DATA USE IN ONTARIO SCHOOL BOARD IMPROVEMENT PLANS

by

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Abstract

Board improvement plans (BIP) are documents which include goals and actions to improve student achievement and well-being within a school board. School boards in Ontario are encouraged to use data to make informed educational decisions about their students, educators, and schools to improve education. However, how data are used in board improvement planning is unknown. The purpose of this research is to explore the role of data in board improvement planning to gain an understanding of how data are used at the board level of the Ontario school system. To understand the role of data at the board level, the main research question is: What is the role of data in board improvement planning?

Data were collected from three sources for this exploratory case study: three principal interviews, document analysis of relevant Ministry documents, and document analysis of 18 BIPs. Interviews were inductively coded and used to deductively analyze Ministry documents. BIPs were analyzed following the iterative process of skimming, reading, and interpretation using elements of content and thematic analysis.

The three themes discovered during interview analysis and used to explore Ministry documents were: functional development of BIPs, relational aspect of BIPs, and data path in BIPs. From document analysis, four broad types of data were found: board-wide student achievement data, board-wide student well-being data, school level data, and classroom level student data. With respect to the uses of data, data were used to identify, plan, and monitor. Lastly, data were found to be interpreted by examining trends (deconstructing and comparing) and through triangulation (multiple sources and in teams). In conclusion, the results provide evidence that multiple types of data are being used for board improvement planning, for various different uses, with different ways of interpreting the data.
Dedication

For my older brothers, Andrew and Jeremiah.
Acknowledgements

I would like to thank and acknowledge the following individuals for supporting me, challenging me, inspiring me, and helping me reach my goal. Each of you has influenced me tremendously in this journey.

To my supervisor Jamie Pyper, thank you for facilitating my learning of qualitative research studies. You supported me with your thoughtful feedback and expertise in educational research. I appreciate all the time you spent reading the many iterations of my writing. To my committee member, Ben Kutsyuruba, thank you for all of your incredibly helpful comments to improve my study. Your thoughtful feedback is much appreciated. To my thesis examiner Ben Bolden, thank you for reading my thesis and providing me with thought-provoking questions to expand my thinking about the impact of my research.

I would like to thank my mother for cultivating my affinity for education at a young age. I feel lucky to have been raised surrounded by the most inspiring, confident, and positive women. Grandma, mum, Abbey, Sarah, Marlee, Nicki, my aunts and great aunts – thank you for your inspiration.

To my loving husband, Tom, thank you for getting to know all the coffee shops and writing spots from Kingston to Ottawa with me. You are the best company.

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Table of Contents

Abstract .......................................................................................................................... ii
Dedication ....................................................................................................................... iii
Acknowledgements ........................................................................................................ iv
List of Figures .................................................................................................................. ix
List of Tables .................................................................................................................. x
List of Abbreviations ...................................................................................................... xi
Chapter 1 Introduction ................................................................................................... 12
  Personal Story ............................................................................................................... 12
  Purpose ......................................................................................................................... 13
  Rationale ....................................................................................................................... 14
Conceputal Framework: Data Use Theory of Action ...................................................... 15
Key Terms ....................................................................................................................... 16
  Data use, practice of data use, and uses of data ......................................................... 16
  Data, interpretation, information, and evidence ......................................................... 17
  Data literacy, assessment literacy, DBDM, and DDDM. ............................................. 17
Overview of Thesis ........................................................................................................ 18
Chapter 2 Literature Review .......................................................................................... 19
  Approach to Literature Review .................................................................................. 19
  Defining Data Use ....................................................................................................... 21
    Levels of data use: inquiry cycle. ............................................................................. 22
    Simple versus complex data use. ............................................................................ 22
  Factors Related to Data Use ....................................................................................... 23
    Individual factors ...................................................................................................... 24
    Social factors ........................................................................................................... 24
    Organizational factors .............................................................................................. 25
    Leadership factors ................................................................................................... 26
    Training factors ....................................................................................................... 26
  Defining Data Literacy ................................................................................................. 27
Developing Data Literacy in Educators .......................................................................... 28
Goals of the BIP......................................................................................................................... 87
Involvement in the BIP. ............................................................................................................. 87
Interpretations of Data in BIPs ............................................................................................... 88
Trend Data. .............................................................................................................................. 88
Triangulating data.................................................................................................................... 89
Uses of Data in BIPs ............................................................................................................... 91
  Using data to identify. ........................................................................................................... 91
  Using data to plan. ............................................................................................................... 93
  Using data to monitor. ........................................................................................................ 93
Summary .................................................................................................................................. 93
Limitations of the Study ......................................................................................................... 94
Implications for Future Research .......................................................................................... 95
Implications for Policy and Practice ...................................................................................... 96
References ............................................................................................................................... 98
Appendix A GREB Clearance Letter .................................................................................... 111
Appendix B Letter of Information and Consent Form .......................................................... 112
Appendix C Sample Interview Questions ........................................................................... 114
List of Figures

Figure 1. Diagram of Marsh’s data use theory of action................................................................. 15
Figure 2. Diagram illustrating the number of articles at each stage and themes of review........... 21
Figure 3. Diagram of the case (centre of triangle), school system boundaries (borders of triangle), and data sources (connected by arrows)................................................................. 35
Figure 4. Step by step diagram of BIP document analysis (content and thematic analysis)........ 39
Figure 5. Diagram illustrating connections of the BIP from interviews ..................................... 48
Figure 6. Data path in BIPs. ........................................................................................................ 51
Figure 7. A diagram from the SEF explaining BIP connections (Ontario Ministry of Education, 2013, P.5)................................................................................................................................. 58
Figure 8. A table of Grade 3 and 6 EQAO scores in Upper Canada DSB's BIP......................... 64
Figure 9. DSB of Niagara reported board-wide student achievement data................................. 65
Figure 10. School climate and safety in Kawartha Pine Ridge DSB's BIP................................. 66
Figure 11. Diagram illustrating themes of data use using examples from BIPs across Ontario. 71
Figure 12. Diagram illustrating themes regarding interpretations of data with examples from BIPs........................................................................................................................................ 76
Figure 13. Data trends present in Upper Canada DSB's BIP. ..................................................... 78
Figure 14. A diagram from Durham DSB’s BIP explaining triangulation................................. 79
Figure 15. Summary findings of data use for Ontario BIPs. ....................................................... 82
List of Tables

Table 1. Key search terms used to identify relevant literature. ......................................................... 20
Table 2. Inclusion criterion for selecting relevant literature. ................................................................. 20
Table 3. Total BIPs Collected in Regions Across Ontario ........................................................................ 43
Table 4. Reported (x) and implicit (i) data in 18 Ontario BIPs. ......................................................... 61
Table 5. Frequency of each data type theme in 18 Ontario BIPs. ..................................................... 63
Table 6. Frequency of the uses of data in 18 Ontario BIPs. ................................................................. 70
Table 7. Frequency of each data interpretation theme in 18 Ontario BIPs. ................................. 75
## List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BIP</td>
<td>Board improvement plan</td>
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<tr>
<td>BIPSA</td>
<td>Board Improvement plan for student achievement</td>
</tr>
<tr>
<td>DBDM</td>
<td>Data-based decision making</td>
</tr>
<tr>
<td>DDDM</td>
<td>Data-driven decision making</td>
</tr>
<tr>
<td>DSB</td>
<td>District school board</td>
</tr>
<tr>
<td>EQAO</td>
<td>The Education Quality and Accountability Office</td>
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<tr>
<td>ERIC</td>
<td>Education Resources Information Centre</td>
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<tr>
<td>ESL</td>
<td>English as a Second Language</td>
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Chapter 1

Introduction

Personal Story

My science classroom at St. Peter’s School in Huntingdon, England had a large bench at the front which I used for science demos. I also used it for marking. It was nearly the width of the room which allowed me to spread all the projects and portfolios out for marking. That was exactly what I was doing with my year 7’s student booklets when I heard the sound of my Outlook email. I peeked over, apprehensively, to read the heading of the email on my computer. The subject line read, “OFSTED will be here…” It was the email from the Office of Standards in Education (OFSTED) that all the teachers were anticipating – but dreading. It’s that same feeling you get when you don’t raise your hand and try to be invisible, but the teacher calls on you to answer anyways. It was our school’s turn to be put in the spotlight.

You could instantly feel the chaos in the air as teachers frantically prepared. We had 48-hours before the two-day “show down”. The six-person OFSTED team observed the workings of the school with a fine-tooth comb. Rumor had it that they could walk in your class at any moment, go through your mark book, the student books, and even make judgements based on your bulletin boards. I prepared seating plans and detailed lessons and summaries of the students for each class I was going to be teaching over the next two days (5 lessons the first day, 4 the second day). I thought, couldn’t they have come the following days, where most of my prep periods fell?

Surely, out of all the classes and teachers, they won’t come into mine, the Canadian in the back corridor of the science building? They did. I handed over the details of what I was teaching
to a man in a black suit. He sat at the back of the class and took notes. He chatted to some students and flipped through their books. The lesson observation was over before I knew it.

At the end of the day I waited in line to get my “grade” with a few other teachers. I stepped into an office and the OFSTED man slid a paper over with some “3’s” on it. I looked it over and noticed it is out of four. But the scoring is like golf. Oh. So, I’m right on par, I thought. It could have been worse, I guess. Our department got a “3” and our school got a “3” too. In addition to classroom observations, the remaining inspection is spent in a board room displaying graphs and talking about numbers. “Is the school progressing?” is the million-dollar question. Whether the students are reaching their target grades or not is the two-million-dollar question.

While I had a very enjoyable experience abroad, this two-year teaching experience changed the trajectory of my career in education. I started to wonder, how do we measure how good schools are and how do they improve? What data would one use? How do we measure improvement? Are student grades a valid measure of school progress? Can data actually improve schools, and if so, what kinds of data? These seemingly endless and unanswerable questions lead me to shift my focus to research, hoping I could add some information in the way of answers. My personal goal of this research thesis is to contribute, in any way, to the conversations on improving education.

Purpose

The purpose of this research is to explore the role of data in board improvement planning to gain an understanding of how data are used at the board level of the Ontario school system. To understand the role of data at the board level, the main research question is: What is the role of data in board improvement planning? Three supplementary research questions guide this study: (a) What types of data are involved in board improvement planning? (b) How are data being
interpreted for board improvement planning? (c) How are data being used for board improvement planning?

**Rationale**

There are two parts to the rationale of this study. First, the Ontario school board system works within an accountability model. In other words, administrators, teachers, schools, school boards, and the Ontario school system are held accountable for the quality and improvement of education. The Education Quality and Accountability Office (EQAO) formed in 1996 to provide stakeholders with accurate information on students’ achievement in the Ontario school system (Education Quality and Accountability Office, 2015; Klinger, DeLuca, & Miller, 2008).

Second, Ontario Ministry of Education documents such as Achieving Excellence (2014), Board Improvement Planning for Student Achievement (2011), Growing Success (2010), Ontario Leadership Framework (2013), and SEF (2013) suggest using data for improvement purposes. In addition to ministry documents influencing the use of data in schools, there are numerous research articles on topics of using educational data. Topics include determining skills of data literacy (Earl & Katz, 2006; Gummer & Mandinach, 2015; Mandinach & Gummer, 2016), building capacity for data literacy (Jimerson & Wayman, 2015; Marsh, 2012; Marsh & Farrell, 2015; Schildkamp, Lai, & Earl, 2012; Schildkamp, Karbautzki, & Vanhoof, 2014;), perceptions about using data (Jimerson, 2014; Marsh, Farrell, & Bertrand, 2016; Staman, Visscher, & Luyten, 2014;) and using data for improvement (Anderson, Leithwood, & Strauss, 2010; Earl & Katz, 2006; Louis, Leithwood, Wahlstrom, & Anderson, 2010; van Geel, Keuning, Visscher, & Fox, 2016)
Conceptual Framework: Data Use Theory of Action

The data user (teacher, principal, or board level staff) organizes, filters, and analyzes raw data such as student EQAO scores to transform it into information. This information, when combined with understanding and expertise, becomes actionable knowledge that can be applied to decisions about improvement, meeting goals, and attaining outcomes (Marsh, 2012). At any point in the process of using data to improve outcomes, the data user may need more data thereby the process of smaller feedback loops emerge (see the dotted lines in Figure 1). Outcomes from decisions can be used to assess the effectiveness of the process, and combined with new data, forms a continuous decision and improvement cycle (Marsh, 2012).

Figure 1. Diagram of Marsh’s data use theory of action. Reprinted from “Interventions promoting educators’ use of data: Research insights and gaps,” by J. A. Marsh, 2012, Teachers College Record, 114(11), 4. Copyright 2012 by Teachers College. Reprinted with permission.

With respect to this study, where the purpose is to understand the “role” of data at the Ontario School board level, the data use theory of action provides a framework to define the role of data. First, the data use theory of action provides a guide as to how a data user interacts with
data. Second, Marsh (2012) pointed out that there are multiple entry points in this model to supporting data use, for example, supporting the collecting of data in step 1 of Figure 1. I have chosen to use these entry points as a frame to define the “role” of data in Ontario school boards. The entry points I have chosen to frame my study are highlighted as steps one through four in Figure 1. Step 1 will be examined by determining the types of data used. Step 2 and step 3 have been combined to examine how data are interpreted. To determine how data are applied in step 4, I will examine how data are used. These three entry points provide the lens to understand the role of data at the Ontario school board level.

**Key Terms**

Jimerson (2014) suggested that educators do not distinguish between the terms commonly used to explain data in education such as data, evidence, and information. However, for the purpose of this study, it is important to delineate the terms from their colloquial meanings as well as their synonymous use in research. Data use, practice of data use, uses of data, data, interpretation, information, evidence, data literacy, assessment literacy, data-based decision making (DBDM) and data-driven decision making (DDDM) are defined here for the purpose of this study.

**Data use, practice of data use, and uses of data.** Marsh’s (2012) data use theory of action explained the term “data use” in the context of education. Data use refers to how educators collectively interact with data from collecting to analyzing to understanding to applying to assessing the effectiveness of data use. Some literature also refers to this as the “practice of data use” highlighting that it is the collective action of a group or individual interacting with data (Spillane 2012; Coburn & Turner, 2012). The third research question asks how data are being used. This question is examining the purposes and applications of data.
Data, interpretation, information, and evidence. The definition of data is broad. For the purpose of this study, data are raw, un-interpreted, qualitative or quantitative facts. They include student assessment scores, demographic data, feedback from educators, students, and parents, observations, artifacts, and survey results. Unlike information and evidence, data has yet to be interpreted.

An interpretation is finding meaning from data. Interpreted data results in information, which is data that carries meaning, relevance and purpose (Schildkamp, & Kuiper, 2010). Evidence results when information (interpreted data) is used for the purpose of supporting an argument (Philips, 2007).

Data literacy, assessment literacy, DBDM, and DDDM. The skills and knowledge required to use and interpret data, as well as contest questionable uses and interpretations is referred to as data literacy (Earl & Katz, 2006). It is important to note that although assessment knowledge is paramount in data literacy, assessment literacy is distinctly different from data literacy (Mandinach & Gummer, 2013). Assessment literacy involves understanding the principles of sound assessment. This includes creating and scoring reliable assessments in an aim to make valid decisions regarding teaching and learning (Stiggins, 2002). Conversely, data literacy focuses on the ability to use and interpret various forms of data, one being assessment data, into evidence to support a decision.

The importance of being data-literate lies within the potential and ability to make decisions by drawing on the knowledge and skills prescribed in the construct of data literacy. The three terms, data use, DBDM, and DDDM are considered to be synonyms used in current literature. All three refer to using data for the purpose of making educational decisions.
Overview of Thesis

There are five chapters in this thesis. Thus far, Chapter 1 introduces the research, beginning with a narrative story by the researcher. The introduction also detailed the purpose and rationale of the study, as well as the conceptual framework and key terms that guide the study.

