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Setting Sail for Early Learning Success: Using a Data-based Decision Making Process to Measure and Monitor Outcomes in Early Childhood Programs

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Abstract

The use of data to inform decision-making and monitor individual student progress is recognized as an important, yet elusive practice in early childhood programs. In this article, Data-based Navigation is presented as a five step data-based decision making process designed to help early childhood professionals measure and monitor desired programmatic outcomes. A case study that focuses on the reduction of challenging behaviors is provided to illustrate the process.

Keywords

Early child-hood, data-based decision making, challenging behaviors, programmatic outcomes, measure outcomes, monitor outcomes

Cover Page Footnote

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Setting Sail for Early Learning Success: Using a Data-based Decision Making Process to Measure and Monitor Outcomes in Early Childhood Programs

Early childhood education (ECE) programs seek to improve outcomes for young children and their families by promoting social competence, enhancing cognitive development, and teaching pre-academic skills that enhance the likelihood of early and sustained school success. In order to achieve these outcomes, early childhood educators have to implement evidence-based and developmentally appropriate curricula and practices with fidelity. One evidence-based strategy for measuring success that is increasingly being identified as a critical component of effective school reform by federal policymakers and early childhood research is data-based decision-making (DBDM). DBDM involves the use of valid and reliable information to make programmatic and individualized decisions regarding the allocation of resources, organization of roles, and the distribution of responsibilities to achieve desired outcomes (Newton, Horner, Algozzine, Todd, & Algozzine, 2009).

In early childhood programs, the use and application of data to support the range of needs displayed by young children is challenging. Barriers identified from the literature include: (a) the lack of reliability and consistency in how data is gathered and used, (b) the shortage of available measures relevant to ECE, (c) the lack of training, skill, and experience in data analysis and interpretation, and (d) the inability to use data to inform decision-making (Frey, Boyce, & Tarrullo, 2009; Frey, Young, Gold, & Trevor, 2008; Muscott, Pomerleau, & Dupuis, 2009; Stormont, Covington, & Lewis, 2006).

The purpose of this article is to describe a data-driven decision making process to help early childhood programs measure and monitor outcomes. The process described as Data-Based

Navigation, outlines a strategy for engineering change. Developed and used in ECE programs in New Hampshire and Kentucky, Data-Based Navigation provides a guiding framework to overcome data implementation challenges. Both state initiatives focused on establishing behavioral capacity, targeting the promotion of social emotional competence and preventing challenging behaviors. Using steps such as defining goals, outlining objectives, identifying barriers, delineating action items, and evaluating outcomes, this article describes how the process was applied in a single early childhood program in New Hampshire.

Data-Based Navigation in Early Childhood Programs

The Data-Based Navigation process was developed in response to the various challenges faced by early childhood educators in employing effective and efficient strategies to inform decision-making using data. The process is an early childhood adaptation of the DBDM model originally conceived by Bransford and Stein (1984) and infused into the Positive Behavior Support (PBS) framework by Horner and Sugai (2005). Data-Based Navigation is comprised of five steps and organized around a nautical theme. The steps are: (1) Determine your Destination; (2) Establish Current Position and Plan for Stormy Weather; (3) Chart your Course and Prepare to Sail, (4) Stay on Course, Check Compass, and Make Course Corrections; and (5) Evaluate and Plan for the Next Voyage. Each step will be discussed in turn.

Step 1: Determine Your Destination

The first step in the process requires early childhood program-wide leadership teams comprised of administration, teaching staff, support staff, and parents, to keep the end in mind by determining the program's general outcome area(s) and the designated time period for the focused effort (usually yearly). A key question may be, "What is the priority for improvement this year?" This step concludes when the team identifies a target area (e.g., social skill

development, listening comprehension, parenting skills, or reducing instances of challenging behavior) and delineates goals for success.

Step 2: Establish Current Position and Plan for Stormy Weather

The second step requires early childhood administrators and teams to determine their current position in relation to the desired destination and address potential obstacles that might prevent success using a systematic data collection process. Examples of data collection tools may include (a) authentic curriculum-based measures, (b) specific early learning or social-emotional skills measures, or (c) measures for collecting, aggregating, summarizing and graphically displaying behavior incidents. For example, the priority in step one may be to reduce the frequency of physical aggression. Data about the current position may be collected by asking key questions such as, “How many students are currently exhibiting physical aggression, how often, and within what classroom routines or program locations?”

