Using CBM to Help Canadian Elementary Teachers Write Effective IEP Goals

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Abstract

Knowing what students should be able to accomplish academically is the first step in knowing how to write accurate Individual Education Plan (IEP) goals. By giving students short Curriculum-Based Measurements (CBM) in areas such as reading, writing, and mathematics, teachers are able to determine current level of performance, or baseline. Teachers then use empirically established performance standards to set year-end goals and monitor progress throughout the year to see if current instructional offerings are sufficient. Using CBM in this manner is more effective than the current method of writing IEPs because it takes less time, relies on normed data that is established in research, and provides a clear and concise picture of how well the school is doing in advancing students academically. The purpose of this paper is to introduce to Canadian educators the concept of using CBM to write IEP goals in the areas of mathematics, reading, and writing.

Using Curriculum-Based Measurement (CBM; Deno, 1985) as the means for writing Individual Education Plan (IEP) goals in the academic areas of reading, writing, and mathematics has the potential of being a more effective approach to monitoring progress and accurately adjusting the instructional program for students with reading, writing, spelling, and mathematical learning needs than the current IEP method. CBM-generated goals are easy to write, clear in terms of understanding when they have been met, and easy to use when monitoring progress of students. In Canadian school districts, however, using CBM to write IEP goals is not promoted in the provincial IEP writing guides that educators generally use to comply with provincial IEP standards. While it is possible that some school psychologists, special education teachers, and classroom teachers use CBM to monitor progress toward IEP goals, the concept of using CBM to write IEP goals is not officially promoted across provinces. The goal of this paper is to present CBM as an effective and viable addition, or alternative, to the current method of writing IEP goals in the Canadian context.

The Individual Education Plan in Canada

In Canadian schools teachers typically work collaboratively with special education professionals and other support staff to develop or contribute to an education plan for students with learning or behaviour problems. For students deemed to have an exceptionality, all provinces and territories in Canada require that an IEP, or a plan of a similar name, be written (Hutchinson, 2010). In this paper, the term IEP will be used to represent planning or plans of similar names, such as Individual Program Planning or Plan (Alberta, Nova Scotia), Special Education Plan (New Brunswick), Personal Program Plans (Saskatchewan), or Individual Support Services Plan (Newfoundland). The term IEP is used in the remaining eight provinces and territories. The basic concept of these plans is the same across Canada. An IEP is a formal document that describes the student's education program and necessary services, and is often described as a dynamic or working document (e.g., New Brunswick Department of Education, 2002) because it is intended to change according to the developing needs of the student for whom it is written. The IEP functions as a blueprint for schools to follow for individual students (Hutchinson, 2010; Pierangelo & Giuliani, 2007). As described by Hutchinson (2010), the IEP format across Canada is similar and is likely to contain seven components: (1) a description of the student's current level of functioning, including their strengths and needs; (2) long term goals; (3) short term goals; (4) instructional strategies, materials, and required services; (5) dates for review; (6) names of those responsible for writing and carrying out the plan; and (7) evaluation procedures.

An important characteristic of an IEP is that it contains specific goals that are to be based on and modified by continuous assessment and evaluation (e.g., Nova Scotia Department of Education, 2008; Ontario Ministry of Education, 2004). Continuous assessment data are a crucial element of any IEP because they provide indicators of student progress, teaching effectiveness, and help in the planning of future goals and interventions (Alberta Education, 2006; Pierangelo & Giuliani, 2007). Using student data to inform decisions about what to do next for students as they progress, or not, is useful to plan and differentiate instruction as needed, as well as being useful for helping teachers know how to write ambitious goals to take students further in their progress (Fuchs & Fuchs, 2007). Students with learning difficulties in the academic areas of math, spelling, reading, and writing are particularly benefited by the efficacious use of data monitoring for planning and adjusting of interventions designed to address areas of need (Brown-Chidsey & Steege, 2005). The IEP goals and objectives are intended to be meaningful, measurable, and manageable such that the students' teachers can see and communicate what progress students have made (Alberta Education, 2006).

