ARTICLES

USING TECHNOLOGY IN MULTI-TIERED INTERVENTIONS TO DIFFERENTIATE INSTRUCTION

By

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ABSTRACT

Differentiated instruction denotes varying instruction in terms of content, product, and process to meet the needs of all learners. One way to differentiate the instructional process is to provide multi-tiered instruction. Examples of systematic approaches to multi-tiered instruction are response to intervention (RTI) and school-wide positive behavior support (SWPBS). RTI and SWPBS involve layers or tiers of increasingly more intensive high-quality research-based instruction, progress monitoring, and data-based decision making. Students receive additional tiers of instruction if they do not show progress towards attaining an academic or behavioral goal with the current level of instruction. These data are then used to determine the supports that students need to be successful. Technology, such as instructional software and online progress monitoring tools, can be utilized throughout tiered interventions to increase the efficiency in which students receive supports. This article will describe the components of tiered interventions: universal screening, three tiers of instruction within RTI and SWPBS, and progress monitoring. Examples of technology utilized in RTI and SWPBS will be described.

Keywords: Response to Intervention, Schoolwide Positive Behavior Support, Differentiated Instruction, Technology.

INTRODUCTION

Differentiated instruction is teaching with the intent to maximize each student's growth and individual success by modifying content, instruction, and student products (Tomlinson, 2005). Providing multiple layers or tiers of interventions is one method of systematically differentiating instruction.

Response-to-Intervention (RTI) and Schoolwide Positive Behavior Supports (SWPBS) incorporate multi-tiers of increasingly intensive interventions, progress monitoring, and data-based decision making with the goal of preventing the escalation of learning or behavior problems. RTI provides support to students struggling with academics when needed. Whereas the focus of SWPBS is to help all students achieve important social outcomes (OSEP, 2004). RTI and SWPBS utilize the same logic and are in essence two sides to the same coin. SWPBS and RTI can actually be successfully implemented interchangeably due to the fact that often, students with behavior problems display difficulty with academics, while students with academic problems may also display behavior problems (McIntosh, et al., 2006).

In a typical RTI or SWPBS model, there are three tiers of intervention. Students receive additional tiers of instruction if they do not show progress towards attaining an academic or behavioral goal with the current level of instruction. RTI and SWPBS rely on empirically based teaching practices and incorporate the use of differentiated instruction at each tier. In other words, RTI and SWPBS differentiate instruction through tiers of intervention and progress monitoring.

Tier I Instruction

Tier 1 is often referred to as the universal level where all students in the school receive evidence based teaching practices in the general education classroom (Fairbanks, Sugai, Guardino, & Lathrop, 2007). Evidence based teaching practices are used for multiple reasons including mandates from Individuals with Disabilities

Education Improvement Act (2004) and No Child Left Behind Act (2002) which increased teacher accountability and emphasized sound empirical research supporting the efficacy of teaching practices and/or interventions.

Tier II Intervention

Some students will be identified for more intensive interventions than those implemented at the school and class-wide levels. Tier 1 typically meets the needs of approximately 70-80% of the students in the general education classroom, leaving 20-30% needing additional instruction or intervention at the next level or Tier II (Vaughn, Linan-Thompson, & Hickman, 2003). Students whose progress is below the goal or benchmark will also begin receiving more intensive, small group instruction for 30 to 60 minutes per day. Tier II interventions are "add-ons" to the general curriculum in that these students will continue to receive high quality instruction in the general education setting. Tier II interventions are "explicit" in format (structured, direct, content specific) and "embedded" in nature (occurring within daily activities, building on children's strengths, complementing explicit interventions). Several elements of Tier II interventions are modeling, immediate corrective feedback, active student responding, ensure comprehension of instructions, additional practice opportunities, setting goals, and self-monitoring (IRIS, n.d.).

Tier III Intervention

School-wide and small group supports are not always effective for every student. There are students who require more intensive, individualized interventions than their peers. These students require Tier III interventions and may be require an Individualized Education Plan, which may outline specific techniques that can be used to teach him/her and interventions that address any problem behavior the student might be displaying. Every technique or intervention, no matter which type is implemented, should be research-based, and every decision should be based on progress monitoring data. The data not only allows the teacher to examine the effectiveness of her behavior management and

instruction, but also to be certain that he / she is using the best available practices with every student.

