided an opportunity for those students to participate more fully in their classrooms, other students could benefit from this technology if it remained in a specific classroom. Though many participants advocated for the use of technology, Brenda identified one of the challenges all boards face, stating, "Many …kids with developmental disabilities aren't assigned SEA equipment. It's not recommended by outside professionals, and without the recommendations we can't go ahead and order for them."

Brenda's school board appeared to be addressing some of the barriers associated with implementing technology into students' programs. Brenda shared a couple of her board's strategies to encourage teachers to use technology along with the expectations in the A4 resource document. Brenda indicated that "you could embed technology into certain sections… certainly

the math." Another strategy Brenda shared involved providing troubleshooting guides. These

guides would contain information providing examples of common problems which may occur

when using specific technology and described appropriate troubleshooting solutions related to

these problems. When creating each student's troubleshooting guide, care was taken to ensure

that student's accommodations, as outlined in their IEPs, were used. In this way, this board

would promote independence and self-reliance in their students.

The idea of having access to assistive technology trainers was also raised by members of

the development group. Assistive technology trainers may be special education teachers who

provide students, their families, and teachers training on the systems being tested. According to

Brenda and Dawn, providing teachers with AT training regarding various systems being used in

their classrooms would provide teachers with additional knowledge which may be needed in the

future.

In addition to the development of the print-based A4 resource, the development group

also created a website to support teachers. It was hoped that this website would eventually be

populated with many useful teaching-learning resources. Jennifer, lamenting that the print-

based A4 resource was not being adopted on a broad scale by teachers, felt that the website

could be another solution to this inconsistent implementation:

I see [teachers] taking more advantage of the website than they are, or have in the past …

In the last year and a half or so, our focus has really been on the website, because the tool

just didn't take off, like maybe we had hoped it would.

This suggests that the participants saw that there was a potential for more uses of technology in

the A4 Project than just student use.

Creation of the A4 website. One of the original goals for developing a region's A4 curriculum resource was to create a bank of teaching-learning resources for teachers and educational staff. Thus, the A4 development group collaboratively decided to create a website to be used in conjunction with the resource. Jennifer described the website as follows:

The website is very, very thorough … lesson plans and ideas …. all of the expectations … in the curriculum or the resource … you can plug them right into an assessment rubric. It will write in an excel spreadsheet." The reason for building these affordances into the website was for the website to promote "accountability… [by] … tracking how kids are doing.

Most of the study's participants discussed the value of the website as a tool to assist teachers in providing alternative curriculum for their students. According to Brenda, "The website is revised all the time…. the document itself … won't be revised from this point forward." She also explained that, "Everything that was in the document is on the website… we can all access it… teachers have seemed to find that to be a more useful tool."

A visit to this region's A4 website revealed the existence of a, "A4 Website Handout" which provided information regarding the various categories on the site and interesting statistics such as the number of pages in the site (over 500) and the increase in website visits in the last year (432%). These statistics support the group's decision to only revise the website, not the A4 print document. In this way, the participants felt that, as educators become aware of the website, they may benefit from its contents.

Other observations made while exploring the website included a) some of the links were not active, and b) some of the word documents were not editable.

Implementation

Implementation of the printed A4 resource. While the study's participants hoped teachers would view the A4 curriculum resource as "an invaluable document," "a resource tool …teachers … can't live without," "critical to planning but also to the assessment piece," and as a "starting point," much of the information shared during the interviews suggested otherwise. It was observed in the November, 2009 meeting notes that a "field testing of documents" was to occur in late April, 2010. However, only one study participant mentioned conducting a pilot in her centres' programs.

According to the participants, while one of the project's goals was to have teachers in mainstream classrooms use the resource, boards with self-contained programs often used these programs to begin the A4 curriculum resource's implementation phase. Some of the reasons for this decision were that these teachers were very comfortable working with alternative curricula, and they knew their students well. One board had hoped that as these teachers became more comfortable with using the resource, they would become spokespersons for it.

Only one of the study's participants was teaching students with developmental disabilities on a daily basis during the A4 Project. Although group members agreed on many aspects of the A4 resource's development, their thoughts on the document were mixed. David declared:

I am so happy that we do have it because … in terms of a resource to get people to start thinking about their students and where they might be at and vice versa for developing IEPs and their expectations. It is awesome.

He went on to say, "It was a ton of work …. It just was one of those theory things that it just didn't end up being practical for classroom teachers."

David also stated,

I have never talked to a teacher who is able to use this document for the purpose it was intended for. Like for each student to have one of these books and you would track their skills in here. It's an insane amount of time to do that because there were so many skills.