Chapter 2 is a review of the literature surrounding data use in education. Literature is organized into the categories: defining data use, influences of data use, defining data literacy, developing data literacy in educators, and data use and improvement. Chapter 3 outlines the methodology and method used for this study including data collection and data analysis. The results are presented in Chapter 4 under three main headings: Interview Results, Ministry Documents, and BIP Documents. Chapter 5 discusses the results collectively under headings linked to the three research questions: types of data, interpretations of data, and uses of data. Chapter 5 finishes with limitations of the study and areas for future research.
Chapter 2

Literature Review

Approach to Literature Review

A review of the literature was completed to obtain a comprehensive overview of relevant research regarding data use in education. The framework for a scoping review proposed by Arksey & O’Malley (2005) was utilized to guide this review and to provide transparency to this study. Scoping reviews “draw conclusions from existing literature regarding the overall state of research activity,” and thereby in the process identify gaps in the literature (Arksey & O’Malley, 2005, p. 7). Arksey & O’Malley (2005) outline five steps in the review process: (a) identify the research question; (b) identify relevant studies; (c) study selection; (d) charting the data; (e) collating, summarizing and reporting the results. The authors also note that the process is iterative and reflexive to ensure a comprehensive review.

The research question for this review was broad and reflective of the purpose of the study: what is known about data use in K-12 education within the literature? The question was intentionally kept broad to gain a comprehensive overview. Next, key terms were identified (Table 1) and combined to search two databases, ERIC (Education Resources Information Centre) and Education Source, as well as google scholar. In addition, literature was identified through reference lists and hand-searching through key journals.
Table 1

*Key search terms used to identify relevant literature.*

<table>
<thead>
<tr>
<th>Data related terms</th>
<th>Context related terms</th>
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<tbody>
<tr>
<td>data use, data literacy, data-driven</td>
<td>education, school level, board level, board</td>
</tr>
<tr>
<td>decision making, data-based decision</td>
<td>improvement, school improvement, student</td>
</tr>
<tr>
<td>decision making</td>
<td>achievement</td>
</tr>
</tbody>
</table>

Table 2 describes the inclusion criterion for literature. The sources were required to be peer reviewed and published within the dates 1997-2017. The year 1997 was chosen as a cut off because data use in education is a relatively new phenomenon and the year reflects the shift to an accountability model of education with EQAO implementation in Ontario. The date proved to be inclusive, as only 2 sources prior to 2002 met criteria.

Table 2

*Inclusion criterion for selecting relevant literature.*

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Range</td>
<td>1997-2017</td>
</tr>
<tr>
<td>Context</td>
<td>K-12 education</td>
</tr>
<tr>
<td>Study Focus</td>
<td>Data use in education</td>
</tr>
<tr>
<td>Study Type</td>
<td>Empirical (qualitative or quantitative), review</td>
</tr>
<tr>
<td>Participants</td>
<td>Educators and other key stakeholders</td>
</tr>
<tr>
<td>Source Type</td>
<td>Peer reviewed, journal articles, and reports</td>
</tr>
</tbody>
</table>

A total of 403 sources were identified in the initial search. Articles in this pool were reviewed by examining the abstract. If the abstract did not have data use as a central focus and was otherwise not relevant to data use in education, it was excluded. A total of 131 articles remained and were reviewed for a second time by re-examining the abstract and text using the exclusion criteria. After the second review, 45 articles remained. During the charting stage,
similar articles were grouped together to form categories (Figure 2). The categories of the literature review are: defining data use, influences of data use, defining data literacy, developing data literacy in educators, and data use and improvement. The chapter concludes with a summary of the review.

*Figure 2.* Diagram illustrating the number of articles at each stage and themes of review.

**Defining Data Use**

Data use refers to using data to make informed decisions to improve education.

Researchers have aimed to define and outline the concept of “data use” by creating frameworks
identifying the steps involved in transforming data into a decision. The result is a number of different frameworks for data use. However, frameworks fall into two categories which are rooted in two fundamental frameworks: an inquiry cycle across levels of data use (Mandinach, Honey, & Light; 2006), and simple versus complex data use (Ikemoto & Marsh, 2007).

**Levels of data use: inquiry cycle.** Many frameworks of data use are built across classroom, school, and district levels (Coburn & Turner, 2011; Ikemoto & Marsh, 2007; Mandinach, Honey, & Light; 2006; Marsh, 2012; van Geel, Keuning, Visscher, & Fox, 2016). For example, data use at the classroom level would involve teachers using data to inform instruction. At the school and district level, educators would use data to identify areas for improvement (van Geel et al., 2016). Many frameworks are based on an inquiry cycle of data use (Ebbeler, Poortman, Schildkamp, & Pieters, 2017; Schildkamp, Poortman, & Handelzalts, 2016; Marsh, 2012).

Mandinach et al. (2006) present a theoretical framework for an inquiry cycle of data use across levels of classroom, school, and district. The authors base their work in systems thinking – a holistic approach that focuses on how parts of a system interrelate. The cycle of steps in the author’s model are: collect and organize data, analyze and summarize data into information, synthesize and prioritize information into knowledge, knowledge is used to make a decision, the decision is implemented, and an impact or outcome results. Depending on the impact, the stakeholder may need to revisit one of the previous six steps, resulting in smaller feedback loops (Mandinach et al., 2006).

**Simple versus complex data use.** Ikemoto & Marsh (2007) acknowledge the framework put forth by Mandinach et al., (2006) but note that data use may not always be linear or continuous. Ikemoto & Marsh (2007) elaborate by suggesting data use can vary and it also
occurs along two intersecting continua: the type of data used and the type of analysis and decision making. Simple and complex lie at the ends of each intersecting continuum, forming four quadrants. Simple data and simple analysis form the basic quadrant, simple data and complex analysis form the analysis-focused quadrant, complex data and complex analysis form the inquiry-focused quadrant, and complex data and simple analysis form the data-focused quadrant.

The authors argue that their framework accounts for the variation of data use seen across classroom, school and district levels. For example, their framework helps explain the difference between a deciding an area for professional development and deciding how to improve high schools (Ikemoto & Marsh, 2007). In the first scenario, a principal reviews test score data to identify the weakest subject, and then decides on the area for professional development. This would fall into the basic quadrant (using simple data with simple analysis). In the second scenario, a group reviews achievement data, program feedback, problems and challenges with the current system, and the demographic of students over the course of a year. This would fall into the inquiry quadrant (using complex data with complex analysis). The classification of these two examples of data use depends on the manner in which the decision was made rather than the level (class, school, district) it was made at.

**Factors Related to Data Use**

In a recent study, Jimerson (2014) uses Ikemoto and Marsh’s (2007) framework but adds the interaction of mental models. Mental models are approaches or beliefs a person has about a concept, which effect actions surrounding that concept. Mental models are fluid. For example, they can be influenced by others when working in a group setting. Jimerson (2014) argues that teacher data use occurs with the interaction of four factors: personal experience, social
interaction with colleagues, modeling by leaders, and formal training. In addition to these four factors influencing data use, research also suggests that the structure and routines of organizations effects data use, as well as attitudes, beliefs, and identify of the data user. The next section summarizes factors related to data use in five groups: individual, social, organizational, leadership, and training.

**Individual factors.** Individual factors are factors that relate to the individual data user and influence data use. Individual factors that influence data use include the data user’s: personal experience, attitudes and beliefs, efficacy, anxiety, and intuition. Teachers report that they learned about data use through personal experience by interacting with data as a major factor that influenced future data use (Jimerson, 2014).

Attitudes and beliefs towards data use have also been noted as factors that influence data use. (Mandinach & Gummer, 2016; Schildkamp & Kuiper, 2010; Vanhoof, Verhaeghe, Van Petegem, & Valcke, 2012). Data users with a negative attitude toward an issue relating to data use were less likely to engage in the process of data use (Vanhoof et al., 2012).

In a study using factor analysis of survey responses Dunn, Airola, Lo, & Garrison (2013) found that teacher efficacy and anxiety towards data use impacted data use and collaboration. In other words, teachers who were more confident in their ability to use data were more likely to engage in collaboration to improve their data use skills (Dunn et al., 2013). Teachers’ expert intuition has also been found to drive decisions at the classroom level over the use of data (Vanlommel, Van Gasse, Vanhoof, & Van Petegem, 2017).

**Social factors.** Educators use data both independently and collaboratively as part of a team (Means, Chen, DeBarger, & Padilla, 2011). When educators use data in groups, team characteristics influence data use (Schildkamp & Poortman, 2015; Schildkamp et al., 2016; Van
Gasse, Vanlommel, Vanhoof, & Van Petegem, 2017; Young, 2006). When teachers interpret data within small groups, they are more engaged with student data, use a wider variety of skills to make decisions, and more often come to valid conclusions (Means et al., 2011).

Social interactions and relationships therefore influence data use, and social network theory applies (Daly, 2012; Farley-Ripple & Buttram, 2015). Social network theory aims to outline how people or groups interact within the network. For example, a school network for data use would include principals, teachers, secretaries, students, and administrators, and so on. The aim of social network theory is to determine how each position interacts with others in the network (Daly, 2012).

**Organizational factors.** Because educators’ data use is situated within the school context, many argue that the organization of the school and district influence data use (Coburn & Turner, 2011; Farley-Ripple & Buttram, 2015; Schildkamp & Kuiper, 2010; Schildkamp & Poortman, 2015; Spillane, 2012; Vanhoof et al., 2012; Wayman, Jimerson, & Cho, 2012). The organization of a school dictates authority of data users, norms and customs of data use, and time and access to data (Coburn & Turner, 2012; Ikemoto & Marsh, 2007). For example, a school may engage in school improvement planning each year, with a small group of teachers. This process of school improvement planning has certain constraints, such as the number and length of meetings (time), the types of data used in the meeting (accessibility), the people involved and their role (norms and customs) and may outline how decisions are made (authority) (Spillane, 2012).

Schildkamp & Poortman (2015) summarize the school characteristics that influence data use: leadership, shared goals, and training and support. Wayman, Cho, Jimerson, & Spikes (2012) believe that district policies, such as access to data use systems, pose a significant barrier
to data use. In a study focused on the characteristics of 16 schools that lead to successful implementation of a school-wide data use program, the authors found that leadership, standardization of work processes, and staff continuity contributed to success of the data use program (van Geel, Visscher, & Teunis, 2017).

**Leadership factors.** A number of studies highlight the role of leadership in data use (Anderson, Leithwood, & Strauss, 2010; Ikemoto & Marsh, 2007; Jimerson, 2014; Lachat & Smith, 2005; Louis et al., 2010; Schildkamp & Poortman, 2015; van Geel et al., 2017b). Leadership factors relate to both social factors and organizational factors. Principals offer leadership to data users and they also contribute to the routines (e.g. school improvement planning) of the school organization (Farley-Ripple & Buttram, 2015; Spillane, 2012). Additionally, leadership is linked to organizational factors as principals often act as messengers facilitating board level initiatives or policies to their teachers regarding data use (Honig & Venkateswaran, 2012). Principals enable data use in schools by establishing data use purposes and expectations, holding teachers accountable for data use, and by providing access, time, and training (Anderson et al., 2010).

**Training factors.** A major factor effecting data use in education is training educators to use data. Training is related to leadership because principals are responsible for providing time, access, expertise, and modelling (Anderson et al., 2010; Ikemoto & Marsh, 2007). Training can also be linked to social aspects as meanings of data are socially constructing through data teams (Daly, 2012). Educators self-report that on the job training was a major factor influencing their data use (Jimerson, 2014). Further, providing educators with professional development on data use has been shown to improve their skills (van Geel et al., 2016).
**Defining Data Literacy**

Despite the number of factors influencing data use, it could be argued that none of those factors are as important as having the knowledge and skills necessary to use data. Data literacy is the term used that collectively refers to the knowledge and skills needed for data use. Many studies have aimed at defining and mapping out the knowledge and skills involved in data literacy (Cramer, Little, & McHatton, 2014; Earl & Katz, 2006; Mandinach, Gummer, & Muller, 2011; Gummer & Mandinach, 2015; Mandinach & Gummer, 2016). Due to the complexity of the construct, there is little consensus in the literature to what the knowledge and skills are. However, it is agreed that assessment literacy and statistical literacy are embedded in the data literacy construct (Chick & Pierce, 2013; Cowie & Cooper, 2017; Mandinach & Gummer, 2016).

Mandinach et al. (2011) identified the need to synthesize definitions of data literacy and outline an operational model for developing data literacy in educators. Gummer and Mandinach (2015) propose a framework for data literacy for teaching and subsequently revise the framework to its latest version (Mandinach & Gummer, 2016). They outline six domains of data literacy: content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts, and knowledge of educational ends, purposes, and values. These six domains support the largest domain, data use for teaching. Data use for teaching connects to 5 components of the inquiry cycle of data use: identify problems/frame questions, use data, transform data into information, transform information into decision, and evaluate outcomes (Mandinach & Gummer, 2016).

Although Mandinach and Gummer’s (2016) framework for data literacy provides the most detail of the knowledge and skills necessary, it focuses on individual capacity for data use, suggesting that the knowledge and skills are different for someone at the classroom, school, or
board level or different types of data use such as simple or complex data use. Mandinach and Gummer’s (2016) model is a result of how they choose to define data use. Although their model is suited to their definition of data use and does not factor in the potential variations pointed out, it remains the most detailed model to date.

**Developing Data Literacy in Educators**

Researchers have explored how educators can be taught to use data effectively or in other words, to be data literate. Given the lack of agreement among experts of a common definition of data literacy due to its complexity (Mandinach & Gummer, 2013), until recently (Gummer & Mandinach, 2015) there was little detail of the specific skills necessary for data literacy. Therefore, the fact that definitions of data literacy have varied in the literature should be taken into account when examining the studies regarding how to build data literacy.

This section explores the development of data literacy for educators. The first section outlines the prevalence of data literacy in educator programs. The second section reviews building data literacy as professional development.

**Pre-service data literacy development.** It appears that data literacy does not receive much attention in pre-service educator programs. A recent study by Mandinach, Friedman, & Gummer (2015) aimed to determine if and how teacher education programs were preparing educators to use data. The authors analyzed teacher education programs across the United States using a stratified random sampling approach with surveys and examination of course syllabi. A total of 208 program responded of 808, and 80 syllabi were collected. About two-thirds of teacher education programs claimed they offered a stand-alone course on data use. In addition, 92% of programs responded that data use was embedded in other courses. However, upon examination of syllabi, the majority of courses were actually focused on assessment literacy.
Only one course focused primarily on data use, and three courses that claimed to focus on assessment literacy actually had a stronger focus on data use (Mandinach et al., 2015).

A similar study was conducted regarding principal preparation programs in the United States. Out of 40 education programs, 60 course syllabi were collected. Thirty courses (50%) focused on testing and measurement. Of the 30 courses, 25% had course objectives relating to data use (Grigsby & Vesey, 2011).

**In-service data literacy development.** For in-service educators such as school leaders, teachers, and support staff, professional development for data use is also lacking (Jimerson & Wayman, 2015). Since educator preparation programs do not focus on data use, there is a need to develop in-service educator’s competence surrounding data use (Schildkamp & Kuiper, 2010). Additionally, literature tends to focus on the self-perceived lack of knowledge and skills that in-service educators have surrounding data use (Chick & Pierce, 2013; Earl & Katz, 2006; Cowie & Cooper, 2017). In a review of the literature on data use professional development, Marsh (2012) found that that effects of data literacy interventions were typically self-reported and there was little direct observation of the knowledge and skills.