The problem is that IEP goals, as Canadian teachers are instructed to develop them now, are not easy to write or use, and teachers often struggle with how to use the IEP as a tool to enhance student learning after all the goals have been written (Alberta Education, 2006). Often IEPs are lengthy documents that are hard to read, vague in some instances or too detailed in others; written in isolation with little collaborative input; and a poor measure of progress, achievement, and learning. Parents have expressed concerns that IEPs should be less vague in terms of year-end targets and become more quantitative instead so that it is easy to measure the progress that their children have made (Manitoba Education, Training & Youth, 2001). In a province-wide review of special education (Manitoba Education, Training & Youth, 2001), the Manitoba government acknowledged that IEP outcomes were not always monitored because in some instances teachers had difficulty writing measurable goals that indicated when student success was obtained. Siegel (2000) found while conducting a review of special education in British Columbia that there was generally a lack of consistency in the preparation of IEPs, and

much concern was expressed over how difficult it was to write IEPs that would be used for their intended purpose.

Though it is necessary to have IEPs that address individual student needs with goals that are SMART—Specific, Strategic, Manageable, Attainable, Realistic, Relevant, Results-oriented, and Time bound (e.g., Saskatchewan Ministry of Education, 2008; many provinces advocate SMART goals although acronym labels differ slightly from province to province)—meeting these criteria is one of the most challenging tasks a teacher faces when writing IEP goals. It is very difficult for teachers to target every skill area that needs instruction and write IEP objectives to meet those needs. What is needed is for teachers to access measures that are efficient indicators of proficient reading, writing, and numeracy performance (Hessler & Konrad, 2008). Curriculum-Based Measurement is such a measure.

With CBM, teachers are able to quickly determine a student's baseline score, or current performance level, and combine it with empirically established performance standards or rates of growth, to predict year-end achievement results. These year-end results can be written as goals, and progress toward the goals can be monitored on a regular basis to determine how well the student is learning.

It is necessary to mention, however, that CBM goals may not be effective or possible in all areas of concern to teachers writing IEP goals for children with exceptionalities. As already mentioned, CBM is currently only used to write goals in areas of reading, writing, mathematics, and spelling. These are the only subject areas to date where empirically established performance standards have been determined. CBM, by definition, are tied to the curriculum used in classrooms (Hosp, Hosp, & Howell, 2007). Other important learning goals for students with exceptionalities—established by parents, teachers, or school-based teams, and many that are outlined in provincial curriculum documents, such as problem solving skills, creativity, communication, and physical tasks—cannot currently be addressed through CBM.

What is Curriculum-Based Measurement?

CBM is a formative assessment approach that involves giving students repeated and short criterion-referenced tests in a particular subject area in order to determine a student's level of skill at a particular point in time, but also as it progresses over time (Hosp et al., 2007; Yell & Stecker, 2003). Assessments are typically 1 to 2 minutes in length and are given three to four times a year for typically-achieving students in order to benchmark their progress. For students experiencing difficulty, CBM probes are given more frequently—often monthly, weekly, or twice weekly depending on the severity of the need. The more severe a student's learning difficulty, the more frequent it is recommended that CBM probes be given (Fuchs & Fuchs, 1997). Frequent progress monitoring allows teachers to measure intervention effectiveness in a timely manner and change what they are doing if it is not effective.

CBM was developed by Stan Deno, Phyllis Mirkin, and their colleagues at the University of Minnesota Institute for Research on Learning Disabilities in the mid-1970s. The original intent of CBM was to provide classroom teachers and special educators with a simple and efficient method for tracking student growth in basic skills for the purpose of informing educators when current instructional methods were not effective and instructional changes were needed (Deno, 2003; Hosp et al., 2007; Stecker, Fuchs, & Fuchs, 2005). Since its inception CBM has taken on many other applications, not the least of which is being used for writing IEP goals (Hosp et al., 2007).

An example of a CBM in first grade reading is the word identification fluency task. It involves giving students a list of grade-level words and having them read as many as they can, and as accurately as they can in one minute. The number of correctly read words per minute is calculated and compared to the student's previous word identification fluency CBM to gauge individual growth over time or to a normed sample to determine growth compared to others in the same age group or grade (Hosp et al., 2007).