According to several participants, many boards chose to implement the resource in their regional programs as these teachers were familiar with alternative curricula and were seen as the "experts". However, while some of these "experts" were very enthusiastic to try to use the resource, many other teachers were less than receptive to it. This was a common problem which many of the study's participants admitted. As the A4 resource is not an official provincial curriculum guide, the working group understood they could not mandate teachers to incorporate it into their programs.

Brenda indicated that her board first shared the document in the secondary regional programs because the Community Skills section fit with what was being taught. Also, her board believed that the board's teachers would provide valuable feedback. Thus, they made the resource available to the region's elementary teachers. Once these teachers were comfortable using the resource, it was the board's hope that these teachers would help to promote its use among resource teachers and teachers in regular classrooms.

Financial aspects of A4 Resource implementation. In personal interviews, some participants indicated that every school board received some money to assist with the A4 resource's implementation. All groups used some of the money to offset printing costs. Some printed the whole document for each student while others chose to print and place the document in a master binder where the skills specific sheets would be copied and placed in the appropriate student's binder.

Implementation also needed to address how the document was going to be used as an assessment tool. Most participants referred to the value of the resource when creating IEP expectations. It appears that the resource was seen more often as an IEP reference guide than a curriculum resource guide.

Members of the newly formed group grappled with their understanding of curriculum as it related to their work in developing the curriculum resource. Brenda explained:

 Everyone was super clear on what [the Ontario curriculum] was in terms of expectations ... When we started to look at alternative curriculum, that's when we all had different visions, depending on what board you're from; depending on the programs that are available; depending on experience with kids that may have needed alternative curriculum.

Brenda clarified the meaning of the expression "alternative curriculum", stating, "Alternative is Ministry language for functional." According to Jackie, "It was extremely challenging to define the curriculum." In an effort to clarify the group's understanding of the expression "functional curriculum", Dawn, a special education consultant, noted that, according

to the group, "[A] Functional Curriculum …. was anything that was missing out of Ontario curriculum that we felt was necessary for students to learn."

Discussion

The purpose of this study was to learn: 1) about the process involved in creating the A4 curriculum resource; 2) how the writing team set priorities and made decisions regarding the development and implementation of the A4 curriculum resource; and 3) how the A4 curriculum resource's writing team discussed the role of technology in helping special education students meet curriculum expectations. The findings of this study were considered in light of these questions and the literature reviewed. After reviewing this information, the following themes were identified: a) special education policies were being implemented; b) creating a functional curriculum resource requires alternative learning expectations; c) the primary curriculum model used was a product approach, though some reference to the process model was evident; d) curriculum development process focused more on the common-sense and practical approaches than theoretical approach; e) curriculum implementation requires a clear implementation strategy; and f) theoretically, technology offers more affordances than assistive technology alone.

Upon review of this study's findings and literature review, the process used by this regional writing team involved choosing individuals with special education experience to create an assessment document according to Ministry of Education guidelines.   Part of creating this resource involved establishing the project's framework and goals (Wiles and Bondi, 2011), conducting research to determine current assessment practices and assessment tools which were available (Glatthorn, 1994). Based on these findings, this study addressed the research question regarding the process used by the writing team to create the A4 curriculum resource.

Special Education

A critical component of any exceptional student's educational program is his or her Individual

Education Plan (IEP). Students with developmental disabilities often are unable to achieve the

learning expectations outlined in the standard provincial curriculum policy documents for their

grade level. Instead, teachers create alternative learning expectations which focus on the

student's strengths and needs. These alternative learning expectations are recorded in the

student's IEP and form the basis of the student's alternative curriculum (MOE, 2004).

According to some of this study's participants, the A4 resource could be used more effectively as

an IEP reference resource than an assessment document. Also, the writing team spent a lot of

time deciding on what skills would be included in the A4 resource's final version. These

findings help answer the research question regarding the development group setting its priorities.

A functional curriculum resource with alternative learning

expectations. In this study, I reviewed pertinent Ministry of Education policy documents to

determine how the words "alternative" and "functional" were used. The Ministry of Education's

Draft A4 Project Guidelines specifically state that the term "alternative" refers to students who

"do not access the Ontario curriculum and who do not participate in provincial assessment"

(MOE, 2009, p. 1). In this context, and based on participants' responses and documentation

analyzed in this study, it was evident that the individuals and groups who developed the A4

curriculum resource understood that the term "alternative" was usually associated with learning

expectations, programs, courses, instructional and assessment methods or strategies, and reports

as they relate to specific students (Bennett & Wynne, 2006; MOE, 2010b, 2011a).

