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Winter 2017

# Bridging the Gap between Data and Instruction to Promote School Readiness


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Ratsavong, Lucki M.; Myrtil, Maureen J.; Guglu, Mihaiela R.; and Schachter, Rachel E., "Bridging the Gap between Data and Instruction to Promote School Readiness" (2017). *Faculty Publications, Department of Child, Youth, and Family Studies*. 196.  
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# Bridging the Gap between Data and Instruction to Promote School Readiness

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## EXECUTIVE SUMMARY



States are increasingly endorsing collecting data in the early childhood classroom to measure instructional quality, as well as to enhance classroom- and school-based improvement efforts (Meisels, 2006; National Association for the Education of Young Children, 2009). While an increase in available data has the potential to inform decisions in the classroom, many educators report a need for clearer guidance in analyzing, interpreting, and using the data they collect (Sandall, Schwartz, & Lacroix, 2004; U.S. Department of Education, 2009). Thus, efforts must be made to improve resources and training to provide early childhood educators the opportunity to build their capacity for data proficiency and decision-making within schools. As professionals build their capacity for data-informed decision-making (DIDM), children will benefit from instruction that is responsive to real-time information, and interventions that are tailored to their individual needs.



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The purpose of this white paper is to provide practical recommendations on how to employ effective data-informed decision-making (DIDM), particularly in early childhood programs.

This paper addresses the steps to using DIDM effectively as well as the school- and state-level efforts necessary to support this process. To illustrate how DIDM works in the real world, we use examples from the A. Sophie Rogers School for Early Learning (School for Early Learning), a five-star early childhood program affiliated with The Ohio State University and located in Weinland Park, Columbus, Ohio.

## Recommendations

### For Policymakers

- Require that early childhood program standards incorporate DIDM proficiency;
- Support and expand high-quality, ongoing professional development opportunities that focus on data analysis, data interpretation, and using assessments to inform instruction;

### For Practitioners

- Promote a school climate that encourages teachers' data use in decision-making and also collaboration amongst early childhood educators in data use;
- Develop data-support teams that guide the setting of goals, planning of interventions, and evaluation of progress;

### For Researchers

- Evaluate the effectiveness of current professional development programs that provide training on data-informed decision-making for early childhood educators;
- Partner with schools in the creation and sustainability of data-informed decision-making systems.



## Introduction

Since the passage of No Child Left Behind, the use of educational assessments has dramatically increased; as a result, school systems have access to more data than ever before (Stipek, 2006; U.S. Department of Education, 2009). If properly utilized, data-informed decision-making (DIDM) can monitor student performance, differentiate instruction, and measure effectiveness at the program, community, and state levels (Riley-Ayers, Frede, Barnett, & Breeneman, 2011). In early childhood programs, data can serve a critical role in supporting children's development of foundational skills and accurately determining children's readiness for formal schooling. Nevertheless, research demonstrates that DIDM is largely under-utilized and that the potential benefits to data-informed decision-making are largely unrecognized by both policymakers and early childhood educators (Gischlar, Hojnoski, & Missall, 2009; Zweig, Irwin, Kook, & Cox, 2015).

This may, in part, be due to lack of educator training and comfort in analyzing data. A recent U.S. Department of Education report revealed that nearly **50%** of school districts reported a need for further guidance in interpreting and using data to inform classroom- and administrative-level decisions (U.S. Department of Education, 2009). Driven by this concern, many states have responded by developing training opportunities to facilitate the effective implementation of DIDM. For example, the Ohio Department of Education (ODE) developed the Early Learning Assessment and created professional development opportunities on how to utilize these assessment data to inform practice (Marsh, Pane, & Hamilton, 2006; U.S. Department of Education, 2011). However, inconsistency across training content, duration, and format often prevent early childhood educators from becoming data proficient, which in turn, may prevent them from implementing effective interventions that will provide children with the foundational skills required for formal schooling. For this reason, better efforts are needed to provide early childhood educators with the resources they need to build their capacity for DIDM.

This white paper provides practical recommendations for both policymakers and early childhood educators on how to employ effective DIDM and illustrates how these recommendations were implemented in a high-quality early childhood education program.