Two recent studies explored the effect of long-term data literacy professional development programs. The first study implemented a one-and-a-half-year data use intervention with data teams using local school data as well as monthly coaching by a data expert (Ebbeler et al., 2017). Pre and post knowledge tests, data use questionnaires, satisfaction surveys, observations and interviews were used to collect data. Participants were satisfied with the support they received during the intervention. There were small to medium effects showing improved data literacy skills and more positive attitude towards data use (Ebbeler et al., 2017).
In the second study, van Geel, Keuning, Visscher, & Fox, (2017) aimed to explore the effects of a two-year data literacy intervention program by examining differences within and between groups of educators. The program involved classroom and school data use. Using item response theory of questionnaire items, they found that data literacy skills improved from pre to post test. In addition, the gap between school leaders and teachers, and differences in education levels closed. The authors concluded that the study showed that a similar level of data literacy can be achieved among all educators despite difference in groups (van Geel et al., 2017a). Neither of the studies evaluated the long-term learning effects of the data literacy program nor the effects on student achievement.

**Data Use and Improvement**

Using data for improvement is one of the two central purposes of data use in education (Anderson et al., 2010; Earl & Fullan, 2003; Louis et al., 2010; Schildkamp & Kuiper, 2010). However, very little is known about how data use in schools leads to improvement (Goren, 2012; Honig & Coburn, 2008; Louis et al., 2010). A common metric for educational improvement is student achievement on large-scale tests, such as EQAO assessments. Whole school improvement could also be linked to school culture and safety, staff knowledge and ability, student behaviour and attendance, among other things.

Some studies link leadership to student achievement with data use as a confounding variable (Leithwood, Seashore-Louis, 2011; Leithwood, Seashore, Anderson, & Wahlstrom, 2004; Lynch, Smith, Provost, & Madden, 2016; Togneri & Anderson, 2003). Most of their conclusions are similar: a principal with strong leadership skills and a data-driven approach has a positive effect on student achievement. However, because there are many variables linked to
leadership it is challenging to tell if data use is truly having an effect on student achievement or if it is due to principals’ leadership skills.

Datnow, Park, and Wohlstetter’s (2007) report on a case study of four American school districts that have a strong data use approach shows that three of the four districts have higher student achievement compared to the state. However, there was no comparative information regarding other factors that affect achievement (such as class size, ability of teachers, socio-economic factors, etc.). Without this information, there is an equal possibility that four school districts not focused on data use have higher student achievement than their corresponding state achievement. Anderson et al. (2010) summarize this notion: “The fact that data use is correlated to district leader concerns and evidence about student performance does not necessarily mean that it contributes positively or negatively to that performance” (p. 9).

There are limited studies with data use as the central focus and student achievement as the outcome variable. In one study, Anderson et al. (2010) set out to investigate the relationship between data use and student achievement as part of a larger study on leadership and learning by Louis et al. (2010). The authors use survey data from principals and teachers regarding school and district data use and student achievement on state math and literacy tests. On initial analysis, they found no relationship between level of data use and improved student achievement. On further analysis, the authors used only elementary schools as the variable, and found that the level of data use accounts for 19% of the variance in student achievement. They conclude that the statistical relationship between data use and student achievement is weak (Anderson et al., 2010).

Improvement planning in Ontario. In Ontario, both schools and school boards are required to complete improvement plans—school improvement plans are known as SIPs and
board improvement plans are known as BIPs. BIPs provide relevant information regarding data use and insight into board level data use processes (Spillane, 2012). In Ontario, the SEF (2013) and the School Improvement Planning Handbook (2000) guide school improvement planning. For BIPs, the Board Improvement Planning for Student Achievement (2010), and Ministry memorandums (2010) provide the framework for BIPs in Ontario. The purpose of BIPs is to improve student achievement by setting goals, monitoring, tracking, and evaluating those goals (BIP memorandum, 2010). Further, the memorandum outlines the components to be included in BIPs: needs assessment and analysis, SMART (specific, measurable, achievable, relevant, timely) goals, indicators from the K-12 SEF that relate to the SMART goals, targeted, evidence-based strategies and actions, resources, professional learning, monitoring, monitoring responsibility, and evaluation.

With the purpose of determining the content in Ontario BIPs, van Barneveld, Stienstra, and Stewart (2006) used 62 BIPs and outlined four areas of data: achievement data, indicators data, policy data, and values/mission statement. The most common data were EQAO data, which was present in 59 of the 62 BIPs. Forty percent of BIPs contained a values statement and 40% referenced other large-scale assessment data than EQAO (van Barneveld et al., 2006).

Summary

There appear to be two main frameworks for data use in education. The first, by Mandinach et al. (2006), involves an inquiry cycle of data use that spans across classroom, school, and district levels. The second involves a dual continuum of complexity of data use that depends on the type of data and the type of analysis (Ikemoto & Marsh, 2007). There are multiple influences of data use such as individual, social, organizational, leadership, and training.

Data literacy refers to the knowledge and skills needed to use data. The most
A comprehensive framework is outlined by Mandinach and Gummer (2016). The data literacy framework outlines 49 specific skills and 6 dispositions for data use and refers to individual data use. This framework may not be appropriate for data use at the school or district level because it specifically refers to teachers using data at the classroom level. It appears that data literacy preparation is not very prevalent in educator programs. Data literacy as professional development has been reported to be successful.

While the majority of literature revolves around teacher data use at the classroom level, there are limited empirical findings linking data use to improved student achievement. In Ontario, van Barneveld et al. (2006) performed a content analysis of BIPs. The authors found that the most common data type was EQAO data.
Chapter 3

Research Methodology and Method

In this chapter, the rationale for case study methodology is explained, followed by a description of the boundaries of the case. The method for this study is described beginning with data sources and the participants involved. How the data were collected and analyzed is explained next, finishing with the credibility and trustworthiness of the study.

Rationale of Exploratory Case Study

To explore the role of data in Ontario school boards, and more specifically the types of data, the uses of data, and the interpretations of data, a qualitative case study methodology was used. The Ontario public school board system served as the case (Figure 3). Yin (2013) suggests using a case study when contextual conditions are relevant and when you cannot manipulate the behaviour of those involved. The context of the Ontario school board is integral to the study because it is made up of schools and educators that act and are influenced within the complex system. The interactions of educators with data are relevant to the system, and not separable from this context. Therefore, educators’ behaviours were not manipulated, and only observed through interview and document analysis.

The Bounded System

The school system boundaries to the case were the Ontario Ministry of Education (OME), school boards, and schools. In Figure 3, the boundaries to the case appear along the sides of the triangle. In addition, the case was bound by the timeframe of the most recent BIP publicly available on boards websites. For example, some school boards chose to use a three-year cycle for their BIP, such as 2015-2018. Other boards chose an alternate cycle such as 2016-2017.
Figure 3. Diagram of the case (centre of triangle), school system boundaries (borders of triangle), and data sources (connected by arrows).

**Data Sources**

Data sources were collected at each of the three levels: school, school board, and Ontario Ministry of Education. Data sources for the school level were interviews of educators who were principals in the last five years. This means that either the principal was retired or had moved on to another position. Interviewing participants who previously held a position of responsibility such as a principalship avoided a potential conflict of interest to their board of employment. The data sources for the board level were BIPs across Ontario that were publicly available and in English. Data sources for the Ontario Ministry of Education included the documents Board Improvement Planning for Student Achievement (2010), a Ministry Memo and attachments (2010), and the SEF (2013).

**Data Collection**

Data were collected from interviews, board improvement plans, and ministry documents. Collecting data from multiple sources allows for data to be triangulated, providing a comprehensive understanding of the case (Patton, 1999). Once clearance was granted from the
General Research and Ethics Board (GREB) at Queen’s University (Appendix A), interviews were conducted followed by collection of ministry documents and then board improvement plans.

**Interviews.** Convenience sampling was used to recruit past principals. Through contacts of the researcher, five principals were invited to participate in the study. One principal declined as they felt they could not comment on the research topic. Another principal declined for personal reasons. In total, three past principals completed a 30-minute semi-structured interview. Each participant had retired as principal within the last five years. Two past principals had been employed in the high school setting and one in the elementary setting. The retired principals were employed in Ottawa, London, and Toronto, respectively.

Participants were given the option to choose the method (phone or Skype) or a location of their choosing. Prior to the interview, participants were given the letter of information and consent form which explained the purpose of the study as well as confidentiality of responses and choice to participate. See Appendix A for further details regarding the letter of information and consent form. One consent form was signed and returned to the researcher for each participant.

Participants were informed that they did not have to answer any question they were not comfortable with and they could withdrawal from the study at any time, up to two weeks after the interview took place. At their request, two past principals were supplied with the interview questions prior to the interview. Interview questions were created to gain information regarding the process of board improvement planning in addition to the questions regarding data use for BIPs. For details of the interview questions, see Appendix B. Interviews were audio recorded and transcribed verbatim by the researcher. Pseudonyms for participants and schools were used.
in the transcript. Transcripts were sent back to the participants for approval. Audio files were encrypted with a password and deleted after approval of each transcript.

**Ministry documents.** Ministry documents were collected and downloaded from the Ontario Ministry of Education website. Three documents were chosen based on relevance and guidance provided to the process of board improvement planning. The three documents collected were Board Improvement Planning for Student Achievement (2010), a Ministry Memo and attachments (2010), and the SEF (2013).

**Board improvement plans.** BIPs were collected and downloaded from publicly available board websites. Each board website was examined for links to its most recent BIP. In total, 18 BIPs were collected out of a total of 31 English school boards in Ontario that had more than one school within the board. No BIPs were excluded for any reason.

**Data Analysis**

Each of the three sources of data were analyzed in the same order of collection. Interviews were analyzed by a general inductive approach. Ministry documents were analyzed using a deductive approach. Board improvement plans were analyzed using content and thematic analysis.

**Interviews.** Coding of the interviews followed that of a general inductive approach outlined by Thomas (2006). Interview transcripts were read multiple times to familiarize the researcher with the data. Each transcribed interview was first open coded by using a word or short phrase to label the data. Following open coding, categories were constructed using the labels to create a short description of the category. Links between the categories were assembled to create themes connected to the purpose of the research (Thomas, 2006).
Ministry documents. The three Ministry documents were analyzed deductively using the three themes that emerged during interview analysis. This approach of using the broad interviews themes as codes was used to narrow down the information found in the documents to content relevant to the study. First, the ministry documents were examined and parts that were relevant to data use were highlighted. Then, each highlighted section was examined and assigned a code from the interview themes. Each highlighted section was cut out to make three separate piles. Highlighted text from each pile was re-read to ensure it was coded properly. Each pile was then described using the highlighted texts within the pile to create descriptions unique to the Ministry documents.

Board Improvement plans. Document analysis of the BIPs used the iterative process of skimming, reading, and interpretation using elements of content and thematic analysis (Bowen, 2009). Figure 4 gives an overview of the steps. Steps 1 to 4 refer to content analysis. Steps 5-10 refer to thematic analysis.

Content analysis is the process where relevant text is identified, and text not related to the research questions is excluded (Bowen, 2009). Therefore, in the first iteration, text that was found to refer to data use in BIPs was highlighted. During the second iteration of content analysis, highlighted text was copied into a word document, printed, cut out into cards, and organized into three groups related to the research questions (types of data, uses of data, and interpretations of data). The cards also included information with the corresponding BIP so that the text on the cards could be linked back to the BIP.
After content analysis, thematic analysis began. The cards of text within each of the three groups were read carefully and coded by sorting them into smaller categories. Category construction followed that of a constant comparative approach, as outlined by Bowen (2009). The first card was read, and a category was created. The second card was read, and was either placed within the first category, or a new category was created. This continued on until each card in the group was sorted. In addition, if a new category was created, cards that had already been sorted were re-read to ensure they were in the correct category. This process of creating
categories was done with the three groups of cards created during content analysis. Links between categories were explored and themes were created based on the categories in each group.

**Credibility**

While quantitative studies are concerned with the validity and reliability of findings, qualitative studies focus on the credibility and trustworthiness of findings. Credibility is the “truth value” of the research and can be promoted by exploring a topic from multiple perspectives to confirm findings (Baxter & Jack, 2008, pp. 556). To ensure the findings of this study were credible, the case was explored through multiple sources of data. By using multiple sources, various perspectives on the role of data use in BIPs were gathered to gain a comprehensive understanding of the case. This method is referred to as triangulation (Patton, 1999). For example, principal, board, and Ministry perspectives were gained through documents and interviews. By using all three data sources, the results begin to converge to present a holistic understanding of the case.

In addition to triangulating data sources to gain credible findings, member checking was used to confirm the accuracy of transcripts. Interview transcripts were sent back to the interviewees, where they had the chance to review the transcript. One participant chose not to review their transcript, one participant reported no issues with their transcript, and one participant clarified that “superintendent” should be changed to “supervisory officer.”

**Trustworthiness**

While credibility refers to the ‘truth value’ of the findings, trustworthiness refers to how dependable the findings are. To ensure the findings of the study are trustworthy and dependable, an explicit and transparent description of the research protocol and coding of data analysis was
used. This contributes to the ability to replicate the study, increasing the level of trustworthiness of a rigorous method (Yin, 2013).
Chapter 4

Results

There are three sections to this results chapter. The first section presents the results from the interview portion of the study. Three principals, Abbey, Sarah, and Karen participated in interviews. Each participant had been employed as a principal in the last five years and had either retired or was employed in an alternate position. All participants were able to answer interview questions regarding data in BIPs.

The second section of this chapter includes results from the analysis of the Ontario Ministry of Education documents. Three documents that guide board improvement planning were used: Viewer’s Guide: Board Improvement Planning for Student Achievement (2010), a Ministry Memo and attachments (2010), and the SEF (2013). Each document referred to the functional development of BIPs, relational aspect of BIPs, and data path in BIPs. The terms BIP, BIPSA, or newer, BIPSAW, were used to refer to a board’s own BIP. The “SA” stands for student achievement and the “W” stands for well-being.

The third section refers to findings from 18 BIPs collected from publicly available Ontario district school board (DSB) websites. Table 3 refers to the total number of BIPs collected from each of the six regions in Ontario. The six regions are defined by the Ontario Ministry of Education Ontario (Ontario Ministry of Education, 2018). At the time of collection, there was a total of 31 English public-school boards in Ontario that had more than one school in the board. Seventeen of the 18 BIPs referred to data in one of the three categories: types of data, uses of data, or interpreting of data. BIP page length ranged from one to twelve pages, the average being 5.8 pages (Table 3).
Table 3

Total BIPs Collected in Regions Across Ontario

<table>
<thead>
<tr>
<th>Region</th>
<th>BIPs Collected</th>
<th>Total BIPs Collected</th>
<th>Total BIPs in each Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrie</td>
<td>Durham DSB</td>
<td>Kawartha DSB</td>
<td>Simcoe DSB</td>
</tr>
<tr>
<td></td>
<td>Durham DSB</td>
<td>Pine Ridge DSB</td>
<td>Simcoe County DSB</td>
</tr>
<tr>
<td>London*</td>
<td>Grand Erie DSB</td>
<td>Greater Essex DSB</td>
<td>Lambton DSB</td>
</tr>
<tr>
<td></td>
<td>Hastings &amp; Prince Edward DSB</td>
<td>Ottawa- Carleton County DSB</td>
<td>Renfrew County DSB</td>
</tr>
<tr>
<td>Ottawa*</td>
<td>Edward DSB</td>
<td>Algoma DSB Ontario</td>
<td>North East DSB</td>
</tr>
<tr>
<td>North Bay</td>
<td>Algoma DSB</td>
<td>North East DSB</td>
<td></td>
</tr>
<tr>
<td>Sudbury</td>
<td>Algoma DSB</td>
<td>North East DSB</td>
<td></td>
</tr>
<tr>
<td>Thunder Bay</td>
<td>Rainy River DSB</td>
<td>Superior Greenstone DSB</td>
<td></td>
</tr>
<tr>
<td>Toronto*</td>
<td>Toronto DSB</td>
<td>Upper Grand DSB</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *denotes the region represented by the interview participants

Interview Results

Analysis of the three participant interviews resulted in three themes: functional development of the BIP, relational aspect of the BIP, and data path in BIPs. Abbey, Karen, and Sarah discussed BIPs from their experiences as principals and contributed to each of the three
themes. The functional development of the BIP theme discusses the cycle of BIPs, the content in BIPs, and the involvement in BIPs. The relational aspect of the BIP theme explains the connections the BIP has to the Ontario Ministry of Education (OME) and SIPs. The data path in BIPs theme includes data sources, data analysis and interpretations, and uses of data in BIPs.