Interestingly, however, the term "functional" was found in only four of the Ministry of Education documents reviewed for this study (MOE, 1990, 2002, 2005, 2007).   One document's use of the term "functional" focuses on how technology could assist students in developing their capabilities and skills as well as the properties of a computer's hardware and software (MOE, 2005). Another document referred to "functional" more from the behaviour perspective in terms of an approach that is commonly used when working with students with autism (MOE, 2007). The other documents' references to "functional" addressed the need for a student's program to be authentic and community-based so that students with special needs would be able to fully participate in their communities.

The term "functional curriculum" was found only once in the Ministry of Education documents reviewed in this study (MOE, 2007). Likewise, the term "alternative curriculum" was only found once in Ministry of Education documents where this reference supports other Ministry of Education documents in reference to alternative programming (MOE, 2002a). On this topic, Brenda stated, "Alternative is Ministry language for functional". Thus, the two terms, "alternative" and "functional" appear to have two different meanings. While "alternative" addresses how the program or learning expectations are different from the provincial curriculum, "functional" refers to the skills outlined in the learning expectations.

Researchers such as Bennie (2005), Bouck and Flanagan (2010), Browder et al. (2004), and Myreddi and Narayan (2011) all address the need to create educational programs for students with developmental disabilities where the instructional program incorporates age- and ability-appropriate authentic (real-life) tasks which are designed to assist students in developing their adaptive behaviours. According to Myreddi and Narayan (2011), some of these authentic tasks include: shopping, taking public transit, and employment training. Ideally, this would assist

students in generalizing their skills so they can reach their full potential and be contributing

members of their community. Review of the skills listed in the A4 resource's various categories

indicates that the group attempted to address the need for alternative learning expectations while

providing a functional application for each targeted skill. In this way, the A4 curriculum

resource writing team created a functional curriculum resource for teachers wishing to use this

document and addressed the research question regarding setting priorities during the

development process. This would not have been possible if the writing team did not understand

the Ministry of Education's special education policies as outlined in the Special Education

section of this document.

Curriculum Models

Upon analyzing the data in this study, it appears that the primary curriculum model used was the

product model (Smith, 1996, 2000). Most of the general categories chosen for this regional A4

curriculum resource reflect various components of essential life skills that students receiving an

alternative curriculum may master. Sheehan's (1986) examples of the product curriculum

model, "mastery of specific skills and competencies, and acquisition of certain 'appropriate'

attitudes and values" (p. 672) were echoed in participants' comments and reflections.

References to task analysis made by various study participants clearly reflect Bobbitt's

curriculum model (Smith, 1996, 2000). Key components of this model, such as accountability,

measurability, and evaluation, were evident in the A4 curriculum resource that was produced.

These findings help answer the research question regarding the development group setting

priorities during the development process.

Participants in this study stressed the importance of programming for students based on their strengths and needs, which is a component of the process curriculum (Smith, 1996, 2000). This requires using a holistic approach to programming where constant review and reflection influence how a program is modified so that students can demonstrate achievement and experience success (Sheehan, 1986). Beane (1995) supported this approach when he stated that curriculum is experienced by all citizens and is influenced by different groups. Creating a coherent curriculum requires curriculum developers to identify how various curriculum pieces can be connected and put into contexts in order to assist students in making sense of their learning experiences. A coherent curriculum involves providing students opportunities to make connections between their learning and their current life experiences. Addressing who students are as people and how they make sense of out their experiences can influence which purposes and contexts are used during their learning experiences. These findings and related references to the literature help us understand how the A4 writing team set its priorities during the A4 development process.

Curriculum Development

When designing curriculum, curriculum development teams may choose one or more of the following approaches: a) common-sense, b) practical, or c) theoretical, as per Walker's (2003) model. References made regarding how the A4 group members worked during this document's creation suggest that Walker's common-sense approach and practical approach were most likely used.

Participants used their experiences and understanding of what alternative curriculum meant, which may have inadvertently contributed to some challenges the group faced as they

grappled with the task of defining "alternative curriculum". For example, Tom stated, "We based our development of the curriculum on past practice to some extent ….. we looked at what at what everyone was doing in their individual programs in different boards." Brenda identified the need for consistent terminology when she commented, "Even though we were …. all in education, we still had different definitions for things … when we are talking Alternative, Functional Alternative, what do we mean by that?" Using more of a theoretical approach (Walker, 2003) during the A4 resource's development may have resulted in less time used to establish consistent terminology and more time for deliberations to determine what would be included in the actual document.