Once teams establish their current position, it is essential to plan for stormy weather. Challenges that may threaten to throw the ship off course should be carefully identified. Some guiding questions to isolate potential obstacles to the implementation of high quality practices include, “What issues might affect progress toward achieving the desired outcome?” or “What professional development activities, resources or coaching are needed to accomplish our goals?” Barriers that affect the entire crew should also be identified, such as lack of expertise in critical content areas or insufficient planning time for teachers.

Step 3: Chart your Course and Prepare to Sail

The third step requires early childhood administrators and teams to determine precisely where and when they want to land, and the route they will take to get there. *Chart your Course* begins by translating broad outcomes into specific objectives, identifying the timeline by which

to accomplish the goal, and establishing criteria for success based on data. The use of criterion-referenced process tools such as the Preschool-wide Evaluation Tool (Pre-SET; Steed, Pomerleau & Horner, 2011) can help program-wide teams develop critical benchmarks. During this step, the team answers questions like “How much of a reduction in physical aggression (goal identification) on the playground (context) is achievable by June (course charting)?”

Prepare to Sail involves making strategic preparations that will increase the likelihood of reaching each milestone. Much like a ship’s crew might divide tasks on a voyage, an effective early childhood team specifies activities, resources, and deadlines to attain the objectives in a written action plan. This action plan creates an organizational and accountability structure that increases the likelihood of reliable implementation. This is particularly important as the team embarks on the fourth step.

Step 4: Stay on Course, Check Compass, and Make Course Corrections

Once the ship leaves port, it’s imperative for the crew to follow the charted course as outlined in the action plan, monitor progress regularly and make any necessary adjustments in order to ensure that the final destination is reached. Step 4 requires the administrator and team to develop a simple system of progress monitoring. The establishment of structured meetings at predetermined times allows the team to address the accomplishment of benchmarks, review data, and discuss important questions regarding implementation. Potential questions include, “Are we headed in the right direction?” and, if not, “What types of adjustments need to be made?” Establishing a process to monitor progress toward the objectives in the action plan will increase the likelihood of staying on course, thereby increasing the likelihood of a timely arrival.

Very few sailing voyages go as planned. In early childhood settings, there are predictable challenges to staying on course. These include staff turnover, differences in beliefs, consistency

of implementation, and sustainability of recommended practices with a high degree of fidelity. In addition, the challenge of reliable and accurate data collection and analysis is often present.

Effective early childhood administrators and teams regularly monitor the charted course and, if necessary, make course corrections. This is accomplished by instituting regular reviews of the action plan (e.g., monthly, quarterly) to assess fidelity of implementation and consider the data collected in order to monitor and evaluate progress. The analysis of the action plan and outcome data is also used to identify impediments to success and provide support and resources as necessary to maintain clear sailing. During this part of the step, the team addresses questions such as, “Are actions achievable within the identified timeframe and what additional supports are needed?” New actions may be added based on priorities and the supporting data. It is also important that staff members are provided with summary data and updates throughout the year in order to make informed decisions.

Step 5: Evaluate and Plan for the Next Voyage

In this final step, early childhood administrators and teams evaluate how close they came to arriving at the desired destination and begin the planning process for the next voyage, typically the next school year. Key questions to consider in this phase include, “Was the plan implemented correctly and did it work?” If the program reached its destination (i.e., achieved its goals and objectives), the team shares and celebrates those successes with staff, children, families, and the community. When it does not, the team should determine if re-embarking during the next program year is desirable and, if so, what course corrections would be necessary to ensure future success.

Data-Based Navigation at the Lakes Region Child Care Services, Inc. Program

The Data-Based Navigation process was implemented at Lakes Region Child Care Services, Inc. (LRCC), a private, non-profit ECE program located in Laconia, New Hampshire. LRCC offers child care and preschool services for children from infancy through kindergarten. The program includes three preschool and one kindergarten classroom, serving approximately 70 children between the ages of three and five. LRCC accepts state tuition scholarships for low-income children and children identified for early intervention or preschool special education services.

LRCC decided to set sail as part of the Positive Behavioral Interventions and Supports-New Hampshire (PBIS-NH) initiative in 2006. The leadership team and coaches received three years of professional development, facilitation, and consultation support for the implementation of program-wide PBIS (PW-PBIS) as part of a statewide initiative supported by the New Hampshire Department of Education, Bureau of Special Education (Muscott, Mann & LeBrun, 2008; Muscott, Pomerleau & Szczesiul, 2009).