CBM is a fluency task that measures how well a student is able to perform a cognitive skill, like word retrieval, quickly and accurately. The ability of a student to perform a skill like reading or math computation quickly and accurately is a good measure of his or her competence in a subject area (Hutchinson, 2010; Snow, Griffin, & Burns, 2005). By first establishing a student's baseline, and then through frequent progress monitoring, teachers are able to determine whether students are making adequate progress in their skill development over the course of a school year.

Simply collecting performance data, however, is not enough to change student performance. Research has demonstrated that when teachers simply collect CBM data, but neglect to make changes to their own instructional methods when these data show that students are not making adequate progress, no effect is evident (Dion, Morgan, Fuchs, & Fuchs, 2004; Stecker et al., 2005). However, when teachers used the CBM data to adjust instruction, either by making it more explicit or by targeting areas where students continued to struggle, researchers found significant effects on student achievement (Stecker et al., 2005). The use of CBM for progress monitoring provides teachers with evidence to determine if children are responding to their instruction or intervention. Response to Intervention (Hosp et al., 2007) is a theoretical concept that promotes a tiered approach to instruction; whereby, if a student does not respond to initial instruction or intervention, as indicated by progress monitoring, then teachers intensify their instruction through a series of tiers (usually three) until the desired level of response is reached. Tier 1 is generally identified as the initial classroom instruction a teacher provides; tier 2 is a more intensive small group or one-on-one format, either in the classroom or by pull-out; and tier 3 is usually the most intensive form of instruction that is characterized by substantial one-on-one or small group instruction, usually by a special education teacher or specialist. CBM can be used to help teachers write effective IEP goals, and change them if necessary, for each tier so that instructional intensity can be more accurately described.

Using CBM to Write Effective IEP Goals

CBM is well suited to help educators write effective IEP goals because: (a) CBM is technically adequate, (b) CBM is based on performance standards that are empirically established, therefore, (c) CBM benchmarks can easily be turned into year-end targets or annual goals, (d) CBM is an effective progress monitoring tool for teachers and students, and (e) CBM decision rules respond to the call in provincial documents for IEPs to be dynamic plans.

CBM Has Been Established as Being Technically Adequate

Though teachers may question the reliability and validity of using a 1- or 2-minute criterion-referenced assessment to measure a student's performance competence, research has clearly established CBM as being technically adequate to accomplish this task (Deno, 2003). CBM is a well-researched tool for making vital school-based decisions (Hasbrouck, Woldbeck, Ihnot, & Parker, 1999; see Stecker et al., 2005, and Wayman, Wallace, Wiley, Ticha, & Espin, 2007, for

reliability and validity tables on CBM). A curricular sampling approach has been shown to be technically sound and instructionally useful for indexing student progress in a variety of subject areas (Fuchs, 2004; McMaster & Espin, 2007). Over 200 empirical studies published in peer review journals provide evidence to CBM validity and reliability for measuring a student's level of competence in reading, spelling, and mathematics (Fuchs & Fuchs, n.d.). A sample finding from one of the 91 empirical studies that Wayman et al. (2007) examined provides an example here. In a study by Hosp and Fuchs (as cited in Wayman et al., 2007), children in grades 1–4 ($n = 310$) were given short passages to read for one minute: words correct and errors were tallied at pre- and posttest. In addition, three subtests of the Woodcock Reading Mastery Test – Revised (WRMT-R; Woodcock, 1987) were administered. Test-retest reliability was .92–.97 across the four grades. Relationships in terms of validity between CBM and the Decoding, Word Reading, and Comprehension subtests of the WRMT-R ranged from .71 to .91 for Grade 1; .82 to .88 for grades 2 and 3; and .71 to .83 for Grade 4.

As far as IEP writing is concerned, special educators, classroom teachers, parents, and students can be confident that CBM generated goals are based on sound empirical evidence and that they are a good measure of academic progress in reading, writing, and numeracy.