Throughout the interviews, it was apparent that members of the development group believed there was a need for a consistent curriculum, because as Jennifer pointed out, "It was difficult … sometimes to have that sort of guiding curriculum, or even a place to reference or go to." She went on to say, "And in our school board, in addition to that, we were having so many inconsistencies between our schools even around language and IEPs. What one school might call 'living skills,' another school was calling 'speech' or "communication." Addressing the need for consistency demonstrates another way in which the development team set priorities during the development process.

According to Beane (1995), coherence focuses more on making connections and seeing the whole picture while consistency addresses more specific details such as institutional order and very explicit course outlines and outcomes. In this sense, the A4 curriculum resource's writing team attempted to address the inconsistency of learning expectations and the lack of curriculum coherence which results in fragmentation of knowledge, skill, and human experience.

A4 Curriculum Resource Implementation

Implementation of a new curriculum requires a well-designed strategy. According to Glatthorn (1994), some factors required for successful implementation include (a) stakeholders agreeing there is a need for change; (b) the curriculum's objectives are clearly stated; (c) the benefits of the curriculum are clearly communicated with principals, teachers, parents and students; and (d) the document is of high quality. Furthermore, Doyle & Ponder (1977) contend that success of the new curriculum's implementation is contingent on teachers' perceptions of the need for a new curriculum and the new curriculum's fit with their current practices. These findings support the need for an effective implementation strategy and address the research question regarding setting priorities during the implementation process.

A critical factor which impacted the A4 resource document's implementation was the fact that it was not a curriculum policy document. Therefore, the writing team understood they could not mandate the use of the document. Other factors that the study's participants acknowledged were influential in determining the resource's implementation success, and which align with Doyle and Ponder's (1977) and Glatthorn's (1994) findings, included: a) the writing team's belief that there was a need for change, though many teachers in their school boards did not; b) the absence of clear and consistent explanations regarding how to publish and use the resource; c) inconsistency amongst writing group members regarding which grade levels the document applied to; and d) the absence of a trial evaluation of the A4 resource prior to its official circulation.

Technology

The findings of this study indicate that the professionals involved in designing theA4 resource

defined technology in terms of assistive technologies without recognizing the value of

technology as an everyday learning tool for all students. This finding reasonably addresses the

research question regarding the role of technology in the A4 resource. Wiles and Bondi (2011)

acknowledge that in the 21st century, technology has become a common part of people's lives.

Teachers need to incorporate activities into their programs which promote computer skill

development. For students with developmental disabilities, this skill development may focus

initially on developing skills required to use certain computer software. Once they have

mastered competencies needed to operate specific equipment, students, along with their teachers,

have the opportunity to discover affordances which could not be realized without technology.

This statement demonstrates how literature addresses the research question regarding the role of

technology in assisting students with developmental disabilities to become active members of

their communities.

Researchers such as Meyer and Rose (2005) suggest that while AT provides better access

to existing materials and methods, new educational technologies will change teaching methods,

establishing learning goals and how students will be assessed. The great flexibility of digital

media, including the ability to change from one medium to another (e.g., speech-to-text) and

allowing multiple representations of meanings (e.g., closed captioning on videos) provides

students with special learning needs greater access and increased learning opportunities.

Teachers' pedagogy influences how technology will be incorporated in their classrooms.

Wiles and Bondi (2011) state that there is a need for teaching practices to be transformed from

the 19th century industrial paradigm to the information age paradigm, which recognizes the role

of technology as part of a dynamic and interdependent relationship between social changes and

education. When asked how technology was addressed during the resource's creation, some

participants stated there was no reference to technology, while others felt it had been considered

as a possible category, until it was realized technology expectations are already found in the

standard Ontario curriculum policy documents. This may explain why only one learning

expectation in the resource clearly included an activity which involved information technology.

This expectation involved on-line banking (Ontario Region, 2010). This finding provides

another indication of how the A4 resource writing team addressed the role of technology in the

A4 resource.

When asked about the role of technology, some participants focused heavily on students'

eligibility for SEA funding. In this way, they were acknowledging that, without additional

funding, the incorporation of technology in educational programming can be a costly endeavour.

Many participants stated that technology was being embedded in learning expectations.

However, few examples of how technology was being used were shared during the interviews.

This implies that there is a need to assist teachers in incorporating technology in their classroom

activities.

Conclusions and Recommendations

Conclusions

The primary goal of this study was to gain an understanding of the process involved in developing a functional curriculum resource, the A4 resource. Ideally, a functional curriculum provides teachers of students with developmental disabilities with appropriate ability-level learning expectations. These learning expectations assist teachers in providing an effective educational program. In addition to learning about the development process, the study also attempted to learn how teachers may use a functional curriculum resource in their classrooms, and how digital technology may have been addressed in the A4 curriculum resource.