Functional development of the BIP. The functional development of BIPs reflects how BIPs operate or work, including the cycle of BIPs, content in BIPs, and involvement in BIPs. The first part explains the continuous cycle of BIPs from data collection to creation to implementation. The second part explains the content contained in BIPs. The third part explains who is involved and their role in creating BIPs.

The cycle of BIPs. The BIP is developed at the board level at the end of the school year in June and is communicated to schools in late summer and early fall. The BIP follows an annual cycle of implementation that starts at the end of the school year but is also part of a longer multi-year plan. The annual cycle of implementation was explained by Sarah, “develop it in June, in-service it in August, schools have a look at it, the rest of the year it focuses on, and then every director meeting we dip back in.” Sarah pointed out that in her experience, BIP development begins at the end of the school year in June. It is then conveyed to principals in August with the expectation that they work with their school staff to review it and put it into practice, or as Sarah said, “in-service it.” The rest of the year, the BIP is focused on in schools and examined in more detail at directors’ meetings throughout the year.

The BIP is developed in June and reviewed each year. Annual review cycles do not mark the end of the cycle, rather each cycle is connected to the following year. Abbey explained how the annual implementation cycles work in practice. “At the end of every year we monitor to see if we met our goals, some goals stay, some drop to the bottom of the list but you never stop
working on those things because if you did you’d slide backwards.” In other words, at the end of the year a completely new BIP is not created. Rather, boards prioritize goals in the plan. One year the board may focus on one goal more than another, and the next year move on to another goal but still use the same BIP, rather than creating a new one. Although the BIP is developed in June and reviewed annually, the strategies of the plan are intended to be in effect for multiple years to give adequate time for goals to have effect.

The content in BIPs. The content, or what is contained in BIPs, outlines what the board will focus on and in turn, what schools will focus on. BIPs often have reoccurring themes that are present from year to year such as literacy and numeracy. The difference in content varies from board to board and is dependent on the length of the BIP. Abbey explained the content of BIPs:

The BIPSA is fairly general. It talks about in general terms what the teachers need, what the students need, and it talks about theories of action. So then from there, we as individual schools pick out what is appropriate for the needs of our school.

Theories of action are if-then statements that outline an action or strategy (the “if”) and an outcome or goal (the “then”).

The reoccurring themes of BIPs across recent years revolve around literacy, numeracy, and mental health issues. Sarah explained the main themes of BIPs are usually “literacy and numeracy—they are always, or always seem to be the main part. The improvement of literacy, the improvement of numeracy and mental health.” Sarah highlighted three BIP content areas: literacy, numeracy, and mental health. Abbey added a fourth theme that is present in her local board’s BIP, “I’ll say across the schools, we all have pretty much all done literacy, numeracy, credit accumulation, and then school well-being.”
Abbey explained that although there are reoccurring themes, there are differences in BIP content because each board consists of different types and numbers of schools. Abbey added, “our BIPSA will be very different then say Board 1 or Board 2, or Board 3, because we choose maybe to use mental health as bigger criteria, maybe this year.”

Content may also be different depending on the length of each board’s BIP. For example, Karen said, “we’ve been able to take an 11 by 14-inch paper and that year we put our BIP on one page, and we were so proud of it. But then, there wasn’t room for the monitoring pieces. So, we back tracked and it’s no longer on one page.” Karen highlighted the challenge of creating a concise BIP, that contains all the relevant information. In her board, they decided it is better to have a longer BIP containing all of the important content rather than omit content in an attempt to get it all on one page.

Involvement in BIPs. Involvement in BIPs refers to the people involved in creating the BIP and their level of involvement. Creating the BIP involves a team of people in all three boards. However, the role of the principal varies across all three boards. The principal’s role ranges from not being involved at all, to some secondary involvement, to direct involvement in creating the BIP.

Abbey and Sarah stated as principals they were not directly involved in creating the BIP. “So, in the creation of the BIPs, I did not play much of a role,” Sarah said. Abbey spoke for the principals in her board, “we are not involved. We know the trustees, the superintendents, sit down at the meeting in June. They review all the information of the year and then set the board plan.”

Both Abbey and Sarah said they were not involved in the direct creation of the BIP, however Sarah noted some possible secondary involvement. For example, Sarah said “I don’t sit
down at the table for the BIP… our meetings where all the principals from my area would be, our superintendents would certainly ask for input… and then maybe she would take [the input] to where they are creating the BIP.” As a principal, Sarah noted some secondary involvement in the BIP process through the superintendent. In her board, principals from the area, both elementary and secondary would meet to discuss school improvement planning with their family of schools. At these meetings, the superintendent would be present and would possibly relay information back to the team creating the BIP.

In Karen’s board, there was also a team that created the BIP, however, there were many more people involved than just the trustees and superintendents. Karen spoke of the people involved in her board’s BIP: “there are 55 people—we tried to target them from every facet, clerks and secretaries to custodians to teachers and principals to SOs (school officials) who work in the board office.” Karen worked as a principal for 12 years as well as at the board level for 5 years. She believed that the role of the principal in creating the BIP has changed and principals’ involvement is increasing.

**Relational aspect of BIPs.** The *relational aspect of BIPs* refers to the connections the BIP has within the Ontario school system. The BIP is linked to two systems: the OME and schools in the board. The OME directly influences the BIP. The BIP directly influences the SIP. Therefore, the OME indirectly influences school improvement through the BIP. This connection, OME to BIP to SIP, is unidirectional from OME down to SIPs (see Figure 5).
Figure 5. Diagram illustrating connections of the BIP from interviews.

**BIP connection to OME.** The OME directs the focus of BIPs. For example, Abbey discussed how the OME’s goals for education in Ontario influences the BIP, “I think what drives the boards are of course the Ministry has very specific goals. Their goals are credit accumulation being 85%...85% of students must graduate.” Abbey went on to explain Ministry funding also influences the focus of BIPs, “the literacy money came to very specifically target literacy. And now the government has decided that numeracy is the focus. So, I think BIPs across the province are driven by those Ministry goals.” Sarah pointed out the connection among the OME, boards, and schools. From Sarah’s experience, “[the boards] are always mandated by what the Ministry puts out, [the boards] are…mandated from the Ministry and then they mandate us. And then we start to create the SIP.” In this instance that Sarah described, the Ministry influenced the board’s planning, and in turn the board’s planning influenced the schools’ planning.
Although the OME has specific goals, such as the Renewed Math Strategy, some boards do not incorporate this into their BIP. Karen recalled a meeting with Ministry representatives regarding her board’s BIP where she was surprised to find out that not every board has a math goal “…not everywhere they go does a board have an actual math goal set out. It was really shocking to us when they said that, because I mean, provincially, that’s where the funds are all going. The Renewed Math Strategy is a big deal.” Karen also pointed out how Ministry goals and funding influence BIPs. Abbey explained these differences among boards, “there can be a Ministry target, but we also have to look at the culture of the community that we’re working with… across the province having worked with other principals I know that Board A is not like Board B.” Although there are Ministry goals that influence the creation of the BIP, the boards still have room to choose what their BIP will focus on, pointing out the indirect influence the OME has on school planning, through the BIP.

**BIP connection to SIP.** In all three principals’ experiences, the BIP was used to guide the creation of SIPS. In Sarah’s board, the BIP directly influenced the SIP, “the BIP is definitely created before the SIP, because the BIP runs the SIP.” The notion that the “BIP runs the SIP” was present in Abbey’s board, through alignment of the BIP and SIP: “in the fall [the board] send[s] us a copy of their plan. And then they ask us to develop our SIPS, and then they set out the criteria to develop our SIPS… it needs to align with the BIPSA.” The BIP had an influence on the SIPS in Karen’s board too, “[principals] are all given release days to work with teachers in their schools to create their own SIP that mirrors or at least is attached to, or that connects to the BIP.”

Similar to how some BIPs do not include all Ministry goals, integrating all BIP goals into the SIP can be a challenge. One reason why incorporating BIP goals into the SIP is a challenge is
due to the different information the board and schools have about their context. For example, a school may be more familiar with the types of students that attend the school, their background, and their classroom academic achievement whereas a board is more familiar with the general population of students. Abbey explained, “it’s hard because boards create their [plan] based on a much bigger piece of information—a broader view. Individual schools have to work within that but we have all argued that each school is individual and that it’s really important to have that individual piece.” Karen also noted this difference in information, whereby SIPs incorporate “more on the ground, what they know about kids in their own schools.” In addition, Sarah also felt schools focused their SIP on the individual needs of the school and the context they were working in, “you focus your SIP on what’s going on in your school or your family. So sometimes we would work together…so that we could all work to make sure that the outcomes would be the best they could be for the child.” Although the BIP influenced the SIP, the SIP was also influenced by the individual and contextual information unique to the school. Karen believed this was a challenge for schools “it’s still hard sometimes for a school, a teacher in school A, let’s say in a remote or rural area to feel 100% connected to the [board] plan.”

**Data path in BIPs.** Data are an integral aspect of creating BIPs. Data were discussed as part of an interconnected pathway including the data sources, data analysis and interpretation, and uses of data (Figure 6). There are three data sources that principals discussed, provincial assessments, surveys, and school data. Data were analyzed by examining groups of students and trends across years. This related to the interpretations made. Most interpretations referred to additional data to make sense of the data. Then the data were used to determine a goal and strategy. Data were also used to monitor the goal and strategy.
The data path that was discussed by principals was linear and interconnected. Abbey identified the parts of the data path.

“So if you have a high ESL population in your data and you are not addressing it, then how do we address it for next year? The problem with EQAO scores is that… your data is reflective of the current year and now you’re planning for the next year which is a different group of kids.”

From this example, the data source was provincial assessment data (EQAO scores). The data were being analyzed by examining a group of students (English as a Second Language). The interpretation was that the student group was not being addressed. The data were used to plan for the following year. Additional information that informed the interpretation was the consideration of the source of data (EQAO) and combining that with information for the upcoming year (will there be the same amount of ESL students with similar problems).

**Data sources.** The data path in BIPs starts with data sources. “Data source” refers to where data are collected from. Data typically included in BIPs are provincial assessment data, survey data and school data. For example, in Karen’s board, they used “EQAO… Tell Them From Me, we look at our report card data, we look at the Fresh Grade stuff” when developing the
BIP. EQAO is provincial assessment data and Tell Them From Me (TTFM) is a nation-wide student, parent, and staff survey on well-being. Report card data and Fresh Grade, an online portfolio system, are both sources of school data. Different sources of data have varying impacts in the BIP according that Abbey. She explained “the unfortunate part more so, is that EQAO and OSSLT (Ontario Secondary school Literacy Test) scores for Grade 3, Grade 6, Grade 9 math and Grade 10 literacy drives a lot of [BIPs] and I think then the soft data would be when you are talking mental health,” noting that values from provincial assessments play a larger role in the BIP than qualitative sources of data.

Data analysis and interpretation. After data have been collected from the various sources it was analyzed and interpreted. When analyzing data, all three principals noted that certain groups of students were often examined and compared to other groups. In addition, trends in data were also analyzed and interpreted.

For example, Karen said that in her board the most common groups of students that were analyzed were “students with special education needs, again the gender gap, and then the gap between Indigenous and non-Indigenous.” In Abbey’s board, they “look at those students… that English isn’t their first language.” Sarah’s board also analyzed data by examining groups of students: “they’ve always tried to look across equity in terms of rac[e].” Sarah suggested using caution when analyzing by race because “that gets a little bit more dicey,” meaning that this type of data analysis can be dangerous. For example, when Sarah discussed examining race as a means for analysis, she questioned the validity of the possible interpretations, “there are different areas of the city where the demographic is totally different.” Comparing groups of students by race across the school board needs to be done with caution because different areas of the board have different demographics, which may influence the interpretations drawn about race, when in
reality it is different demographic variables influencing the group. One area with ethnic students may not be easily compared to another area with ethnic students because it is quite possible that a factor such as socio-economic status will confound the results and cloud the interpretations.

Abbey gave another example showing the connection between analysis and interpretations, “you start to look at the trend, the pattern or behaviour. So, if we are finding females being more successful than males, we’ve had to re-assess increasing young men and boys in education.” Here, Abbey pointed out how data were analysed by looking at the trend. Upon analysis, the first interpretation would be females were more successful than males, and the second interpretation would be that the plan for increasing males in education needed to be re-assessed. When analyzing data, Karen pointed out the importance of examining trends, “with six years doing the same survey, you have a bit of what you can call trend data, otherwise sometimes it’s just data for the sake of data if it’s only one year.” Karen suggested that interpretations made from data coming from a solitary year may not be as useful as data collected over multiple years.

All three principals questioned the validity of interpretations by referring to additional facts or data sources. Abbey cautioned interpreting EQAO scores “just for example, School A vs. School B. At School A if you have two kids fail that puts you at 25% fail rate. Whereas at School B they have to have 200 kids fail.” Here, Abbey pointed out that interpreting pass and fail rates considering additional data such as sample size was important. In another example, Karen interpreted rising anxiety data by relying on additional data from previous years. Karen originally thought that anxiety increased because it was a fad, “what some of us struggle with is that because [anxiety is] the new buzz word, and everybody’s using it.” Karen used additional data from TTFM survey to validate the increase, for example “over these six years and the three
cycles of [TTFM] we’re seeing [student anxiety levels] creep up. It’s not going down.” Sarah also questioned the reliability of data sources, “I know board C would run surveys on certain dates so they would try to survey kids and survey parents. How accurate they are, I don’t know.” Sarah suggested that students and their parents might not be the best participants to survey and that the surveys themselves may not be valid.

**Uses of data.** After data have been analyzed and interpreted, they are used to determine strategies for the BIP. For example, Sarah noted that EQAO data were used for the purpose of offering school support: “they definitely used the EQAO in the BIP plan and it would offer sometimes extra support for those schools that were very, very low.” Abbey explained how EQAO student questionnaire data lead to staff development: “The thing about ‘I hate math’ and ‘I’m not good at math,’ we’ve spend a lot of time this year on changing the mindset. So all of the principals went to see Jo Boaler…so the board is into growth mindset, so therefore educate your principals.” In this example, student EQAO survey data were used to determine how professional development of educators would occur.

After the data were used to create a goal to improve, data were also used to monitor the plan. Monitoring was gathering data along the way to see how the plan or strategy was working. Abbey explained how multiple types of data are used to monitor a goal “we would have to have a monitoring plan. The plan would be first of all, [gather] our EQAO scores, our OSSLT scores, but also what [other] data are we going to use?” Karen’s board checked in with schools to monitor their plans: “we ask them to do a check-in in February, and a lot of people have started sending us pictures, video footage, student reflection, student opinion.” as evidence to support a strategy in place. Both Karen and Abbey’s boards used data to monitor their BIP.
Ministry Documents

In the next section, the Viewer’s Guide: Board Improvement Planning for Student Achievement (2009) is referred to as the BIPSA guide, the Ministry BIP Memorandum with attachments (2010) is referred to as the Ministry BIP Memo, and the School Effectiveness Framework (2013) is referred to as the SEF. Collectively, they are referred to as ministry documents. Viewer’s Guide: Board Improvement Planning for Student Achievement (2009), a Ministry BIP Memorandum with attachments (2010), the SEF (2013) were analyzed using codes from the interviews. The codes that were used to analyze the content of these three documents were functional development of BIPs, relational aspect of BIPs, and data path in BIPs. The functional development of BIPs refers to the operational aspects of the BIP, including the cycle, the content, and the people involved in creating the BIP. The relational aspect of BIPs refers to the connections that the BIP has to the OME and schools. The data path in BIPs refers to the data involved in BIPs.