Teachers can implement many different types of interventions and techniques that address both behavior and academic problems as a part of Tier III intervention. Common behavior and instruction techniques include token economy, providing choice of activities, and repeated practice of any skills or tasks that are difficult for the student to perform

Progress Monitoring

One of the main concerns of schools as they develop RTI and SWPBS is how to screen all students and progress monitor. A universal screening is typically conducted as part of Tier I at the beginning of the school year. These screening assessments are typically conducted at trimesters but can be done more frequently depending on the classroom needs and individual student needs to ensure that students are meeting grade level standards in the core curriculum (Richards, Pavri, Golez, Canges, & Murphy, 2007). Students who are identified as struggling through the screening are provided a more intensive intervention along with weekly progress monitoring.

Progress monitoring in RTI involves curriculum-based measurements (CBM), brief timed assessments (called probes) of skills from the curriculum administered to individual students. In SWPBS, progress is typically monitored by collecting student office discipline referrals (ODR). CBM and ODR data are graphed and compared to goals or benchmarks to make instructional decisions. The purpose of progress monitoring is to simply determine whether an intervention is successful at improving deficient skills. If the student consistently achieves or exceeds his/her goal then the teacher develops a plan to fade the intervention so that he/she can be successful without extensive support. If the student does not meet his/her goal in the prescribed amount of time, a school-based team should decide if a more intensive intervention is necessary and what modifications may be necessary to improve the intervention's effectiveness. Teachers have reported that progress monitoring has had a positive impact on the success of interventions

implemented for at-risk students (Hupert & Heinze, 2006; Hupert, Heinze, Gunn, & Stewart, 2008). Without progress monitoring as a critical feature of any intervention plan, there are no verifiable data demonstrating that the strategies implemented had any effect. The use of data guides the continuance of teaching practices, the selection of interventions, and assists with the identification of which students may need more intensive instruction. It also ensures that decisions are data driven and objective.

How Technology Can Help With RTI and SWPBS

Implementing various tiers of instruction and monitoring students' progress on a frequent basis may become cumbersome for some schools. Technology can ease the workload by completing some of the tasks necessary to implement tiers of instruction and progress monitoring. Instructional software and internet-based programs can be used to supplement instruction while using flexible grouping. The process of assessment administration and scoring is simplified by computer programs that guide teachers on utilizing the correct assessment level, automatically scoring the results, and providing immediate assessment results that assist in identifying students in need of further intervention. Because of the availability of the data through the use of technology, the teachers are better able to make effective use of the data assessment, and, therefore, improve the level of instruction. Teachers who have used technology to collect assessment data have indicated that the ease and efficiency of administering the assessments are increased, the accuracy of the assessments is increased, and the access to the data in order to make decisions is also improved (Hupert, et al., 2008). Furthermore, teachers indicate that the use of technology, such as hand-held computers has yielded even more significant impact on intervention implementation and success (Hupert, et al., 2008; Hupert & Heinze, 2006).

Some schools implementing RTI and SWPBS in Tennessee have utilized the following technological programs. These programs tout the ease of monitoring students' progress by providing graphical displays of the data and using decision rules to determine the effectiveness of the intervention. Programs such as DIBELS, Imagination Station, and Headsprout assist the teacher with designing an individualized intervention that will target deficit skills.

Dynamic Indicators of Basic Early Literacy Skills®. Many schools utilize the DIBELS Data System to assist with assessing and progress monitoring students' basic literacy skills. The DIBELS assessment is based on the identified Big 5 Ideas of Reading (Phonemic Awareness, Alphabetic Principle, Accuracy and Fluency, Vocabulary, and Comprehension) (Dynamic Measurement Group, 2009). DIBELS has been demonstrated to be an effective screening tool and monitoring tool (Good, Simmons, & Kame'enui, 2001). Students' performance on the test can inform lesson plans, help design interventions, and monitor the students' progress toward reading skill acquisition (Coyne, Kame'enui, & Simmons, 2004). The Data System facilitates the teachers' administration of benchmarking and progress monitoring probes by providing a database for entering DIBELS scores. The Data System provides feedback regarding assessment results in the form of graphs and automated reports. The DIBELS Data System was utilized by over 15,000 schools during the 2007-08 academic year (DIBELS, 2009). The DIBELS assessment is also available on a handheld computer device (mClass:DIBELS). The mClass facilitates the administration and scoring of DIBELS probes with electronic teacher's probes, immediate scoring and identification of at-risk students. Furthermore, the mClass provides users with research-based reading programs that target specific early literacy deficits (Wireless Generation, 2009).