This study has shown that creating the A4 resource was a large undertaking. Some of the challenges the development group faced included inconsistencies regarding language and terminology across the region. Determining the target student group and the definition of curriculum was challenging because the group understood the broad range of abilities possessed by students identified as developmentally disabled. Choosing the final skills categories was seen as a very important component of the development process.

In theory, the group believed the document they created provided valuable information which teachers could use. Ideally, the group wanted the A4 curriculum resource to be used by teachers in regular classrooms. According to some of the participants in this study, the assessment tracking component of the A4 resource made the resource difficult to use as intended. However, many participants saw the value of the listed skills in the various categories as IEP expectations. Overall, the lack of a uniformed implementation strategy resulted in limited adoption of the resource within the region for which it was created.

While technology use in the 21st century is commonplace in Ontario, the narrow scope of incorporating technology into the A4 resource was unexpected. There was a reluctance to advise other boards and teachers on how to embed technology into students' programs. Issues related to funding to acquire technology equipment may have been a contributing factor.

Recommendations

The findings of this study led to some recommendations for improving educational programming for students with developmental disabilities at the local, regional and provincial levels. One of the challenges the A4 curriculum resource writing team attempted to address was the challenge of supporting teachers with less experience working with alternative curricula. Therefore, it is recommended that a mentoring program be established where expert teachers of alternative curricula mentor novice or less experienced teachers.

As implementation of the A4 resource was a significant challenge, creating and distributing clear guidelines on how to use the A4 resource need to be developed. This may require the formation of a new team to develop a consistent implementation strategy across the region. Although the A4 resource writing team believed strongly in the resource development project they embarked on, they acknowledged the limitations of the print version of the resource they produced. Thus, it is recommended that the Ministry provide additional funding to support review and revision of the A4 curriculum resource analyzed in this study and other similar resources. It is recommended that a trial evaluation be part of the implementation strategy in order to allow a development team to address areas of concern prior to a regional launch of any revised guidelines and documents.

As this was a provincial initiative with the goal of improving provincial consistency, it is recommended that the Ministry of Education share findings it may have gathered from other regional A4 projects with schools and school boards across the province. This would support the earlier recommendation of sharing best practices.

Finally, given the lack of support in the A4 resource for integrating technology in the special education classroom, it is recommended that future curriculum resource development teams include educators with expertise in using technology with student with developmental disabilities.

References

Bai, H., & Ertmer, P.A. (2008). Teacher educators' beliefs and technology uses as predictor of preservice teachers' beliefs and technology attitudes. *Journal of Technology and Teacher Education (2008) 16*(1), 93-112.

Beane, J.A. (1995). *Introduction: What is a coherent curriculum?*. Alexandria, VA: Association for Supervision and Circulation Development.

Bellovin, E. (2011). *Scholastic intervention solutions*. Retrieved from http://www.scholasticinterventions.org/2011/12/05/generalization-and-maintenance-of-skills

Bennett, S., Dworet, D., & Weber, K. (2008). *Special education in Ontario*, (6th Edition). St. David's, ON: Highland Press.

Bennett, S., & Wynne, K. (2006). Special education transformation: The report of the co-chairs with the recommendations of the working table on special education. Toronto: Author. Retrieved from http://www.edu.gov.on.ca/eng/document/reports/speced/transformation/transformation.pdf

Bennie, G. (2005). *Effective transitions from school to employment for young people with intellectual disabilities in New Zealand.* Country Report for 25th Asia-Pacific International Seminar on Special Education National Institute of Special Education (p.p. 97 − 106). Yokohama City, Japan. Retrieved from http://www.nise.go.jp/cms/resources/content/383/d-240_16.pdf

Bouck, E., & Flanagan, S.M. (2010). Functional curriculum = evidence-based education?: Considering secondary students with mild intellectual disabilities. *Education and Training in Autism and Developmental Disabilities, 2010, 45*(4), 487-499. Retrieved from http://daddcec.org/Portals/0/CEC/Autism_Disabilities/Research/Publications/Education_Training_Development_Disabilities/2010v45_Journals/ETDD_201012v45n4p487-499_Functional_Curriculum_Evidence-Based_Education_Considering.pdf

Browder, D., Flowers, C., Ahlgrim-Delzell, L., Karvonen, M., Spooner, F., & Algozzine, R. (2004). The alignment of alternate assessment content with academic and functional curricula. *The Journal of Special Education, 37*(4), 211-223.