Step 1: Determine Your Destination

As part of the program's commitment to the Data-Based Navigation process, the leadership team began entering behavior incident data into the Behavior Incident Reporting System-NH (BIRS-NH), a web-based software system for collecting, aggregating and summarizing incidents of challenging behavior in early childhood programs (NH Center for Effective Behavioral Interventions and Supports at SERESC, 2008). The system includes fields for (a) ten of the most prevalent challenging behaviors exhibited by young children, (b) early childhood routines, and (c) teacher and administrative responses to challenging behaviors. Aggregate graphs displaying (a) challenging behaviors, (b) routines in which those behaviors occur, and (c) average number of challenging behaviors per day per month for the program can

be produced for any time period. Moreover, individual student graphs can be produced to support problem solving. Following the first complete month of data entry, an initial review was conducted at a monthly leadership team meeting. The team determined that their primary goal was to reduce challenging behaviors within the program.

Step 2: Establish Current Position and Plan for Stormy Weather

According to data reports generated from the BIRS-NH (NH CEBIS, 2008), staff reported a total of 79 behavior incidents in January 2009 (see Table 1).

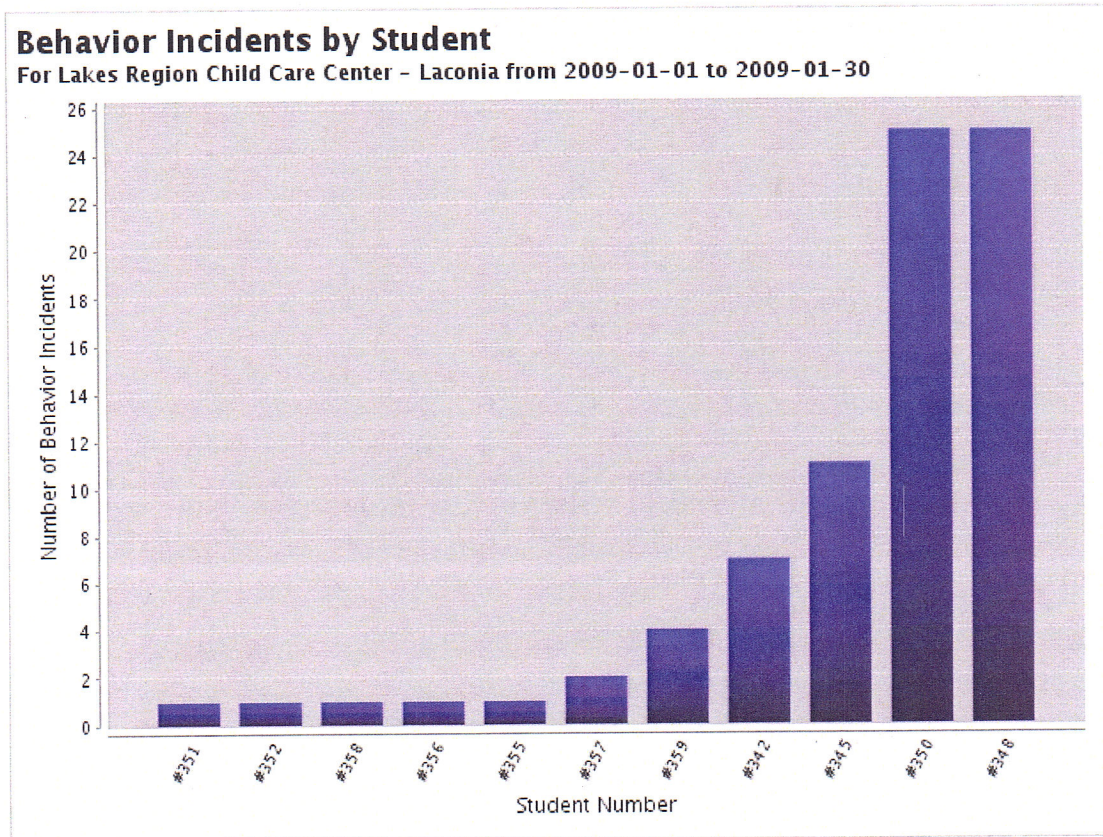
Table 1. Challenging Behavior Incidents at Lakes Region Child Care January-March 2009.