Functional development of BIPs. The functional development of BIPs has three parts, cycle, content, and involvement and refers to how the BIP works or operates in practice. Ministry documents focused on formalizing the contents and cycle. In addition, the Ministry documents set out the purpose of the BIP. The BIPSA guide noted, “Bill 177 establishes board responsibility for student achievement and well-being,” (p. 5). Furthermore, the purpose of the BIP was to “improve student learning, achievement, and well-being and to build capacity and sustainability in the skill and knowledge of educators,” (p. 3). The Ministry BIP memo asserted four purposes of the BIP, including to “plan specific student achievement goals on an annual basis,” to “improve achievement for each student in the board,” as well as for “tracking and monitoring” and for “evaluation of the Board’s progress,” (p. 1).
The cycle of BIPs. The Ministry documents outlined and formalized the BIP cycle. The BIPS A guide highlighted that the BIP is a “living document” and referring to previous years informs the BIP’s current iteration (p. 6). The Ministry BIP memo detailed the entire BIP cycle using specific dates and what tasks need to happen at each. For example, February to April, May to July, August to September, September to September 15, September 15\textsuperscript{th} to October 15\textsuperscript{th}, October 15\textsuperscript{th} to 30\textsuperscript{th}, October 31 to December and January each had an explanation of what is to be done during each timeframe. One task to be completed in January was: “monitor and evaluate impacts on student achievement—review student performance data to inform practices” (p. 2). This detailed schedule is an example of how the cycle of creating a BIP is formalized.

The content in BIPs. The SEF noted setting goals as a key function of the BIP content. The SEF directed the content: “establish ambitious and realistic goals for student achievement and well-being through board improvement planning (BIPSA)” (p. 16). The Ministry BIP memo specified setting goals as a component of the BIP as well. The Ministry BIP memo detailed the components of the BIP, stating, “a BIPSA includes the following components: needs assessment and analysis, SMART goals, indicators from the K-12 SEF that relate to SMART goals, targeted evidence-based strategies/actions, resources, professional learning, monitoring, monitoring responsibility, evaluation” (p. 1). In this example, the Ministry BIP memo clearly outlined the components. The Ministry BIP memo also contained information on how to assess an improvement plan. The assessment document included in the Ministry BIP memo included the identical components to be included in BIPs. This consistency and clear outline appears to be an attempt to formalize the content of BIPs.

Involvement in BIPs. A team is involved in creating the BIP, however who they are, their roles and responsibilities are not specified. The SEF mentioned that the “District Steering
Committee has in depth knowledge of the board improvement plan” (p. 42). It is unclear if the steering committee is involved in creating the BIP. It is also unclear the influence the steering committee may have in creating the BIP. The BIPSA guide mentioned, “although trustees are not responsible for the creation of the BIPSA, they are responsible for the multi-year plan… therefore, they will be interested in BIPSA implementation” (p. 5). These two groups, the trustees and the steering committee may influence the creation of the BIP in indirect ways.

The BIPSA guide used an example from Ottawa-Carleton DSB’s BIP, hinting at who is involved in creating the BIP: “members of the planning team for Ottawa Carleton describe collaboration between senior staff and the curriculum team” (p. 9). Here the BIPSA guide suggested that there is a planning team involved with senior staff and curriculum educators. However, how the team works and their specific roles are not explained.

**Relational aspect of BIPs.** The *relational aspect of BIPs* refers to the connections the BIP has to other structures in the Ontario School System. The Ministry documents suggested there is a connection to schools through the SIP. The BIPSA guide examined the process that the Ottawa-Carleton DSB used, and asserted, “[Ottawa-Carleton DSB] keep[s] in mind the need for alignment between their board and school improvement planning” (p. 8). The BIPSA guide explained how the BIP is connected to schools by suggesting alignment of the BIP with the SIP. The Ministry BIP memo claimed that the BIP process is “informed by School Improvement Plans and School Effectiveness Processes” (p.1). Claiming that the BIP is informed by school processes explains the direction of the connection is from school to board.

The SEF used a diagram to clarify the connections of the BIP (Figure 7). The SEF did not explain the BIP connections using text. However, from this diagram, it appeared the BIP is
connected along the dashed white line directly to the SIP as well as to the core priorities of the government.

**Figure 7.** A diagram from the SEF explaining BIP connections (Ontario Ministry of Education, 2013, P.5).

**Data path in BIPs.** The BIPSA guide suggested analyzing data to develop goals, “the BIPSA and its related tools and templates are built on the notion of precise SMART goals based on the analysis of relevant data” (p. 3). In addition to using data to develop goals, the guide mentioned using data for strategies, monitoring and evaluating, as well as analyzing data. For example, the BIPSA guide used questions like, “does the available data provide a wide range of both quantitative and qualitative information?” (analyzing), “what monitoring information will inform mid-course changes?” (monitoring), “what indicators would be used to measure the impact?” (evaluating). When it came to what types of data should be used for BIPs, the guide posed it as a question to the reader, “what data need to be considered to acquire a clear understanding of the impact of your strategies on student achievement?” (p. 10).
The Ministry BIP memo clarified what had been stated in the BIPSA guide by giving specific examples. The assessment tool in the Ministry BIP memo offered a wide variety of data to use falling under four categories: student achievement data, demographic data, program data, and perceptual data (p. 4). As far as analyzing the data, the assessment tool also poses a number of questions for the reader to use. Some examples were: “what are the patterns and trends identified through the BIP, SIPs, School Effectiveness Self-Assessment and District Reviews,” “what are the areas of strength?”, “which achievement gaps have been identified for specific students?” (p. 4). The assessment tool also included a monitoring and evaluation piece.

The SEF briefly discussed using data as part of a cycle. For example, the SEF suggested a way to analyze data: “establish collaborative structures and opportunities to collect and disaggregate student achievement data to identify gaps and set ambitious targets” (p.9). The SEF also suggested looking at trends, “results from the district process are analyzed to determine trends and patterns to inform board improvement planning and capacity building needs” (p. 44). As for the types of data that should be used, the SEF was vague: “use systematically-collected data and information about student learning to inform decision-making and actions for the district, schools and classrooms. (e.g., BIPSA and SIP),” (p. 9).

**BIP Documents**

Eighteen BIPs were deductively analyzed for content relating to data types, uses, and interpretations. One BIP, Simcoe County DSB did not refer to data and therefore did not contribute to the themes. Types of data were recorded and combined resulting in three main themes—board wide student data, classroom level student data, and school level data. For uses of data, three main uses were found: identification, planning, and monitoring. Lastly, data were interpreted by observing trends and by triangulating data.
It is important to note that data appeared in BIPs in two ways (reported and implicit), and both types of data contributed to themes: types, uses, and interpretations. BIPs referenced data by reporting specific data that had been collected (reported data). BIPs also referenced data by implicitly referring to data that would be collected (implicit data). The difference was that reported data were explicitly reported quantitative or qualitative data, whereas implicit data were data that were referred to in a general sense, or data that were yet to be collected.

For example, Toronto DSB reported suspension data as well as implicitly referred to suspension data. In one of their targets Toronto DSB reported, “across the elementary and secondary schools, reduce the total number of suspensions by 10% for all students (from 6,894 to 6,205).” Again, this was reported data because suspension data have been collected and there was reference to these specific data. Toronto DSB later referred to implicit suspension data by implying it would be collected, “ensure effective and caring guidance support is informed by: Suspension Data, Attendance Data.” In the first example, Toronto reported specific suspension data, whereas in the second example, it was implicitly suggested that this data would be collected, or continue to be collected.

In Table 4, following the grid for Toronto DSB to suspension data, there is an x (reported) and an i (implicit) noting that suspension data were referred to in both ways. Table 4 lists all 18 BIPs, their page numbers, total number of data types found, and whether the type of data were reported or referred to implicitly. The “totals” row counts the number of BIPs that referred to each type of data. Each type of data were counted once per BIP. For example, Toronto DSB only contributed to one count for suspension data in the case where the BIP both reported and implicitly referred to suspension data. Therefore, suspension data were present in
Table 4. Reported (x) and implicit (i) data in 18 Ontario BIPs.

<table>
<thead>
<tr>
<th>School Board (N=18)</th>
<th>Board-Wide Student Achievement Data</th>
<th>Board-Wide Student Well-Being Data</th>
<th>School Level Data</th>
<th>Classroom-Level Student Data</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algoma DSB</td>
<td>8 x</td>
<td>x</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>DSB Niagara</td>
<td>12 x</td>
<td>x</td>
<td></td>
<td></td>
<td>5</td>
</tr>
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<td>DSB Ontario North East</td>
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<td>x x x</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Durham DSB</td>
<td>8 xi x</td>
<td>x</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
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<td>xi x i</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Greater Essex County DSB</td>
<td>2 i i</td>
<td>i i i i</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Hastings &amp; Prince Edward DSB</td>
<td>1</td>
<td>i</td>
<td></td>
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<td>xi x i</td>
<td></td>
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<td>x x x x x xi i</td>
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<td>x x x x</td>
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</tr>
<tr>
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<td>i xi i x</td>
<td></td>
<td></td>
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</tr>
<tr>
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<td>1</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Superior-Greenstone DSB</td>
<td>10 x x x x x x x x</td>
<td>i i x x x x</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Toronto DSB</td>
<td>6 xi i x x x x x i x x xi i</td>
<td>i i x x xi x</td>
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</tr>
<tr>
<td>Upper Canada DSB</td>
<td>11 xi xi x</td>
<td>i x i</td>
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</tr>
<tr>
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<td>10 7 6 3</td>
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EQAO & OSSLT Report Card
Credit Accumulation Graduation Rate Benchmark Assessments School Safety and Climate Mental Health Demographics Attitude and Mindset Pathway Physical Health Suspensions Attendance Educator Feedback Educator Observations School Improvement Plans Classroom Assessments Student Work Student Data Student Feedback
three BIPs. The “totals” column, counts the number of different types of data present in each BIP. Toronto DSB referred to 13 different types of data in its BIP.

**Types of data.** Seventeen of the 18 BIPs (94.4%) referred to data. Fourteen of 18 BIPs (77.8%) referred to both reported and implicit data. Hastings and Prince Edward DSB and Lambton-Kent DSB only referred to one type of data. Greater Essex County DSB and Upper Grand DSB only implicitly referred to data. Simcoe County DSB did not refer to any type of data (Table 4). In addition, BIPs that were 1-3 pages in length referred to an average of 4 types of data. BIPs that were 6-12 pages in length referred to an average of 9 types of data.

Out of the 17 BIPs that referred to data, four types of data were found: board-wide student achievement data, board-wide student well-being data, school level data and classroom level student data. Table 5 categorizes the types of data within each of the four themes. Board-wide student achievement data are data from students that are combined from all the schools in the board to represent the entire board. Similarly, board-wide student well-being data are data from students across the board but refers to the well-being of students rather than achievement of students. Classroom level student data refers to day-to-day individual student data such as student feedback, work, and assessment pieces happening in the classroom. School level data refers to data at the level of the schools in the board, such as observations of teaching in schools, SIPs, and school teachers’ feedback.

Table 5 displays the frequency of each of the four themes with respect to data type, in each BIP. Board-wide student achievement data are the most common theme, being present in 16 of 18 (88.9%) BIPs. Classroom level student data are the second most frequent theme, being present in 13 of 18 (72.2%) BIPs. Both board-wide student well-being and school level data are present in 10 of 18 (55.6%) BIPs. The total column shows how many themes of data are in each
board. For example, Kawartha Pine Ridge DSB, Ottawa Carleton DSB, Superior-Greenstone DSB and Upper Grand DSB each have all types of data represented in their BIP. For details about each frequency of type of data within themes, refer to Table 5.

Table 5

Frequency of each data type theme in 18 Ontario BIPs.

<table>
<thead>
<tr>
<th>BIP</th>
<th>Board-wide student achievement data</th>
<th>Board-wide student well-being data</th>
<th>School level data</th>
<th>Classroom level student data</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td>Algoma DSB</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td>DSB Niagara</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
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</tr>
<tr>
<td>DSB Ontario North East</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
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<td>Durham DSB</td>
<td>x</td>
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<td>x</td>
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<td>Greater Essex County DSB</td>
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<td>Superior-Greenstone DSB</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Toronto DSB</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Upper Canada DSB</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Upper Grand DSB</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>4</td>
</tr>
<tr>
<td>York Region</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td>Frequency (%)</td>
<td>88.9</td>
<td>55.6</td>
<td>55.6</td>
<td>72.2</td>
<td></td>
</tr>
</tbody>
</table>

**Board-wide student achievement data.** Board-wide student achievement data includes provincial assessment data (EQAO and OSSLT), report card data, credit accumulation data,
graduation rates, and benchmark assessments. Sixteen of the 18 BIPs referred to board-wide student achievement data (Table 5). The most common board-wide student achievement data were EQAO and OSSLT data with 15 of 18 (83.3%) of BIPs referring to it. Ten of 18 (55.6) BIPs referred to report card data. Eight of 18 (44.4%) BIPs referred to each credit accumulation and graduation rates. Benchmark assessments were referred to in 5 of 16 (27.8%) BIPs. The majority of board-wide student achievement data (63.2%) were reported over implicitly referred to.

Eight of 18 (44.4%) BIPs used a table or chart to present board-wide student achievement data. For example, Upper Canada DSB used a table to present EQAO scores (Figure 7). Figure 8 displays Grade 3 and Grade 6 EQAO scores for the board and province over the last 5 years. Upper Canada DSB also implicitly referred to EQAO data in a plan to analyze data: “school staff and senior staff will analyze and respond to the student data related to mathematics including examination of both report card data and EQAO data over time in the five strands in mathematics.” In Upper Canada DSB’s plan to analyze and use data, they referred to EQAO data without reporting any results, making it implicit data.

![Figure 8](image)

**Figure 8.** A table of Grade 3 and 6 EQAO scores in Upper Canada DSB’s BIP.
DSB of Niagara also used tables to report board-wide student achievement data (Figure 9). In Figure 9, DSB of Niagara reported Grade 9 and Grade 10 English report card data by using pass rates as well as student’s achieving above 70%. Below, credit accumulation and graduation rates are listed over five and three years, respectively.

<table>
<thead>
<tr>
<th>GRADE 9 ENGLISH</th>
<th>Percentage of Students who Achieved Above 70%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>6.2% increase (71.7 to 77.9%)</td>
</tr>
<tr>
<td>Applied</td>
<td>10.1% increase (88.3 to 98.4%)</td>
</tr>
<tr>
<td>Pass Rate</td>
<td>0.5% increase (90.1 to 90.6%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GRADE 10 ENGLISH</th>
<th>Percentage of Students who Achieved Above 70%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>5.0% increase (68.3 to 74.1%)</td>
</tr>
<tr>
<td>Applied</td>
<td>15.7% increase (92.0 to 97.7%)</td>
</tr>
<tr>
<td>Pass Rate</td>
<td>0.1% increase (97.5 to 97.6%)</td>
</tr>
</tbody>
</table>

Credit Accumulation (2011/12 to 2015/16)

<table>
<thead>
<tr>
<th></th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16</th>
<th>5 YEAR TREND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of grade 9s who earned 8 credits:</td>
<td>83.9%</td>
<td>85.9%</td>
<td>87.1%</td>
<td>88.1%</td>
<td>88.1%</td>
<td>4.2% increase</td>
</tr>
<tr>
<td>Percentage of grade 10s who earned 16 credits:</td>
<td>70.7%</td>
<td>74.5%</td>
<td>76.7%</td>
<td>79.5%</td>
<td>80.1%</td>
<td>7.4% increase</td>
</tr>
<tr>
<td>Percentage of grade 11s who earned 23 credits:</td>
<td>69.2%</td>
<td>73.2%</td>
<td>75.3%</td>
<td>80.1%</td>
<td>83.1%</td>
<td>13.9% increase</td>
</tr>
</tbody>
</table>

Graduation Rate (2013/14 to 2015/16)

<table>
<thead>
<tr>
<th></th>
<th>2013/14 - 84%</th>
<th>2015/16 - 85%</th>
<th>1 Year Change - 1% increase</th>
</tr>
</thead>
</table>

**Figure 9.** DSB of Niagara reported board-wide student achievement data.

Benchmark assessment data were standardized data that were collected at the classroom level, multiple times through the year to determine where students were with reference to provincial standards. Benchmark assessment data were the least common board-wide student achievement data. Algoma DSB referred to benchmark assessment data by directing administrators to “track and ensure that Fountas & Pinnell Benchmark Assessment System data are used effectively.” In this example, benchmark assessment data are implicit, and not reported.