Brown, L., McLean, M.B., Hamre Nietupski, S., Pumpian, I., Certo, N., & Gruenewald, L. (1979). A strategy for developing chronological age appropriate and functional curricular content for severely handicapped adolescents and young adults. *Journal of Special Education,13(1),* 81-90. doi: 10.1177/002246697901300113

Bruton, N., Brundrett, M., & Jones, M. (2008). *Doing your education research project*. Los Angeles: Sage.

Centers for Disease Control and Prevention. (2012). *Facts about developmental disabilities: Causes and risk factors*. Retrieved from http://www.cdc.gov/ncbddd/developmentaldisabilities/facts.html

Chmiliar, L. (2007). Perspectives on assistive technology: What teachers, health professionals,

and speech and language pathologists have to say? *Developmental Disabilities Bulletin,*

2007, 35(1,2), 1-17.

Cruikshank, W.M., & Johnson, G.O. (1958). *Education of exceptional children and youth.*

Englewood Cliffs, N.J.: Prentice-Hall Incorporated.

Doyle, W., & Ponder, G. (1977). The ethic of practicality: Implications for curriculum

development. In A. Molnar & J. A. Zahorik (Eds.), *Curriculum theory* (p.p. 74-80).

Washington, D.C: Association for Supervision and Curriculum Development.

Functional Skills Action Committee Special School District of St. Louis County, (1991 – 1992).

Overview of the functional skills guide. Retrieved from

http://pbiscompendium.ssd.k12.mo.us/ResourcesSchools/SSD/Functional/overview.htm

Glatthorn, A. (1994). *Developing a quality curriculum*. Alexandria, VA: Association for

Supervision and Circulation Development.

Glesne, C. (2011). *Becoming qualitative researchers, An introduction* (4th edition). Boston:

Pearson Education.

Gold, M.E., & Lowe, C. (2010). The integration of assistive technology into standard classroom

practices: Practical recommendations for k-12 general educators. *The Journal of*

Multiculturalism in Education 6(1). Retrieved from

http://www.wtamu.edu/webres/File/Journals/MCJ/gold.pdf

Hoepfl, M.C. (1997). Choosing qualitative research: A primer for technology education

    researchers. *Journal of Technology Education, 9(1),* 47 – 61. Retrieved from

    http://scholar.lib.vt.edu/ejournals/JTE/v9n1/pdf/hoepfl.pdf

Hopkins, J. (2004). *Assistive technology (AT) to support students with special needs.* Toronto:

    Curriculum Services Canada. Retrieved from

    http://www.curriculum.org/resources/assistive-technology-at-to-support-students-with-

    special-needs

Legislative Assembly of Ontario. (n.d.). *Janet Ecker, MPP, parliamentary history*. Toronto:

    Author. Retrieved from

    http://www.ontla.on.ca/web/members/members_detail.do?locale=en&ID=33

Lesar, S. (1998). Use of assistive technology with young children with disabilities. *Journal of*

    Early Intervention, 21(2), 146-159.

McCarter, J. (2008). *2008 Annual Report: Office of the Auditor General of Ontario.* Toronto:

    Author. Retrieved from http://www.auditor.on.ca/en/reports_en/en08/ar_en08.pdf

McCarter, J. (2010). 2010 *Annual Report: Office of the Auditor General of Ontario.* Toronto:

    Author. Retrieved from http://www.auditor.on.ca/en/reports_en/en10/2010ar_en.pdf

McNeil, J. (1996). *Curriculum: A comprehensive introduction* (5th ed.). New York, NY: John

    Wiley & Sons, Incorporated.

Messenger-Willman, J., & Marino, M.T. (1994). Universal design for learning and assistive

    technology: Leadership considerations for promoting inclusive education in today's

    secondary schools. *NASSP Bulletin 94*(1), 5-16. doi: 10.1177/0192636510371977

Meyer, A., & Rose, D. (2005). The future is in the margins: The role of technology and disability

    in educational reform. In D. H. Rose, A. Meyer, & C. Hitchcock (Eds.), *The universally*

    designed classroom: accessible curriculum and digital technologies (p.p. 1–28). Retrieved

    from http://udlbc.pbworks.com/f/Instructor+-

    +The+Future+is+in+the+Margins+(FULL+text).pdf

Miller, J.P. (1988). *The holistic curriculum research in education series 17*. Toronto: OISE

    Press.

Miller, J. P., & Seller, W. (1990). *Curriculum perspectives and practice*. Mississauga: Copp

    Clark Pitman Limited.