AIMSweb®. AIMSweb is a web-based program that assists teachers with administering, scoring, and interpreting standardized reading, language, and mathematical curriculum-based measurement probes which can be used for benchmark assessment and progress monitoring. (Aimsweb, 2009; Pearson, 2009; Ysseldyke & McLeod, 2007). Additionally, third party assessments such as DIBELS, IGDI, Monitoring Basic Skills Progress (MBSP), and Get it Got it Go! can be imported into the program to be used for data-based decision making and intervention progress monitoring (Aimsweb, 2009). AIMSweb

summarizes the assessment data into graphs to assist educators in identifying students in need of intervention to prevent academic failure and using decision rules to evaluate intervention effectiveness. AIMSweb is also available for use with a handheld computer device to facilitate administration and scoring.

Intervention Central. Intervention Central (Wright, 2009) is a website that contains free tools for teachers looking for academic and behavior strategies and classroom assessments. Perhaps the most useful part of the Intervention Central website, however, is the Curriculum-Based Measurement (CBM) Warehouse. The CBM Warehouse consists of training materials that introduce CBM, sample reading and math probes, and links to CBM tools on the Internet that will help teachers in implementing progress monitoring in their schools.

Headsprout®. The Headsprout program is an internet-based reading program often used as a Tier II or Tier III intervention in Kindergarten through second grade. The Headsprout program is based on over 30 years of reading research and has been shown to increase the standardized test scores and reading levels of children of all ages through individualized lessons including letters and sounds, blending and segmenting, sight word instruction, and phonemic awareness activities (Layng, Twyman, & Stikeleather, 2004) Interactive lessons adapt the instruction based on student responses. Additionally, teachers can monitor student progress based on student responses in each lesson and benchmark assessments. Although minimal teacher supervision is required, students read leveled books to the teacher as they complete specific lessons in the program (Headsprout, 2009).

Imagination Station®. Imagination Station (Istation) is an internet-based program that provides universal screening and progress monitoring, and delivers differentiated reading instruction for Pre-K through 3rd grade (Imagination Station, 2009). Schools utilize Imagination Station to improve the phonemic awareness, alphabetic knowledge, text fluency, vocabulary, and reading comprehension of young elementary school students. The program is similar to Headsprout, in that the lessons

are interactive and reports on the students' progress are available. Istation has been shown to be a valid indicator of reading skills, and is an accepted teacher administered assessment of early literacy skills (Mathes, 2007).

School-wide Information System™. The School-wide Information System (SWIS) is a web-based program that provides a database for schools to collect and analyze their discipline data (SWIS, 2009). SWIS facilitates data collection, progress monitoring and data-based decision making through its dynamic database that allows data to be entered efficiently (approximately 30 seconds per office discipline referral), provides up-to-date data summaries in tables and graphs, and tracks the discipline records of students undergoing Tier II and Tier III interventions. SWIS is currently being used internationally by 5440 schools including those in the United States, Canada, New Zealand, Australia and Iceland (SWIS, 2009). The SWPBS teams using SWIS utilize the data to determine the effectiveness of the universal, secondary and tertiary supports. Additionally, SWIS can be used to monitor the progress of specific groups of students or individuals who are receiving interventions to improve their behavior. SWIS has recently incorporated Check In Check Out (Filter, 2007), a commonly used secondary level intervention, into the database to track the progress of students involved in the intervention. The simplified data reports facilitate communication of current effectiveness of SWPBS to building-level and district staff along with local, statewide and national data comparisons.

Conclusion

In an age of increasing accountability, it behooves teachers and others directly responsible for student learning to use the most effective an efficient means to improve the educational outcomes. RTI and SWPBS systematically differentiate instruction by monitoring students' progress with interventions provided in tiers of increasing intensity. By incorporating technology to supplement instruction at each tier and monitor students' progress, students will receive the supports needed to succeed.

There are many technological options available to enhance RTI and SWPBS. The purpose of this article is to shed light on technology that has been utilized in Tennessee to differentiate instruction through tiered interventions. The resources described in this article assist teachers with selecting and implementing effective instruction to support all learners and assume some of the tasks involved with progress monitoring. Teachers implement interventions and progress monitoring with higher fidelity if their response effort is eased through the use of instructional software and online progress monitoring tools. Students receive supports more efficiently when tiered interventions are implemented with fidelity. Therefore, technology may prove essential to implementing RTI and SWPBS with integrity.

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