CBM is Based on Empirically Established Performance Standards and Norms

For certain academic skill areas researchers have established benchmarks that indicate how well a student should be able to perform on a given task in a prescribed period of time in order not to be considered at risk for academic failure (Hosp et al., 2007). In other words, benchmark scores act as the proverbial “line in the sand” that demarcates the point at which students are considered at risk for academic failure. For example, a good predictor of early reading performance is the ability to provide the sounds of letters quickly and accurately (National Reading Panel, 2000), known in CBM as letter–sound fluency. Reading researchers have established that in order for a student in Kindergarten not to be considered at risk for future reading failure he or she should be able to correctly identify the sounds of the 26 letters of the alphabet at a rate of at least 35–40 letter-sounds per minute by the end of the school year when the letters are presented in random order (Fuchs & Fuchs, 2004; Hosp et al., 2007). Similarly, students in Grade 1 should be able to correctly read isolated words from a list, called word identification fluency, at a rate of at least 50–60 correctly read words per minute by the end of the school year. Another reading area that has been well established in CBM research is oral reading fluency, which is different from word identification fluency in that students read stories instead of word lists. American websites, such as AimsWeb (www.aimsweb.com), the National Center on Student Progress Monitoring (<http://www.studentprogress.org>), and Intervention Central (www.interventioncentral.org), provide CBM benchmarks for other subject and skill areas, as well as those for reading. These benchmarks may provide weekly rates of growth (e.g., the number of new words or letter sounds per minute a student should be able to perform correctly) or end-of-year totals for the number of correctly read letter sounds or words a student should know. Such norms also exist for numeracy and writing. No websites such as these currently exist in Canada. However, because American children and Canadian children learn to read and write English, and perform numerical operations in the same manner, these sites are equally valuable to Canadian educators as well.

Empirically established performance standards and norms take the guess work out of where a typically-achieving child or a child struggling academically should be at any given point in time during their academic development, and help educators establish ambitious goals for stu-

dents. Because norms have been established for several skill areas, teachers can feel confident that the norms established in these particular skill areas will also be good benchmarks from which they too may write ambitious IEP goals for their students.

CBM Benchmarks Can Easily be Turned into End-of-year Targets or Annual Goals

Since research has clearly established CBM as technically sound, it makes sense to establish year-end benchmarks in academic subject areas for which CBM can be used to measure progress. Knowing year-end normed benchmarks helps educators establish goals for students that can be easily monitored. In fact, knowing a student's initial performance, or baseline, is enough to establish year-end benchmarks and thus write accurate IEP goals for that student. Taking a student's baseline score and multiplying the number of weeks remaining in the school year by the expected growth rate would provide teachers with an approximation of where the student should be by the end of the school year. For example, CBM benchmarks provided in the website www.studentprogress.org (under the Resources tab) indicate that a Grade 3 student should be reading passages at a rate of 100 correctly read words per minute by the end of the year. The rate of growth that a student of this age can expect to meet is 0.75 to 1.0 new words per minute per week. So, if Joshua, a Grade 3 student with reading difficulties, has a personal baseline CBM for passage reading fluency of 49 words read correctly per minute from a passage given to him in September, teachers could look to one of the CBM benchmark tables provided in one of the websites listed above and set either a realistic goal of 0.75 to 1.0 new words per minute per week, or an ambitious learning goal of 1.5 new words that he is able to read per week. Multiplied by the number of weeks remaining in school (32 perhaps), Joshua's year-end *ambitious* goal can be set at 97 words ($32 \times 1.5 = 48$, plus Joshua's current passage reading fluency rate of $49 = 97$ by year-end). An example of what this goal may look like as written in an IEP would be: In 32 weeks, Joshua will read aloud from a Grade 3 reading passage at a rate of 100 words per minute with greater than 95% accuracy. Or one could calculate how many words the student should be able to read aloud at 100% accuracy and simply provide that target, which in this case would be 97 words read correctly. Short-term goals can easily be generated from annual goals by dividing the year into months, weeks, reporting periods, or whatever seems reasonable to the teacher.