**Board-wide student well-being data.** Board-wide student well-being data are data that refer to the well-being of students across the board. Board-wide student well-being data include student data on school safety and climate, mental health, demographics, attitude and mindset, physical health, suspensions, pathways, and attendance. Ten of the 18 (55.6%) BIPs referred to
board-wide student well-being data (Table 5). The majority of board-wide student well-being data (65.9%) were reported over implicitly referred to.

The most common board-wide student well-being data in BIPs were school safety and climate, with 8 out of 18 (44.4%) BIPs referring to it. Safety and school climate included data about bullying, harassment, and feeling safe at school and were collected from school climate surveys or Tell Them From Me (TTFM) surveys. Kawartha Pine Ridge DSB displayed safety and school climate data using two graphs of data collected from a school climate survey (Figure 10).

![Graphs showing school climate and safety data](image)

*Figure 10. School climate and safety in Kawartha Pine Ridge DSB's BIP.*

Mental health, specifically anxiety and depression, were referred to in 7 of 18 (38.9%) BIPs. Demographic data regarding context of students in the board were referred to in 6 of 18 (33.3%) BIPs. For example, Superior-Greenstone DSB noted the background of students entering the school, giving context to the types of students: “our schools are comprised of many different ethnic and racial backgrounds. Aboriginal populations represent approximately 70% of our students.” Attitude and mindset were referred to in 5 of 18 (27.8%) BIPs that referred to board-wide student well-being data. Upper Grand DSB referred to student attitude in mindset in
an implicit manner, “use student attitudinal surveys (pre and post) for schools involved in Gap Closing in Literacy Project.”

Pathways data included data about students in applied and academic streams, re-integration of students after leaving secondary school, and data regarding programs. For example, Ottawa-Carleton DSB reported that “over the previous year there has been a 15% increase in participation in the Ontario Youth Apprenticeship Program (OYAP), with a 50% increase in the number of students registering for the Level 1 OYAP (56 students).” Ottawa-Carleton DSB is referred to pathway data by reporting the number of students in an apprenticeship program. Physical health and suspension data were each referred to in 4 of 18 (22.2%) BIPs. The least common board-wide student well-being data that were referred to in BIPs were attendance data. Only 2 of 18 (11.1%) BIPs noted attendance data.

**School level data.** Ten of 18 (55.6%) BIPs referred to school level data (Table 5). School level data includes feedback by educators, SIP data, and educator observations. Feedback by educator data were found in 6 of 18 (33.3%) BIPs, SIP data were found in 5 of 18 (27.8%) BIPs, and educator observation data were found in 5 of 18 (27.8%) BIPs. The majority (88.9%) of school level data were implicitly referred to in BIPs.

Educators conducting observations included teacher-teacher, principal-teacher, or superintendent-teacher observations. For example, Upper Grand DSB referred to school level data by collecting principal-teacher observations: “principals will conduct Learning Walks to monitor instructional strategies, student engagement and evidence of the SIPS A.” Grand Erie DSB reported feedback from educators, “feedback from educators about their learning needs shows that professional learning at the system and school level should give teachers the knowledge and skills to provide differentiated instruction.” Kawartha Pine Ridge DSB
mentioned collecting SIP data: “evidence will be collected/collated from SIPs (learning focus, targeted marker groups, target strategies).”

**Classroom level student data.** Classroom level student data refers to data about individual students, rather than combined board-wide data. It was the second most common data type reported in BIPs after board-wide student achievement data. Classroom level student data were referred to in 13 of 18 (72.2%) BIPs (Table 5). However, all (100%) classroom level student data were implicitly referred to. Classroom level student data includes 4 types of data: classroom assessments, student work, student data, and student feedback.

Classroom assessment data were the most common type of classroom level student data, being referred to in 10 of 18 (55.6%) BIPs. Classroom assessment data comes from assessments (diagnostic, formative, or summative) that are completed in the classroom. Any type of activity or task that is assessed and results in data are considered classroom assessment data. For example, as an opportunity for professional development, Algoma DSB aims to “increase utilization of classroom assessment data to inform instruction.”

Student work, meaning collecting artifacts and exemplars as sources of data by students in classrooms was referenced in 7 of 18 (38.9%) BIPs. In BIPs, student work was discussed as an additional source of data to classroom assessment data. For example, the principals at Renfrew DSB were instructed to participate in the “review of diagnostic student work and creation of next steps in Grade 9 applied class(es).” Actual pieces of student work were used as a source of data to plan for Grade 9 classes. Algoma DSB also identified the separation of assessment data and student work: “utilize assessment data and/or students’ work (conversations, observations, products) to determine next steps in instruction.”
Reference to individual education plans (IEPs), marker students, or other data about students (and not assessments or work pieces) were combined to create the student data category. Student data were referenced in 6 of 18 (33.3%) BIPs. For example, Upper Grand DSB monitored the goals of their BIP by instructing teachers to “collect and analyze diagnostic assessments and other student data (e.g., Student Profiles, At Risk surveys) to target needs, plan instruction, monitor progress.” Data about students, such as their profiles and information from at risk surveys is an additional data type to classroom assessment data and student work.

Student feedback, or student voice, was referred to in 4 of 18 (22.2%) BIPs. Ottawa-Carleton DSB referred to gathering student feedback: “based on ongoing assessments (including observations, conversations and products) considering student voice, interests and needs, educators plan purposeful mini-lessons.” Renfrew DSB also noted using “student voice” as a source of data to monitor their mental health goal.

Uses of data. BIPs were analyzed for information regarding how data were being used. Data were used for three purposes in BIPs: to identify, to plan, and to monitor. Fifteen out of 18 (83.3%) BIPs referred to using data for at least one of the three purposes. Table 6 shows the frequency of each use of data represented in BIPs. Hastings & Prince Edward DSB, Rainy River DSB, and Simcoe County DSB did not refer to using data. The most common use of data was to plan, which was present in 15 of 18 (83.3%) BIPs. Thirteen (72.2%) BIPs referred to using data to monitor and 10 (55.6%) BIPs used data to identify. Details of each of the three purposes of data use are explained using examples from BIPs (Figure 11). Each purpose of data use has 5 examples, chosen from different BIPs to illustrate the themes.
Table 6

*Frequency of the uses of data in 18 Ontario BIPs.*

<table>
<thead>
<tr>
<th></th>
<th>Identify</th>
<th>Plan</th>
<th>Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algoma DSB</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>DSB Niagara</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>DSB Ontario North East</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durham DSB</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Grand Erie DSB</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Greater Essex County DSB</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Hastings &amp; Prince Edward DSB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kawartha Pine Ridge DSB</td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Lambton Kent DSB</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Ottawa-Carleton DSB</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Rainy River DSB</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Renfrew County DSB</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Simcoe County DSB</td>
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<tr>
<td>Superior-Greenstone DSB</td>
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<td>Toronto DSB</td>
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<td>Upper Canada DSB</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>York Region</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

| Frequency (%)         | 55.6     | 83.3 | 72.2    |
Figure 11. Diagram illustrating themes of data use using examples from BIPs across Ontario.

**Using data to identify.** Using data to identify means that data are used to assess where the board is at, detect achievement gaps, and to determine current needs. For example, Ottawa-Carleton DSB used data to identify where students are: “achievement gaps persist for identified...”
groups of students, with girls outperforming boys with respect to both pass rates and performance at/above the provincial standard across most of the grade 9 and 10 compulsory courses.” This quote describes the current situation with respect to boys and girls in the school board, identifies an achievement gap, and highlights an area of need in the board.

Further, boards used data to describe student needs. Grand Erie DSB described how they used data to determine student needs: “when we triangulate our data from the current available sources, we find our students needs in mathematics align with the provincial EQAO trends.” Here, Grand Erie DSB used data to identify and describe current student achievement with respect to the province. Renfrew County DSB also used data to identify where the students were at: “primary EQAO reading results indicate that reading should be a focus since 2014 data results ranged from 75% to 71% in reading. Struggling readers will be a particular focus.” These data were used to identify areas of need and focus.

**Using data to plan.** After data were used to describe the current state, data were used to set targets, plans, and strategies related to improving student achievement. Most frequently, data were used to set a target or a goal, the first step in developing a plan for improvement. Durham DSB stated, “the percentage of students achieving above 70% in all Grade 9 and 10 math courses will increase by 1%.” Toronto DSB set a target that “by June 2015 there will be a 10 percentage points increase (48% to 58% in the percentage of students with special education needs (excluding gifted) successful in the OSSLT.” Lambton-Kent DSB also used data to set targets, “to increase grade 9 Applied Math level EQAO success by 15% (49% to 64%) by focusing on the students who met standard in grade 3 but not grade 6.”

BIPs gathered data to plan for next steps, such as teacher professional development. Renfrew County DSB used data to plan for professional development: “educator feedback
indicates that capacity building/teacher efficacy is required in the area of Balances Literacy to support our literacy goals.” Durham DSB used data in their BIP to plan interventions, “monitor student achievement during the consolidation years of grade data (3, 6, 9, 10) to inform targeted intervention strategies.” Upper Grand DSB used data in their BIP under the heading “actions” to plan goals, “using data from school climate surveys and equity walks to develop goals and strategies for the Bully Prevention Plan and Safe Equitable and Inclusive School Strategy.”

Upper Canada DSB used data to plan instructional strategies: “identified secondary schools will participate in a Ministry supported initiative in Gap Closing in Literacy with a focus on using student data to guide instruction, as well as the use of non-fiction comprehensive literacy strategies.” Toronto DSB used data to plan strategies in schools: “review with all staff student demographic and achievement data for your school and build consensus on key strategies for increasing student achievement for the identified groups.”

**Using data to monitor.** Thirdly, data are used to monitor and evaluate plans and strategies in place. Monitoring plans asks questions like, “how is our strategy working?” and “how is the plan working so far?” Whereas evaluating was the measurement performed to gauge if the plan or strategy had worked, or if the target had been met.

Data were used to monitor BIP goals, programs, and plans and strategies. Algoma DSB monitored the progress of the BIP monthly: “analyze data and feedback from Principals, Program, and Special Education staff once per month to monitor the progress of the BIPSA and revise strategies as necessary.”

Superior Greenstone DSB also discussed using data to monitor in a general sense. Under the heading “Formal Monitoring Structure” the BIP lists “District Support Visits (feedback given both on School Self-Assessment and evidence of Growth Mindset, Conditions for Learning and
Leadership Criteria for Success), Monday Morning Monitoring Conversations, Tuesday/Thursday Morning Evidence Sharing (as posted on the Desire 2 Learn).” Although the BIP did not mention specific data that will be used in this monitoring practice, it pointed to collecting evidence from school visits. The Ottawa-Carleton DSB used data to monitor a specific aspect of their BIP, “the information gathered from the TTFM surveys helps schools continue to develop, monitor and maintain the annual bullying prevention and intervention plan.”

Less often data are used to evaluate the success of a plan. Kawartha Pine Ridge DSB will know if their anti-bullying plan has worked or not by measuring “decreased number of bullying incidents; increased social outcomes for students.” Superior Greenstone DSB planned to use data to evaluate by measuring success, “we know that we are achieving success if students: understand that they can grow their brain/intelligence through learning.”

**Interpretations of data.** Interpreting is making meaning out of the data. For example, deciding what 76% of students achieving level 3 or 4 on primary EQAO means for the school boards. Evidence of how data were interpreted in BIPs fell into two categories, trends and triangulation (Table 7). Trends involved 1. deconstructing data into groups and 2. comparing data to another group, such as the province. Triangulation involved 1. using multiple sources of data and 2. interpreting data collaboratively in teams at meetings or on professional learning days. The frequency of each theme is displayed in Table 7. Rainy River DSB, Simcoe County DSB, and Upper Canada DSB did not refer to interpreting data. Figure 12 illustrates the themes relating to interpreting data by including quotes from BIPs. Only three example quotes were chosen to represent each theme.
Table 7

*Frequency of each data interpretation theme in 18 Ontario BIPs.*

<table>
<thead>
<tr>
<th></th>
<th>Deconstructing</th>
<th>Comparing</th>
<th>Multiple sources of data</th>
<th>Interpret in teams</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>data</td>
<td>data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algoma DSB</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
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<tr>
<td>DSB Niagara</td>
<td>x</td>
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<td>DSB Ontario North East</td>
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<tr>
<td>York Region</td>
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<td>x</td>
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</tbody>
</table>

Frequency (%): 55.6  55.6  77.8  50.0
"The percentage of students achieving at the provincial standard from the lower achieving groups (e.g., students from Black, Spanish Speaking, and Aboriginal."-TDSB

"67% of students in Grade 7 achieving level 3 or 4 in patterning and algebra on report cards."-GEDSB

"As measured by mark distribution in MFM1P: Students with IEP at Level 3 and 4, 15/16, 59%."-DSBONE

"Students with special needs in UCDSB outperform the province in all areas of the primary and junior assessment."-UCDSB

"Grade 9 applied Math - 2016: 48%, represents a slight upward trend from 47% in 2012."-RCDSB

"This data provides gender differences in attitudes towards math and the use of tools and manipulatives for problem-solving."-RRDSB

"Principals and vice principals will model triangulation of data (conversation, observation, product)..."-UCDSB

"Based on analysis of the current needs assessment that is drawn from a variety of data sources (e.g. perceptual, demographic, program, achievement."-SGDSB

"Observations, conversations and products are gathered, interpreted and used to continuously monitor..."-HPDSB

"School teams to analyze data in order to identify strengths and gaps in literacy achievement and determine ambitious learning goals for school-wide improvement."-OCDSB

Figure 12. Diagram illustrating themes regarding interpretations of data with examples from BIPs.
**Trends.** Interpreting through trends involves deconstructing data and comparing data. A total of 12 of 18 (66.7%) BIPs interpreted data through trends (Table 7). Ten of 18 (55.6%) BIPs interpreted data by deconstructing it into groups. Ten of 18 (55.6%) BIPs interpreted data through comparison. Eight of the BIPs interpreted data by both deconstructing and comparing, with two BIPs only deconstructing data and two BIPs only comparing data.

Data that is deconstructed into groups is often (8 of 12 BIPs) then compared to another group. These deconstructed groups are often compared by looking at the provincial standard, Canadian norms, and less often previous years or other groups of students within the board. The most common groups that data were deconstructed into were groups by gender, ELL, FNMI, special needs, academic or applied, and strands in a subject.

In one example, DSB of Ontario North East deconstructed well-being data by gender and displayed scores over 4-years. By reporting data in this manor, it has implications for interpretations. For example, the score for Grade 12 females in 2014-2015 was 57%. By presenting the data over 4-years and separated by gender and grade, a person may make meaning of the 57% by comparing to males, by looking at the trend from previous years, and also by comparing to other grades.

Durham DSB noted, “as can be seen through students’ performance on the EQAO evaluations, our Board continue to experience strong gains in both learning and achievement.” This quote shows how the board interpreted their results as “strong gains” by comparing to the province. Often, BIPs will state the provincial scores in a table along with their scores, over multiple years. Although tables are not interpretive sentences such as the above Durham DSB quote, it still points to how they are making meaning of their results by visually observing at
trends (Figure 13). An example of a board that showed multiple years of scores compared to the province is presented in the Upper Canada DSB BIP:

![Graph showing data trends]

*Figure 13. Data trends present in Upper Canada DSB's BIP.*

**Triangulation.** Fifteen of 18 (83.3%) BIPs interpreted data through triangulation. Triangulation involved using multiple sources and was often done in teams. Fourteen of 18 (77.8%) BIPs interpreted data by using multiple sources. Seven of these same BIPs interpreted their data in data teams, with one additional BIP only interpreting through the collaborative process.