## Defining Data-Informed Decision-Making (DIDM)

A persistent challenge to employing DIDM across early education settings is the lack of a consistent definition of either “data” or “data-informed decision-making.” While the U.S. Department of Education defines DIDM as “a process that integrates the analysis of educational data, typically stored in educational data systems, to support decisions intended to improve teaching and learning at the school and classroom levels,” this definition is by no means comprehensive of the many ways in which data can be used to guide instruction (U.S. Department of Education, 2009). Further, while educational data are commonly regarded as synonymous with the term “assessment,” data include multiple sources and types of information. In Ohio, data that are collected in early childhood programs range from demographic information and data on student and teacher behavior, to educator’s interviews and statements. It is also important to note that the same collected data may be used to support different program needs and goals. For example, outcome data may be used by state officials to monitor program effectiveness and support the revision and adoption of early learning standards (Spillane, 2012). Educators, on the other hand, may use the same outcome data to assess the progress and performance of individual children and to guide classroom curriculum (U.S. Department of Education, 2010). **Given the different needs of researchers, practitioners, and policymakers, it is important to consider the many types of data that could be collected and all possible uses for this data in order to use DIDM effectively.**

## Establishing a Data Culture

Establishing a strong data culture within early childhood education programs is critical to ensuring that data-informed decisions are made consistently, routinely, and effectively. One way to accomplish this is to establish a data team to serve as leaders in building a strong vision for the most effective use of data. This team should consist of key stakeholders such as directors, educators, and other support staff to include perspectives from all aspects of the program (Hamilton et al., 2009). To begin, this team should write a plan articulating how data will be used to support school- and classroom-wide goals, deadlines for meeting these goals, and how these goals align with the program’s long-term mission. This team is not responsible for holding staff accountable for data use, or supervising data-related activities, but instead, provides leadership to other team members by modeling effective DIDM.

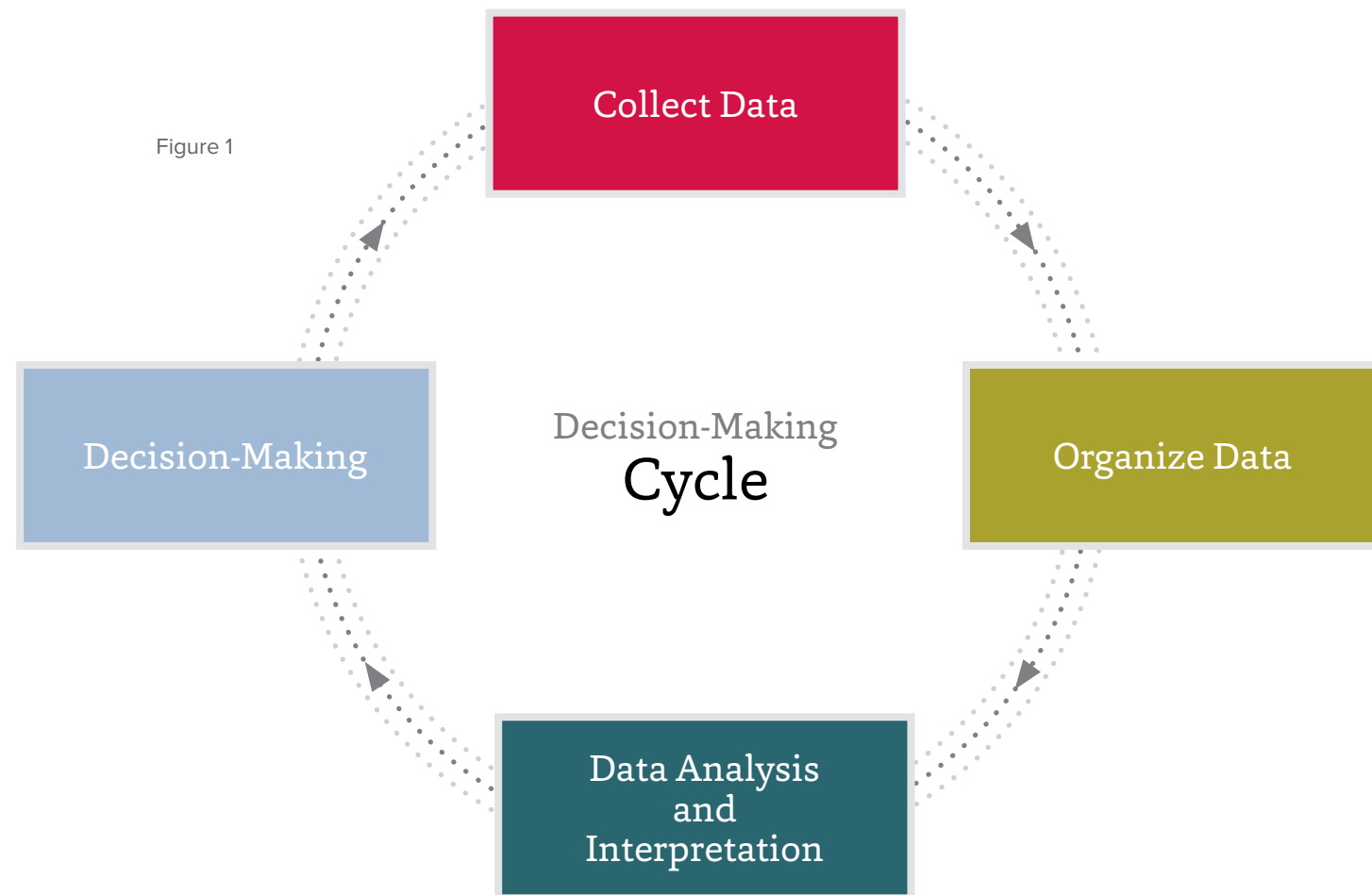
Policymakers can also support legislation to promote a strong data culture in early childhood education. For example, policymakers in Ohio have adopted a set of standards for early childhood educators as a guide to promote effective leadership and teaching practices within Ohio’s education system. Ohio Standards for the Teaching Profession and the Ohio Standards for Principals underscore the use of data to inform instructional plans and to guide the development of a vision and goals of a school. The emphasis on data proficiency by the Ohio Department of Education ensures that all early childhood educators in Ohio are held to the same standards and level of competency.