CBM is an Effective Progress-monitoring Tool for Teachers, Parents, and Students

Progress monitoring is an essential feature of individualized education (Jenkins, Graff, & Miglioretti, 2009). Teachers who use progress monitoring to guide their instruction obtain stronger reading growth from students than those who do not use progress monitoring to guide their instruction (Fuchs, Deno, & Mirkin, 1984). Teachers who use CBM year-end benchmarks as IEP goals would have an empirically validated standard measure by which to gauge a student's rate of progress and could easily display it with a line graph. Being able to see academic growth displayed graphically is beneficial for teachers, students, and parents. In his description of the National Summit on Inclusive Education 2004, Crawford (2005) noted that teachers found IEPs' usefulness highly questionable because often, as they put it, they do not inform or guide instructional practices as they are currently written. As noted earlier in this paper, parents have expressed their desire for IEPs to be less vague and more easily measured in terms of year-end performance indicators (Manitoba Education, Training & Youth, 2001). And finally, when examining the understanding that students have of their own IEP, very few were able to

communicate a clear understanding of what was expected of them (Pawley & Tennant, 2008). A quick review of IEP templates and exemplars from provincial IEP guides may provide support to teachers', parents', and students' concerns. Taken directly from Ontario's IEP Resource Guide (Ontario Ministry of Education, 2004), the following example is provided as an annual goal: "Student A will demonstrate that he has acquired approximately half of the knowledge and skills described in the Grade 6 curriculum expectations" (p. 61). An Alberta sample provides another example of a recommended year-end goal: "Lee will independently read and demonstrate understanding of selected Grade 4 level reading passages" (Alberta Education, 2006, p. 10). In both of these provincial IEP guides the exemplar plans provided go into more detail at the short term objective or learning expectation level, yet neither provides easy-to-follow goals that can be monitored to indicate that the student is making adequate progress at any given point in time. Using CBM-based goals would address this concern, and displaying such growth graphically would provide parents, teachers, and students easy-to-read feedback on how well the student is progressing.

One of the limitations of the current methods of holistic or percent-correct assessment used to evaluate student growth toward IEP goals is that they are not as sensitive as CBM to track incremental progress over time (Hessler & Konrad, 2008). In their paper on developing IEP goals from CBM in the area of writing, Hessler & Konrad (2008) argued that teachers who assess on a holistic 4-point scale may not be able to reflect student growth as accurately between values as CBM could. For example, a student could remain at a level 2 for quite some time when in fact growth toward a 3 is not reflected. Even worse, a holistic scale may not be sensitive enough to show when a student is no longer making progress. With CBM, incremental changes in growth are apparent to teachers so they can make appropriate and important instructional decisions more quickly than they would otherwise. CBM monitored goals are also a better alternative to the percent correct measure that many IEPs use. Because CBM is a fluency-based measure it can reflect a student's performance in greater detail than a percent correct only score can. For example, a student who is able to read 100 words correctly in 1 minute is achieving at a higher level than a student who reads 100 words in 2 minutes, but a percent correct method of assessment would not reflect this (Hessler & Konrad, 2008).

Figure 1 is an example of a progress monitoring line graph that displays the word identification fluency scores for a Grade 1 student named John. After establishing John's baseline score of 10 correctly read words per minute, his teachers decide to set a weekly learning target of 1.5 new words per week that he will be able to read correctly, indicated by the goal line on his graph. However, after just two or three weeks it is becoming obvious to John and his teachers that he is not projected to reach his goal given the current rate of progress, and his teachers will need to do something differently in order to influence his progress. Upon seeing that he is not making progress up to this point, teachers collaborate and problem-solve to make recommendations to enhance his educational program, but they do not lower the learning goal.

The vertical line drawn on the graph after week 4 indicates the point at which an instructional change has been made for John. For students who struggle academically, regular progress monitoring that measures their response to interventions is necessary in order to determine any additional supports and interventions that are needed to move the student along. When interventions and instructional support have been put in place, researchers recommend that the student's progress should be monitored for at least 3 weeks before a judgement is made as to whether or not the intervention has been successful (Fuchs, Fuchs, & Zumeta, 2008).

Figure 1. Baseline for John after initial screening is 10 correctly read words per minute. John's goal is determined by multiplying the number of weeks left in the school year (only 7 in this example) by a reasonable acquisition rate of 1.5 new words per week. After 4 weeks of instruction John has not made progress in keeping with his goal; therefore, an instructional change is warranted. The vertical line indicates the point at which an instructional change was implemented.