Ministry of Community and Social Services. (2009). *Archived backgrounder*

    Closing institutions for people with a developmental disability. Retrieved from

    http://news.ontario.ca/mcss/en/2009/03/closing-institutions-for-people-with-a-developmental-

    disability.html

Myreddi, V., and Narayan, J. (2011). *Development of a community referenced curriculum.*

    Retrieved from

    http://www.acid2011korea.org/kaidd_abs/pds/20110600250_14th_A_21.pdf

Ontario Ministry of Education. (1988). *Curriculum management resource guide.* Toronto:

    Author.

Ontario Ministry of Education. (1990a). *Education Act, R.S.O. 1990, CHAPTER E.2*. Toronto:

Author. Retrieved from http://www.e-

laws.gov.on.ca/html/statutes/english/elaws_statutes_90e02_e.htm#BK2

Ontario Ministry of Education. (1990b). *Planning for independence: A support document for

teachers of students with intellectual disabilities*. Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/planindep/planindep.html

Ontario Ministry of Education. (2000a). *The Ontario student record (OSR) guideline*. Toronto:

Author. Retrieved from http://www.edu.gov.on.ca/eng/document/curricul/osr/osr.pdf

Ontario Ministry of Education. (2000b). S*tandards for school boards' special education plans.*

Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/iepstand/iepstand.pdf

Ontario Ministry of Education. (2001). *Special education: A guide for educators*. Toronto:

Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/guide/specedhandbooke.pdf

Ontario Ministry of Education. (2002a). *The Ontario curriculum unit planner: Special education

companion*. Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/policyfunding/ocup/documents/speced2002.pdf

Ontario Ministry of Education. (2002b). *Transition planning: A resource guide*. Toronto:

Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/transiti/transition.pdf

Ontario Ministry of Education. (2004). *The individual education plan (IEP): A resource guide*.

Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/guide/resource/iepresguid.pdf

Ontario Ministry of Education. (2005). *Education for all: The report of the expert panel on*

literacy and numeracy instruction for students with special education needs, kindergarten

to grade 6. Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/document/reports/speced/panel/speced.pdf

Ontario Ministry of Education. (2007). *Making a difference for students with autism spectrum*

disorders in Ontario schools from evidence to action: Report of the Ministers' Autism

Spectrum Disorders Reference Group to: Minister of Education Minister of Children and

Youth Services February 2007. Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/document/nr/07.02/autismFeb07.pdf

Ontario Ministry of Education. (2009a). *Draft guidelines for assessing achievement in*

alternative areas. Toronto: Author. Retrieved from

http://cal2.edu.gov.on.ca/october09/Draft_GuidelinesA4_Chart_Format.pdf

Ontario Ministry of Education. (2009b). *Ministry of Education special education update,*

October, 2009. Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/SpecialEd_Update2012.pdf

Ontario Ministry of Education. (2010a). *Education policy and program update to April 30, 2010: A guide to changes and additions to Ontario Secondary Schools, grades 9 to 12: Program and diploma requirements, 1999: New policies, programs, initiatives, and resources, kindergarten to grade 12.* Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/policyfunding/Education_Program_2010.pdf

Ontario Ministry of Education. (2010b). *Growing success: Assessment, evaluation and reporting in Ontario schools, first edition, covering grades 1 to 12, 2010.* Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/policyfunding/Education_Program_2010.pdf

Ontario Ministry of Education. (2010c). *Ministry of Education special education update, October 2010.* Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/SpecialEd_Update2010.pdf

Ontario Ministry of Education. (2011a). *Learning for all: A guide to effective assessment and instruction for all students, kindergarten to grade 12. Draft Version 2011.* Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/LearningforAll2011.pdf

Ontario Ministry of Education. (2011b). *Ontario Schools, kindergarten to Grade 12: Policy and Program Requirements, 2011 (OS).* Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/document/policy/os/ONSchools.pdf

Ontario Ministry of Education. (2012a). *Ministry of Education Special Education Update October 2012.* Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/general/elemsec/speced/SpecialEd_Update2012.pdf.

Ontario Ministry of Education. (2012b). *Regional Offices.* Toronto: Author. Retrieved from

http://www.edu.gov.on.ca/eng/parents/offices.html

Ontario Ministry of Education. (n.d.). *Course codes for alternative (non-credit) courses: codes des cours composés d'attentes différentes, ne donnant pas droit à des credits.* Toronto: Author. Retrieved September 12, 2012 from

http://www.edu.gov.on.ca/eng/curriculum/secondary/altCredit_Different.pdf

Ontario Region. (2010). *Assessing achievement in alternative areas*. Retrieved from

http://www.hpedsb.on.ca/ec/services/spe/documents/A4RevisedJune2010.pdf

Roebuck, R., Paquet, M., & Coultes-Macleod, J. (2009). *Improving health outcomes for children and youth with developmental disabilities. A literature review in the health status of children and youth with developmental disabilities within a population health framework*. Toronto: First Leadership Limited. Retrieved from

http://www.surreyplace.on.ca/Documents/Children's%20Forum%20Literature%20Review_final(web).pdf

Sheehan, J. (1986). Curriculum models: product versus process. *Journal of Advanced Nursing, 11*, 671-678.