The overlap of interpreting data in teams using multiple sources of data were highlighted by Ottawa-Carleton DSB’s BIP: “school teams (multi-disciplinary, student success, learning support, safe and accepting schools) meet on an on-going basis to review academic, social, and emotional progress of students and to determine next steps.” Ottawa-Carleton DSB had different teams and they reviewed multiple types of data.
Triangulation of three specific data sources, conversation, observation, and products were common in BIPs. Durham DSB noted their approach to interpreting data using a diagram (Figure 14). This diagram displays triangulating data using multiple sources. Hastings and Prince Edward DSB used the same sources for triangulation, “observations, conversation, and products are gathered, interpreted and used to continuously monitor assessment for, as, and of learning.” Renfrew DSB noted triangulating sources at multiple levels, “if we triangulate evidence as a vehicle for examining district, school, classroom, and individual student success, then instruction and assessment will be target to support learning and achievement will increase.” Durham DSB specified the multiple sources of data in their BIP: “use of diagnostic tools, EQAO data, report card data, and observations with articulated cycles to identify target students and specific student needs.” All of the above examples show the various ways that boards use multiple sources of data when interpreting data.

Figure 14. A diagram from Durham DSB’s BIP explaining triangulation.

Summary

Three past principals (Abbey, Sarah, and Karen), 18 BIPs, and three ministry documents were analyzed for themes regarding data. Themes found using inductive analysis in the interview phase were used as codes for document analysis of ministry documents. The three themes found, with sub themes in brackets were: functional development of BIPs (cycle, content, involvement),
relational aspect of BIPs (connection to OME, connection to SIP), and data path in BIPs (sources, analysis and interpretation, and uses of data). Abbey, Sarah, and Karen echoed what ministry documents suggested, however the past principals gave less detail for the functional development of BIPs (cycle and content) but more detail in all other themes and sub themes.

Referring to types of data in BIPs, four themes were discovered: board-wide student achievement data, board-wide student well-being data, school level data, and classroom level student data. With respect to the uses of data, data were used to identify, plan, and monitor. Lastly, data were interpreted by examining trends (deconstructing and comparing) and through triangulation (multiple sources and in teams). Data were either reported or referred to implicitly. In other words, specific quantitative or qualitative data were reported, or data were referred to in a general sense, with the assumption it would be collected or analyzed at some other time.
Chapter 5

Discussion

Board improvement planning is a process that takes place at the board level and focuses on the improvement of student achievement and well-being. The purpose of this research is to explore the role of data in board improvement planning to gain an understanding of how data are used at the board level of the Ontario school system. The main research question asked was: What is the role of data in board improvement planning? Three sub questions accompanied the overarching question: (a) What types of data are involved in board improvement planning? (b) How are data interpreted for board improvement planning? (c) What are the uses of data in board improvement planning?

Multiple types of data were found to play a role in BIPs: board-wide student achievement data, board-wide student well-being data, school level data, and classroom assessment data. Data were interpreted by deconstructing data into groups related to students such as by gender, language, or special needs. Groups of data were compared to each other and over time. Data were also interpreted through triangulation of data types as well as within teams. Multiple uses of data were found in board improvement planning. Data were used to identify gaps or determine the current status of the board with respect to student achievement, for example. Data were also used to plan by setting goals or outlining strategies. Lastly, data were used to monitor the status and progress of strategies in place.
Figure 15. Summary findings of data use for Ontario BIPs.
The data use theory of action was used to illustrate the role of data at the board level for board improvement plans. This framework for data use shows an iterative and non-linear process as smaller feedback loops emerge (Marsh, 2012). The type of data used at the beginning of the process influences the remaining steps in the process (Marsh, Pane, & Hamilton, 2006). Figure 15 illustrates the data use theory of action (Marsh, 2012) and the overall results of this study with respect to the role of data in BIPs (square boxes with bold font connected by arrows). Extending from each of the three overall results are the specific results. For example, multiple uses of data are linked to the specific results of identifying, planning, and monitoring. Each of the specific results are linked to the findings discussed in this chapter.

This chapter includes three discussion sections regarding the role of data in BIPs: types of data in BIPs, interpretations of data in BIPs, and uses of data in BIPs. The main points of the discussion are summarized. Lastly, the limitations of the study are discussed, followed by implications for future research, policy, and practice.

**Types of Data in BIPs**

With respect to the first research question, which aimed to determine what types of data are involved in BIPs, findings suggest that multiple types of data are used in BIPs which is consistent with previous literature. Differences were found in the amount of data found within BIPs. For example, Ottawa-Carleton DSB and Toronto DSB contained the most data, whereas Simcoe County DSB did not include any data. Differences were also found in the frequency of the types of data found in BIPs. For example, EQAO/OSSLT was the most frequent data type and attendance was the least common. With respect to the types of data found in BIPs, two differences are discussed: the amount of data within BIPs and the frequency of data across BIPs.
Amount of data within BIPs. Overall, twenty different types of data were found in BIPs. In addition, interviews and Ministry documents suggested that a variety of data were to be used for board improvement planning. Data at the board level were plentiful; this finding is consistent with previous literature (Honig & Coburn, 2008; Marsh, 2012; van Barneveld et al. 2006; Schildkamp et al. 2014). However, some BIPs contained more references to data than others. For example, Ottawa-Carleton DSB and Toronto DSB each contained 13 different types of data. On the other hand, Simcoe County DSB did not include any types of data in their BIP. Hastings & Prince Edward County DSB and Lambton Kent DSB each contained one type of data. The length of the BIP, size and location of the board, and involvement in BIPs are discussed.

Length of BIP. Simcoe County DSB’s BIP was one page in length, Hastings & Prince Edward County DSB’s was also one page and Lambton Kent DSB’s was three pages long. These three BIPs contained little to no data. Van Barneveld et al. (2006) suggested boards that use the process of improvement planning for accountability purposes may include more data (van Barneveld et al., 2006). Therefore, the BIP would be longer by default to accommodate the increase in data. BIP page length may be a better indicator of a board’s purpose, rather than an indicator of data use. In addition, the finding that the majority of board-wide student achievement data were reported using charts or graphs supports the notion that the BIP was used for accountability purposes.

Size and location of board. Ottawa-Carleton DSB and Toronto DSB are both large boards and are located centrally to an Faculty of Education in an Ontario University. This finding that larger school boards located close to a university with research increased data use was a finding consistent with the literature (Coburn et al., 2009; Honig & Coburn, 2008). This
was most likely a result of accessible data (Coburn & Turner, 2012; Ikemoto & Marsh, 2007; Wayman et al., 2012). Both size and location of a board influence access to resources such as research and data experts (Fullan, 1980; Reichardt; 2000) as well as providing accessible data and research about data use (Coburn et al., 2009).

**Involvement in BIP.** Interview data suggested that involvement in the BIP process varies from board to board. This variation in the amount and type of persons involved in the BIP process may explain why some BIPs contained little to no data. For example, Individual factors such as attitude and beliefs are known to influence data use (Mandinach & Gummer, 2016; Schildkamp & Kuiper, 2010; Vanhoof et al., 2012). A person who finds board-level data unreliable will not place value in that data, resulting in no board level data being used. In the example of a group of people working on the BIP, social factors come into play. For example, collaborating in teams has been shown to increase data use (Means et al., 2011; Van Gasse et al., 2017). Lastly, leadership has been shown to influence the data use, by both increasing and decreasing data use (Anderson et al., 2010; Honig & Venkateswaran, 2012). A study in Ontario found that an increasing role of principals is to use and organize data (Newton, Tunison, & Viczko, 2010). The increasing involvement of school principals in data use may therefore influence data use in BIPs.

Qualifying different approaches to data use at the board level, Coburn et al. (2009) labelled one approach “no role,” for boards that did not use data. The finding of little to no data in BIPs supports the finding from previous literature that data still does not play a role in decision making in education (Coburn et al., 2009; Earl & Timperley, 2008; Marsh et al., 2006; Means et al., 2011; Supovitz & Klein, 2003).
**Frequency of data types across BIPs.** Some types of data were found in BIPs more frequently than others. EQAO/OSSLT data were the most common data type cited in Ontario BIPs. A number of previous studies that dealt with board and school level data use also found that data users relied on standardized test score data (Earl & Katz 2006; Wayman, 2005; Raths, Kotch, & Gorowara 2009; Spillane, 2012; van Barneveld, 2006; Wardrip & Herman, 2017). The differences observed in data types could be due to variations in board improvement planning seen across Ontario. For example, there may be differences in the purpose of data use, the accessibility of the data type, the goals of BIPs, and the involvement BIPs, which in turn effect the types of data used in the BIP.

**Purpose of data use.** Van Barneveld et al. (2006) found that EQAO test score data were the most common data in Ontario BIPs. The authors suggested two reasons for their finding. The first reason was that BIPs were required to include EQAO data in the BIP at that time. The second reason was attributed to the pressure boards feel to use data for accountability vs. improvement of student achievement (van Barneveld et al., 2006). With respect to the current study, the second was a more likely reason for differences seen. In other words, although boards were no longer required to include EQAO data in BIPs, there may still have been pressure for boards to focus on student achievement results such as EQAO data, to prove to stakeholders the level of student achievement.

It is necessary to keep in mind that BIPs are public documents, available to stakeholders such as parents, and BIPs are also assessed by the Ministry of Education. This notion that boards are likely to feel pressure to use data for accountability purposes, proving to stakeholders that ministry goals are being accomplished, is a finding consistent with previous literature (Coburn et al., 2009; Coburn & Talbert, 2006; Earl & Katz, 2006; van Barneveld, 2006).
**Accessibility of data.** Another reason why EQAO/OSSLT data were the most frequent data type across all BIPs could be due to the accessibility of the data. Accessibility of data enables data use (Ikemoto & Marsh, 2007; Wayman et al., 2012). All boards are supplied with the EQAO/OSSLT data, therefore making it very accessible and more likely to be used in the BIP.

In addition, computer data systems that store data, for example, report card data, may also explain why certain data types are more common than others. Other data such as teacher feedback may be less accessible as it takes more resources to develop surveys, administer, and to analyze the results. The notion that data available electronically increases data use and accessibility is a common finding in the literature (Datnow, Park, & Kennedy-Lewis, 2013; Ikemoto & Marsh, 2007; Kerr et al., 2006; Wayman, Stringfield, & Yakimowsk, 2004).

**Goals of the BIP.** A third reason that EQAO/OSSLT data are the most common data type in BIPs could be due to the goals of the BIPs. Interview findings suggested that Ministry goals, such as improving math in Ontario, influences the goals of the BIP as well as the content of the BIP. Similarly, Schildkamp et al. (2014) found that data types at the school level were related to the goals of the school. Therefore, the theme relational aspects of BIPs, from interviews explains in part how common Ministry goals influence use of particular data types across all BIPs.

**Involvement in the BIP.** According to interviews, the people involved in the BIP process varies from board to board. This variation may explain the difference in data types seen across BIPs in two ways. First, is that individual beliefs about data influence data use (Mandinach & Gummer, 2016; Schildkamp & Kuiper, 2010; Vanhoof et al., 2012). In other words, a data user that holds value in EQAO data would be more likely to use this type of data in the process of data use. Second, people interact within a group during board improvement planning differently.
For example, social norms within the group and authority of a data user (such as a principal over a teacher) may influence the use of certain types of data over others (Coburn et al., 2009; Coburn & Turner, 2011).

**Interpretations of Data in BIPs**

The second research question explored how data were interpreted in BIPs. With respect to the conceptual framework, the second and third step of the data use theory of action involves transforming data into knowledge (Marsh, 2012). Consistent with previous findings, the presence of data alone is not evidence for data use, because data use is an interpretative process (Phillips 2007; Coburn, Touré, and Yamashita 2009; Mandinach & Gummer, 2016; Marsh, 2012; Wardrip & Herman, 2017). There was no evidence found in three BIPs with respect to data interpretation. This finding that data use may play no role at the board level is consistent with previous literature (Coburn et al., 2009). The evidence collected from BIPs, interviews, and Ministry documents are discussed below in two sections: trend data and triangulating data.

**Trend Data.** Evidence found in BIPs suggested that data were interpreted through trends by breaking data down into groups of students and by comparing these groups to each other. Interview data also reiterated this point, and Ministry documents suggested that boards look for trends in data. This finding is consistent with previous literature, as school boards manage data by breaking it down into components (Hannaway, 1989; Honig, 2003; Honig & Coburn, 2008; Horn, Kane, Wilson, 2015).

There are two reasons why boards may break data down into groups. First, Coburn et al. (2009) suggest that board level data are extensive and complex which can make dealing with data unmanageable, therefore creating a need to break data down into manageable parts. Secondly, breaking data down into student groups helps data users understand the overall data.
(Anderson et al., 2010). For example, if data are broken down by gender and boys significantly outperform girls, then the data users understand there is a gap which is causing an overall lower than average scores.

The majority of BIPs that deconstructed data also compared student groups to other groups, or a provincial standard, typically over a 5-year period. Comparing groups to an external standard, such as the province, is consistent with the literature, as it is another way of making sense out of data (Anderson et al., 2010; Ikemoto & Marsh, 2007). Previous literature suggests deconstructing data are an effective method for interpreting data (Lachat & Smith, 2005; Bensimon, 2005). In addition, Ministry BIP documents used in this study stated a purpose of the BIP is to improve student achievement so that 75% of students reach the provincial standard. Evidence from this study supports that Ministry goals are influencing how data are interpreted.

**Triangulating data.** Evidence from BIPs suggested that data were also interpreted by triangulating data. This means that multiple sources of data were used to make meaning, and this was often done in data teams. A study by Kutsyuruba, Christou, Heggie, Murray, & Deluca, (2015) highlighted the link between teams and data use at the board level in the Canadian context by examining Ontario BIPs. The study noted that collaborative inquiry teams focused on continuous improvement of student learning with the use of data. The study also noted that teams collected and analyzed data, however a descriptive account of how data were analyzed was absent (Kutsyuruba et al., 2015).

The most common evidence that data were interpreted in BIPs was the observation of triangulation of data by using multiple sources of data. This finding was also present in ministry documents and in the *data path in BIPs* theme from interviews. Confirming existing literature on data use, using multiple sources of data is a means to interpret raw data into knowledge
(Anderson et al., 2010; Davin, Rempert, & Hammerand, 2014; Honig & Coburn, 2008; Little, 2012; Wardrip & Herman, 2017). A study regarding data use in Ontario warned against using a single data point to make interpretations (Crundwell, 2005). Ikemoto & Marsh (2007) suggested that complex analysis of data involves multiple sources of data. In addition, previous literature in the Ontario context echoes this: Volante (2007) stated that multiple sources of data are required to understand the complexity of the Ontario school system. This method of using multiple sources of data to make interpretations suggests that data use at the board level is interpreted through complex analysis, such as triangulation. Because this was the most common method of interpretation, it may be known as a best practice amongst Ontario school boards.

BIPs referred to triangulating data using three sources, specifically “conversations, observations, and products” which were not only suggested in the BIP Ministry documents used in this study, but also in Growing Success (2010). Growing Success (2010) is an influential document that reports on the policies and practices of assessment and evaluation in Ontario Grades K-12. Growing Success (2010) states “evidence of student achievement for evaluation is collected over time from three different sources – observations, conversations, and student products,” (p. 39). This shows how Ministry documents, even those not directly about board improvement planning, influence the practices within school boards. This finding that policy documents influence school boards is consistent with previous literature (Anderson et al., 2010; Camburn, Rowan, & Taylor, 2003; Desimone, 2006; Louis et al., 2010; Volante, & Cherubini, 2010). In addition, the finding that teams in Ontario were using this process of conversation, observation, and products was confirmed in a previous document analysis of Ontario BIPs (Kutsyuruba et al., 2015).
Data interpretation in a team setting was the least reported method of interpretation with half of BIPs containing evidence referring to data teams. Literature has also found that data is interpreted in teams at the board level (Davin et al., 2014; Kutsyuruba et al., 2015) and school level (Means et al., 2011; Schildkamp, 2014; Wardrip & Herman, 2017). The advantages of interpreting data in teams lies within benefits of collaboration. Data users learn from each other and deficits in knowledge of some data users are made up by others (Marsh, 2012; Mean et al., 2011).