CBM Decision Rules Respond to the Call in Provincial Documents for IEPs to be Dynamic Plans

For any academic domain, where CBM data are available, all IEP components (e.g., current level, annual goal, short term goals) can be represented on a single graph. The CBM graph becomes the student's living document which the teacher uses to judge intervention effectiveness and learning (Fuchs & Fuchs, 2004). There are two basic decision rules involving CBM. First, when a child is not making adequate growth toward his or her year-end IEP goal, teachers must act to change their instruction in order to help the student, but the goal is not changed. Second, if the student is progressing adequately, or at a greater rate of progress than indicated by his or her year-end goal, then the year-end goal should be raised (Fuchs et al, 2008). Figure 1 is an example of a student that is not progressing adequately and therefore some form of instructional change is warranted. In this example, the instructional change, indicated by the vertical line, seems to be effective. If a student's score falls below the goal line for three consecutive weeks it is recommended that the teacher, or school team, implement an intervention for that student at that time (Hasbrouck et al., 1999).

This systematic approach to setting goals, monitoring student progress regularly to evaluate intervention effectiveness, and adjusting instructional frequency and method if necessary has been shown to be highly effective in helping students achieve at greater rates than when teachers do not use this approach (Fuchs et al., 1984). Research has also demonstrated that when teachers use these CBM decision-rules to make instructional decisions teacher decision making improves, and students tend to be more aware of their own performance (Fuchs & Fuchs, 1997).

Conclusion

The aim of this paper is to promote CBM-generated goals as a viable alternative to the current method of writing IEP goals and outcomes. Most IEP guides from across Canada describe the IEP as a living document because the intention of the plan is that based on the results of continuous assessment data it should change according to the needs and development of the student (e.g., New Brunswick Department of Education, 2002). Using CBM to write IEP goals has three distinct advantages in this regard: (a) CBM-generated goals are based on empirically established performance norms, (b) they are easy to write, and (c) they are easy to use to monitor progress of students toward their year-end goals.

However, there are a few important limitations to using CBM-generated goals that should be noted. To date, CBM norms have been established in very few subject areas, and most data in the literature focuses on the earlier grades. Mathematics, reading, spelling, and written expression are the only subject areas where empirically established performance norms have been published. This is not necessarily problematic though. The theory behind Curriculum-Based Measurement is that if teachers or school teams know the year-end provincial standards by which their students are evaluated, then it is possible to set monthly or yearly targets and trajectories once a student's baseline is established. CBM encourages the use of locally developed norms (Deno et al., 2009). Although many of current published norms and goals may be too ambitious for students with severe learning problems or developmental disabilities (e.g., slope of 1.5 new words per week), CBM can be tailored, or individualized, to any goal that the teacher or school team sets for the student, and serves well as a progress monitoring approach for every student. Although IEPs address many areas for exceptional students that CBM may not be able to address (e.g., social and behavioural goals), this does not need to be a problem; IEPs can have a mix of CBM-generated goals along with non-CBM goals.

Researchers have been able to clearly demonstrate that by using the curricular sampling approach employed by CBM, teachers are able to easily and accurately measure student competence in a variety of subject areas because test results can be compared to normed performance standards established in the subject area (Fuchs & Fuchs, 2004; McMaster & Espin, 2007). Performance norms for several subject areas across several grades are available from websites such as AIMSweb, Intervention Central, and the National Center for Student Progress Monitoring. Knowing the level of performance a student should be able to attain given his or her initial baseline performance allows teachers to write goals that are supported with empirical evidence.

Using CBM-generated goals that are based on empirically established performance norms makes it easier for teachers to write IEP goals. Once an educator knows the baseline score for a student, and the performance norm associated with the child at that age and level of competence, he or she can easily determine the year-end target and write the IEP goal. CBM-generated goals fulfill recommendations in some provincial IEP guidelines for goals to be SMART—specific, measureable, attainable, realistic, results-oriented, and time-bound.

Finally, using CBM to write IEP goals provides educators, students, and parents with a means to easily track student progress, particularly if the progress monitoring results are displayed graphically. The graphical display of student data can be a powerful communication tool as well (Hasbrouck et al., 1999). When a student is experiencing success and the results from the CBM are displayed on a graph, the teacher knows that what he or she is doing is working, the student sees that he or she is progressing, and parents have concrete evidence of their child's success. In this sense, IEPs that are enhanced by CBM-generated goals give educators a document that functions precisely the way the IEP was intended to function.

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