Smith, M. K. (1996, 2000). *Curriculum theory and practice the encyclopaedia of informal education*. Retrieved from www.infed.org/biblio/b-curric.htm

Special Needs Opportunity Window. (2012a). *Assistive technology*. Retrieved from

    http://snow.idrc.ocad.ca/content/inclusive-technology

Special Needs Opportunity Window. (2012b). *Technology for accessibility*. Retrieved from

    http://snow.idrc.ocad.ca/node/143

Special Needs Opportunity Window. (2012c). *Technology for learning*. Retrieved from

    http://snow.idrc.ocad.ca/node/202

Special Needs Opportunity Window. (2012d). *Technology for teaching*. Retrieved from

    http://snow.idrc.ocad.ca/node/107

Surrey Place Centre. (2009). *Developmental disabilities.* Retrieved from

    http://www.surreyplace.on.ca/Developmental-Disabilities/Pages/Home.aspx

Ulrich, M.E., & Bauer, A. M. (2003). Levels of awareness: A closer look at communication

    between parents and professionals. *Teaching Exceptional Children, 35*(6), 20- 23.

Walker, D. E. (2003). *Fundamentals of curriculum passion and professionalism* (2nd Edition).

    Mahwah: Lawrence Erlbaum Associates Incorporated.

Westbrook, R. E. (1999). John Dewey (1859-1952). *Prospects: the quarterly review of

    comparative education (Paris, UNESCO: International Bureau of Education), 23*(1/2),

    1993, 277-91. UNESCO: International Bureau of Education. Retrieved from

    http://www.ibe.unesco.org/fileadmin/user_upload/archive/publications/ThinkersPdf/dewey

    e.PDF

Wiles, J.W., & Bondi, J.C. (2011). *Curriculum development: A guide to practice* (Eighth

    Edition). Upper Saddle River, N.J.: Pearson Education Incorporated.

Zegerac, G. (2008). *Special education in Ontario: "Closing the gap as the overarching goal:*

    changing special education practices and outcomes". Toronto: Author. Retrieved from

    http://www.edu.gov.on.ca/eng/research/specEd_AERA_CSSE.pdf

List of Tables

List of Figures

Appendices

Appendix A: **INTERVIEW QUESTIONS/INTERVIEW SCRIPT**

"Investigating the Development of a Functional Curriculum Document"

Prior to the interview:

1. Confirm the signed consent form has been provided.

2. Remind the participant that participation in the interview is voluntary and the interview is being recorded and they will be sent a transcript of the interview.

3. Remind the participant that they have the right at any point during the interview to not answer the question or stop the interview and that if they withdraw, all of the interview transcripts related to them will be destroyed.

4. Also remind them their participation is anonymous and if they name other team members this will be recorded in the transcript as "another person on the team" or "another team member".

	Interview Questions
1.	It must have been really difficult to define a curriculum for this student population so I am interested in how broadly you and the team defined curriculum. Please explain to the best of your ability how you define curriculum and how the writing team defined curriculum.
2.	I'm not just a researcher, I am also teacher who has used this document. I appreciate the kind of work that must have gone into creating a document such as this. What do you remember about the process of building the document?
3.	Do you remember the process that was used in order to come up with the broad categories/organizers for the document such as Community Skills? Please share with me the process which was used.
4.	Did the word technology ever come up during the design and writing process of the document?
5.	Is the use of technology in the document assumed? How would you connect technology use with the document?
6.	If you could add a technology section to the document, have you thought about some things you would like to add?
7.	"If I were a teacher starting to use this document with a group of this student population, how would I know where to gauge the level of expectations for the students?"
8.	How do you see this document being used as a diagnostic tool?
9.	**If time permits I will ask the following question about resources:** I believe this document provides teachers with a valuable resource when they begin to create their student's educational learning plan. What do you believe could be additional resources which may assist the teacher using this document?
10.	If you are currently teaching students with developmental disabilities, how do you use the A4 document to support your student's learning?

Thank you for taking the time to meet with me and answer these questions. You will receive a copy of the transcript of this interview within ____ weeks.