Challenging Behavior	Jan-09	Feb-09	Percent Reduction Jan-Feb 09	Mar-09	Percent Reduction Feb-March 09	Total Percent Reduction Jan-March 09
Non-Compliance	32	4	87%	2	50%	94%
Disruption	8	5	27%	0	100%	100%
Inappropriate Language	2	2	0%	0	100%	100%
Verbal Aggression	2	3	+ 33%	0	100%	100%
Physical Aggression	12	9	25%	3	67%	75%
Running Away	6	0	100%	0	0%	100%
Property Damage	7	2	71%	0	100%	100%
Unsafe Behaviors	10	1	90%	1	0%	90%
Social Withdrawal	0	1	+100%	0	100%	0%
Totals	79	27	66%	6	78%	92%

This total translated to an average of 2.5 incidents per day, an unacceptably high average for program standards. Using the BIRS-NH system, the team produced a graph showing that 11 students accounted for the 79 incidents (see Figure 1). Of the 11, five had one incident and four had between two and eleven incidents. Two students had 25 incidents each, accounting for 63% of the reported behavior incidents in the program.

Figure 1

Graph of LRCC's Incidents by Student for January 1 – 30, 2009



Based on these findings, the leadership team knew they would have to plan strategically to meet the outcome of decreasing program-wide behavior incidents. The goal was set to reduce the frequency of behaviors reported by 10%, from 79 to 71 incidents within 3 months. Success in meeting this outcome depended largely upon the team's ability to reduce the challenging behavior of the two students with chronic and intense needs. To do so would require expertise in conducting functional behavior assessments (FBA) and creating effective behavior support plans (BSP) with a high degree of teacher buy-in and fidelity of implementation.

In order to prepare for potential stormy weather, a team decision was made to focus current resources on one student at a time, rather than both simultaneously. The team reviewed

the behavior data, including the types of infractions, to determine which student had a higher level of risk and intensity of challenging behaviors. The team identified one student with instances of non-compliance, property damage, running away, and unsafe behaviors. The team agreed to concentrate intensive interventions for this student, hypothesizing that reducing the number of incidents for this student would significantly impact the overall goal of reducing challenging behaviors program-wide.

The team then chose to collect additional data on the extent to which the child was at-risk by administering the Behavior Assessment System for Children-2, Behavioral and Emotional Screening System (BASC-2, BESS) for preschoolers (Kamphaus & Reynolds, 2008). Through this screening process, children are identified as either having a *Normal*, *Elevated*, or *Extremely Elevated* risk status for developing an emotional/behavioral problem. Results from this tool indicated that the child was at an *elevated* risk status. Using two data sources, the BIRS-NH data and the BASC-2, BESS screening data, the leadership team conferred with the family and referred the student to the behavior support team for action planning.

Step 3: Chart Your Course and Prepare to Sail

The LRCC behavior support team and the child's teacher developed an initial action plan to complete a functional behavioral assessment (FBA) and implement an individualized behavior support plan (BSP) with fidelity. The initial action plan included specific assignments of who was responsible for each component of the FBA process (i.e., indirect and direct assessments) and by when (i.e., 1 month). Once completed, the team reviewed the assessment information and determined that the function of the child's challenging behaviors was most likely maintained by adult attention.


The primary strategy in the BSP involved the use of an intervention called *Teacher Check, Connect and Expect* (Muscott & Mann, November, 2007), an adapted version of *Check, Connect and Expect* (Cheney & Lynass, 2009; Cheney, et al., 2010). This intervention provides positive child-teacher interactions during specified routines of the day. Upon arrival, the child is greeted by the teacher, reminded of the behavior expectations, and encouraged to succeed. Following each designated routine (e.g., circle, mealtimes, outdoor play, etc.), the classroom teacher positively reviews the child's level of success for behaviors (i.e., hands to self, listen to teacher) that correspond to the program-wide expectations (B Safe, Be Kind, Take Care) using feeling faces that typically correlate to a 0, 1 or 2 point rating scale. In this case, the team's strategic decision to simplify and individualize this intervention for the child resulted in the use of two feeling faces with a 1 and 2 point rating scale (see Figure 2). At the end of the day, the teacher reviews behavioral progress with the child and provides encouragement for the following day.

Figure 2


Individualized Teacher Check, Connect and Expect Daily Rating Card

































































Laconia Early Learning Center
'Check, Connect & Expect'

Name: _____

 = Great Job

Today is: _____

 = Try Again

Goals	Transition 	Mealtimes 	Circle 	Outdoor Play 	Centers 	Bathrooms 	Naptime 
 Be Safe	 	     	 	 	 	 	 
 Be Kind	 	     	 	 	 	 	 
 Take Care	 	     	 	 	 	 	 