Uses of Data in BIPs

The third research question of this study explored what data were used for in BIPs. In the data use theory of action, the application of data is the fourth step. Determining what data are used for, or how data are applied, is a key role in understanding data use at the board level. Data that has been interpreted (second research question) is applied for a specific use (Marsh, 2012). Three BIPs did not refer to using data, which supports that data has no role at the board level. The majority of BIPs used data for multiple purposes, consistent with previous literature (Coburn & Talbert, 2006; Honig & Coburn, 2008; Marsh et al., 2006; Schildkamp & Kuiper, 2010). The purposes of data use at the board level are similar to the underlying purposes of data use at the classroom level (Coburn & Talbert, 2006; Kerr, Marsh, Ikemoto, Darilek & Barney, 2006; Schildkamp & Kuiper, 2010). Overall, three uses of data were for identifying, planning, and monitoring.

Using data for identifying. Over half of BIPs used data for the purpose of identifying. This finding is consistent with previous literature, as data are used for identifying purposes at the board level (Anderson et al., 2010; Marsh et al., 2006; Schildkamp & Kuiper, 2010). The evidence found from examining the BIPs suggested that boards used the data to identify
achievement gaps between certain groups of students, and to assess student’s current needs. This appears to be similar to a step of curriculum development called “needs assessment”. In curriculum development, the current and ideal situations are described, noting any gaps between them (Kern, Bass, Thomas, & Howard, 1998). Using data to identify is similar to an inquiry-focused approach to data use and is linked to policy as well as how data are interpreted in Marsh’s (2012) data use theory of action.

Using data to identify supports the notion that there are different approaches to data use that occur at the board level (Ikemoto & Marsh, 2007). One type the authors described was called “Inquiry-focused”. Consistent with previous literature, an inquiry-focused model of data use focuses on using data for continuous improvement, rather than a specific decision (Feldman & Tung, 2001; Ikemoto & Marsh, 2007). Similar to examples listed by Ikemoto and Marsh (2007), the inquiry-focused approach uses data to identify and describe what needs to be improved. It involves multiple types of data and complex analysis (Ikemoto & Marsh, 2007).

Using data for identifying purposes is echoed by Ministry documents. Specifically, the SEF (2013) suggests that boards “collect and disaggregate student achievement data to identify gaps and set ambitious targets,” (p. 13). This suggests data use in policy documents is linked to the practice of data users at the board level.

There is a connection to the use of data for identifying and how data were interpreted. One method in which data were interpreted was by breaking data down into groups. It may be linked that data were broken down into groups for the purpose of identifying gaps. Eight out of ten BIPs that deconstructed data also used data for the purpose of identifying. The link between interpretation and uses of data supports the cycle of data in the data use theory of action (Marsh,
The connection between the methods of interpretation and the uses of data are an area for future research.

**Using data to plan.** Using data to plan by setting goals, targets, and next steps, was the main purpose of data use found in BIPs, with principles’ agreement appearing in interviews. Seeing that this study focused on board improvement plans, these results are not surprising. Using data to plan has been found to occur in classrooms, schools, and boards (Breiter & Light, 2006; Brunner et al., 2005; Coburn & Talbert, 2006; Schildkamp & Kuiper, 2010). Ministry documents also consistently suggested using data to set goals and targets, again suggesting that the Ministry influences data use at the board level.

**Using data to monitor.** Using data to monitor plans and strategies put in place was another purpose of data use according to BIPs, interviews, and ministry documents. Schildkamp & Kuiper (2010) found that school leaders as well as teachers most often used data for the purpose of monitoring the progress of the school and students in their classroom. Findings from this study suggest that using data for monitoring purposes is also found at the board level, which is consistent with previous literature (Earl & Fullan, 2003; Fullan, 2001; Marsh et al., 2006; Volante & Jaafar, 2008).

**Summary**

Using the data use theory of action framework to understand the role of data at the board level has revealed that multiple types of data are used, various methods of data interpretation are performed, and for multiple uses. Referring to types of data, discussion points included the length of the BIP, size and location of the board, involvement in BIP, purpose of data use, accessibility of data, goals of the BIP. Examining interpretations of data revealed that board level data use is complex and linked to Ministry objectives. Multiple uses of data suggested links to
Ministry documents as well and an inquiry-focused approach of data use at the board level.

**Limitations of the Study**

There are several limitations to this study which should be considered when interpreting the findings and implications of this study. The first limitation is related to the sample of the participants who took part in the interview. The sample was small (n=3) and two of the three did not directly participate in a board improvement planning process. Their view was considered important as each participant possessed expert knowledge from the principal perspective of the board improvement planning process. For the purpose of this case study research, their views were included to provide general context and overview to the board improvement planning process in Ontario, rather than specific details of data use. However, it should be considered that multiple players are involved in board improvement planning, and this research focuses on the principal view solely.

Another limitation refers to the BIP document analysis. The most recent BIP was used for document analysis and it is important to note that the BIP chosen represents one year or one cycle of data use. Perhaps by using the last 3 BIPs from each board would provide a different perspective. In addition, this study used BIPs for document analysis to draw interpretations regarding board level data use. The nuances of what happens in reality may not be fully represented in the BIP document. For example, the conversations that occur among those involved in BIPs and negotiations that may be made regarding which data to use or not to use, and how to interpret the data are not represented in a paper document such as the BIP.

Another limitation relates to the transferability of the findings. As with all case studies, the context of the study is not independent from the findings. The findings of the study should be carefully assessed when considering contexts outside of English, public, Ontario school boards.
and the board improvement planning context. For example, extrapolations to other provinces or countries, to the school level, or future data use at the board level should not be made.

Implications for Future Research

For this study, exploring the role of data use in Ontario school boards has promise for future inquiry into data use in education. There are three main implications for future research. First, there were differences in data use among the various boards. Second, this study focused on documents and interviews. Lastly, as the data use theory of action suggested, the data in step one are linked to the processes in the future steps.

This study established that data are indeed being used at the board level in Ontario for board improvement planning. However, there were some notable differences in data use across the boards. These differences, especially the few boards that did not focus on data for board improvement planning, warrants further investigation. It would be interesting to determine the factors that affect data use at the board level among high and low data use. The connection of Ontario school boards to local universities with research and data experts could be an area for further research to investigate how the connection influences data use. It is worth investigating further the phenomenon of reporting EQAO data in BIPs for the purpose of accountability.

Because the focus of this study was on documents and interviews, the findings are mostly based on evidence that is documented and publicly available. Further research into the daily practice of data use at the board level, such as at board meetings, is needed to determine the nuances of data use. For example, there were 20 different data types mentioned. By observing meetings more insight could be gathered to determine which data types are most important in board improvement planning. Similarly, evidence of data interpretations was gathered from
interviews and documents. However, conversations of how interpretations were negotiated among data users would provide further insight into data interpretations at the board level.

There was evidence that the types of data used in board level data use were connected to interpretations and uses of data. The focus of this study was not to document the connections of each data type to interpretation and use, however, as there is evidence that connections exist, it would be interesting to determine which types of data are interpreted in which ways, and which types of data are used for specific purposes. Knowing more about how certain data types are used could help determine best practices for data use at the board level.

**Implications for Policy and Practice**

This study on data use at the board level has implications for policy and practice in education. First, the findings of this study could be used to influence best practices for data use at the board level. For example, one of the findings of this study notes that the types and amount of data among BIPs varies. Some BIPs referred to no data. Perhaps direction should be given to boards that it is best practice to use data for board improvement planning. In addition, the types of data that are appropriate for board level planning is important, along with how they are interpreted and for what use. Another finding suggested that some boards interpret data in teams and use multiple sources of data which was supported by ministry documents. It would be useful for policy direction regarding these two findings be noted as a best practice for board improvement planning so that boards can adopt these practices.

The findings from this study could also inspire policies and practices related to the purpose of data use in BIPs, the processes for BIP development, and policies for evaluating improvement using data. For example, what is the purpose of data use in the BIP regarding the balance between improvement and accountability purposes? Since the BIP is a public document
the schools, teachers, and parents, have accessed to, some boards may be including data for information, or accountability, to show how the board is doing. The purpose of data use could be clarified to boards. Policy makers could also clarify processes for BIP development related to who should be involved and how the information is disseminated to schools and to classrooms. The findings from this study noted that the BIP was connected to the Ministry and the school, but connections to the classroom were lacking. It would be helpful to support boards in their initiatives by making processes related to disseminating the BIP and its initiatives to the classroom level.
References


Appendix A
GREB Clearance Letter

December 09, 2016

Miss Haley Motruk
Master’s Student
Faculty of Education
Queen’s University
Duncan McArthur Hall
111 Union Street West
Kingston, ON, K7M 3R7

GREB Ref #: GEDUC-838-16; TRAQ # 6019830
Title: “GEDUC-838-16 Exploring the Practice of EQAO Data Use for School Improvement Planning in Small to Medium Sized Secondary Schools”

Dear Miss Motruk:

The General Research Ethics Board (GREB), by means of a delegated board review, has cleared your proposal entitled “GEDUC-838-16 Exploring the Practice of EQAO Data Use for School Improvement Planning in Small to Medium Sized Secondary Schools” for ethical compliance with the Tri-Council Guidelines (TCPS 2 (2014)) and Queen’s ethics policies. In accordance with the Tri-Council Guidelines (Article 6.14) and Standard Operating Procedures (403.001), your project has been cleared for one year. You are reminded of your obligation to submit an annual renewal form prior to the annual renewal due date (access this form at http://www.queens.ca/traq/union.html; click on “Events”; under “Create New Event” click on “General Research Ethics Board Annual Renewal/Closure Form for Cleared Studies”). Please note that when your research project is completed, you need to submit an Annual Renewal/Closure Form in ROMEO/TRAQ indicating that the project is ‘completed’ so that the file can be closed. This should be submitted at the time of completion; there is no need to wait until the annual renewal due date.

You are reminded of your obligation to advise the GREB of any adverse event(s) that occur during this one year period (access this form at http://www.queens.ca/traq/union.html; click on “Events”; under “Create New Event” click on “General Research Ethics Board Adverse Event Form”). An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example, you must report changes to the level of risk, applicant characteristics, and implementation of new procedures. To submit an amendment form, access the application by at http://www.queens.ca/traq/union.html; click on “Events”; under “Create New Event” click on “General Research Ethics Board Request for the Amendment of Approved Studies”. Once submitted, these changes will automatically be sent to the Ethics Coordinator, Ms. Gail Irving, at the Office of Research Services for further review and clearance by the GREB or GREB Chair.

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Sincerely,

John D. Friesen
Ph.D.
Chair
General Research Ethics Board

c: Dr. Jamie Pupus, Supervisor
Dr. Richard Rausa, Chair, Unit REB
Ms. Erin Wickless, Dept. Admin.
Appendix B
Letter of Information and Consent Form

LETTER OF INFORMATION (principal)

Data Use in Ontario School Board Improvement Plans

This research is being conducted by Haley Motruk under the supervision of Dr. Jamie Pyper in the Faculty of Education at Queen's University in Kingston, Ontario.

What is this study about? The purpose of this study is to explore data use in Ontario school board improvement plans.

What is involved to participate in this study? The study will require one audio recorded interview lasting approximately 45 minutes and will occur at a time and place convenient for you. You will also be sent the written transcript of the interview to review. In total, participating in this study will require approximately 1-2 hours, depending on the time you wish to take to review the transcript. There are no known physical, psychological, economic, or social risks associated with this study. Possible benefits may come from your own professional reflection regarding the topic of the study.

Is participation voluntary? Yes. Your participation in this study is voluntary. You do not have to answer any questions you do not want to. You may withdraw either in part or in full, up to 14 days after you receive the transcription of your data for review. Should you wish to withdraw in full, you have the option for your data to be destroyed. In order to withdraw part or all of your data you may contact Haley Motruk at haley.motruk@queensu.ca or Dr. Jamie Pyper at pyper@queensu.ca.

What will happen to your responses? Your responses will be kept confidential. Only Haley Motruk and her supervisor, Dr. Jamie Pyper will have access to this information. Your identity and confidentiality will be protected to the extent possible. Results from this study may be published or presented at academic conferences but any such presentations will maintain individual confidentiality. In accordance with the General Research Ethics Board Standard Operating Procedures, data will be securely password protected for a minimum of five years. If data are used for secondary analysis they will contain no identifying information. You are entitled to a copy of the findings, if you are interested. If you would like a copy of the findings, please contact: Haley Motruk at haley.motruk@queensu.ca or Dr. Jamie Pyper at pyper@queensu.ca.

What if you have concerns? Any questions about study participation may be directed to Haley Motruk at haley.motruk@queensu.ca or Dr. Jamie Pyper at pyper@queensu.ca. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at chair.GREB@queensu.ca or 1-844-535-2988 Toll Free in North America.

Thank you for your interest in participating in this research study.
CONSENT FORM (principal)

Data Use in Ontario School Board Improvement Plans

Name (please print clearly): __________________________

Please sign one copy of this Consent Form and return to Haley Motruk. Retain the second copy for your records.

1. I have read the Letter of Information and have had any questions answered to my satisfaction.

2. I understand that I will be participating in the study called “Data Use in Ontario School Board Improvement Plans”. I understand that this means that I will be asked to participate in a 45-minute audio recorded interview and that my name will be replaced with a pseudonym in the data analysis phase. I understand that additional involvement will be only to confirm the accuracy of the transcribed interview, and time taken will depend on how long I choose to spend looking over the data.

3. I understand that my participation in this study is voluntary, that I may withdraw either in part or in full, up to 14 days after I receive the transcription of my data for review. Should I wish to withdraw in full, I have the option for my data to be destroyed. I understand that in order to withdraw part or all of my data I may contact Haley Motruk at haley.motruk@queensu.ca or Dr. Jamie Pyper at pyperj@queensu.ca.

4. I understand that every effort will be made to maintain the confidentiality of the data now and in the future. Only researchers affiliated with this study will have access to my data. The data may also be published in professional journals or presented at scientific conferences, but any such presentations will be of general findings and will never breach individual confidentiality. I understand that I am entitled to a copy of the findings, if I am interested.

5. I am aware that if I have any questions, concerns, or complaints, I may contact Haley Motruk at haley.motruk@queensu.ca or Dr. Jamie Pyper at pyperj@queensu.ca. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at chair.GREB@queensu.ca or 1-844-535-2988 Toll Free In North America.

I have read the above statements and freely consent to participate in this research:

Signature: __________________________ Date: __________________________

Indicate below if you are interested in being provided with a copy of the study findings by checking the appropriate box:

☐ Yes ☐ No

Contact Information

Email: __________________________
Phone: __________________________
Appendix C
Sample Interview Questions

1. What role do you, as a Principal in the school board, play in the creation of BIPs?

2. From your knowledge,
   a. How is the BIP created? (Who is involved, how often is the planning cycle, do the SIPs inform the BIPs or are the BIPs used to inform SIPs?)
   b. What content is typically included in the BIP?
   c. What data are included in the creation of the BIPs?
      i. What data might be considered more important? And does this determination change each time a BIP is developed?

3. How are EQAO data from the school’s in the board incorporated into the BIP?
   a. Are there aspects of EQAO data (scores/student questionnaires/indicator data such as gender) that are more valuable or focused on when creating the BIP?
   b. What and who determines the EQAO data that will be used in the BIP?
   c. How is EQAO data typically presented in BIPs?

4. What is the purpose of including data in the BIP?

5. Is there anything else about the data in BIPs that you would like to add?