The subsequent action plan included specific tasks for designing and implementing each component of the individualized BSP, inclusive of strategies for addressing setting and antecedent events, teaching social skills, and responding to challenging behaviors, as well as evaluating its effectiveness. For example, training of the child's teacher on the implementation of *Teacher Check, Connect and Expect* was arranged within one week and provided by the program administrator. Training involved review of the *Teacher Check, Connect and Expect* intervention, the procedure for delivery of the intervention including examples and non-examples of encouraging feedback to provide to the child, and data collection and entry processes. The assignment of a mentor staff person to monitor, address, and assist with implementation issues was also arranged. The designated mentor staff person was a credentialed lead teacher in an alternate preschool classroom with experience in the delivery of *Teacher Check, Connect and*

Expect, and was readily available each day in the neighboring classroom. Within two weeks, the child's teacher was assigned the task of introducing the *Teacher Check, Connect and Expect* daily rating card to the child, practicing its use with the child and beginning implementation within the classroom. Bi-weekly progress monitoring meetings for staff support were also outlined. In addition, a member of the staff was trained in the use of an Excel-based data program that could be used to input, summarize, and analyze patterns from the *Teacher Check, Connect and Expect* intervention. The data program included a table with the three program-wide expectations (Be Safe, Be Kind and Take Care) and classroom routines (e.g., arrival, circle time, centers, outdoor play, etc.). Based on the agreed-upon 2 point scale for this child, teachers rated the child's behavior and assigned a score of 1 or 2 on the *Teacher Check, Connect and Expect* daily rating card using the feeling faces. The scores were entered into the database by the coach at the end of the day. Percentages of daily points were automatically computed. The graphs were easily produced for team meetings and used for decision making and action planning. The data helped the team determine specific action items to address obstacles for staying on course with implementation.

Step 4: Stay on Course, Check Compass, and Make Course Corrections

In order to stay on course, the team scheduled monthly meetings to monitor and review the student's and the program's progress toward the desired destination. Prior to the intervention, the student had received 25 behavior incident reports. Following the implementation of the BSP, the incidents decreased from 25 to 0 behavior incidents reported for that month. As shown in table 1, the decrease in challenging behavior for this child was associated with a 66% reduction in challenging behavior program-wide (79 to 27). This exceeded the 10% goal by 56%. The team decided to continue with the supports in place for the child, as the data indicated positive

outcomes were being attained at both the individual student and program-wide levels. Interestingly, the behavior of the other student with 25 incidents during January also decreased. Therefore, there was no need to provide that student individualized supports in addition to the program-wide behavior supports that were being instituted through the core curriculum for all students during the intensive intervention period.

Step 6: Evaluate and Plan for the Next Voyage

The team then met to evaluate progress and plan for the next year. Upon review of the average incidents per day for the three month period, it was clear that the ECE team had reached the outcome of a reduction in challenging behaviors by providing both a strong core curriculum of PW-PBIS and addressing the individualized needs of one student. The average incidents decreased from almost 3 instances per day to less than 1 per day. Further analysis of program-wide behavior incidents by month revealed a 66% decrease after one month and a 92% decrease after two months of implementation. The team decided to stay on course by continuing the action plan, including monthly data reviews, for the remainder of the school year. The Data-Based Navigation process was successful in helping the team prioritize goals, set objectives, predict barriers, implement action-oriented strategies, and most importantly, use data to guide the process.

Conclusion

The Data-based Navigation process provides a descriptive example of how early childhood programs can use data-based decision-making to chart a course, navigate stormy weather, make course corrections and ultimately reach desired pre-academic and social-emotional programmatic destinations. In this article, we described an initial attempt to support engagement in a data-based decision-making model that has been all too elusive in many

preschools across the country. A case example from New Hampshire was used to show how the process can support decision making. Using DBDM, the LRCC program experienced a 92% reduction in challenging behaviors overall within two months of implementation.

Adopting evidence-based practices, utilizing data effectively and monitoring the fidelity of implementation of both program-wide and student-level outcomes will require a fundamental shift for many programs. As such, it may take years to infuse into the culture of some early childhood programs. Nonetheless, the leadership teams in both the New Hampshire and Kentucky programs remain committed to implementing the DBDM model, in order to better support young children and their families.

While no panacea, implementing data-based decision making has the potential to help early childhood programs proactively address stormy weather and barriers related to (a) differences in philosophy (e.g., approaches to early childhood assessment, evaluation, and program management), (b) adequate resources (e.g., inequities in funding, materials, infrastructure, and staffing), and (c) readiness, particularly with assessment and technology tools used to meet the increasingly diverse populations and needs of preschoolers. Although the case study described herein focuses on social emotional development and challenging behavior, the same process could be adopted for academic goals using measures such as authentic curriculum-based assessments. *Bon Voyage!*

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