Researchers can work with practitioners and policymakers to implement training and professional development to provide early childhood educators with the skills they need to be successful in using data to inform education decisions. Formal courses facilitated by researchers on collecting data, administering assessments, and analyzing and interpreting data should be incorporated into professional development opportunities offered by the state and other agencies (U.S. Department of Education, 2009). **The Ohio Professional Registry currently offers professional development opportunities on topics such as, “Using Measures of Quality Data to Inform Practice” and “Using Formative Assessment with Children Birth through 36 months” (Ohio Child Care Resource & Referral Association, 2016).** Ohio’s Early Childhood Advisory Council, also recommends including professional development opportunities focused on analyzing and interpreting data to better support DIDM at the administrative and classroom levels.



# Data-Informed Decision-Making (DIDM) Cycle

For data use to effectively improve school and child outcomes, it must not be merely a yearly assessment of school readiness, but rather part of an ongoing process to measure quality and respond to student needs. Current and effective models of DIDM are iterative, engaging early childhood educators in data analysis, solution identification, implementation of data-based plans, and progress monitoring (Hamilton et al., 2009; Parker et al., 2005). **As Figure 1 shows, a cyclical approach is intended to promote continual re-evaluation and reflection, such that early childhood educators can reflect on their programming to child- or school-level outcomes, and make adjustments to programming based on accurate data.** The cycle outlined below illustrates this process within the School for Early Learning, a five-star early childhood program affiliated with The Ohio State University and located in Weinland Park, Columbus, Ohio. However, this framework may be applied across all levels of the education system, including state educational agencies, school districts, and other educational entities.



## Collecting Data

Data collection is a critical step in DIDM used to gather information that is then analyzed and interpreted in order to understand how to best meet educational needs. Collection efforts must center on guiding questions to determine which types of data are needed and ensure that data collection methods have a clear purpose (Gullo, 2013). Administrators and leadership in the School for Early Learning determined that they needed to collect a valid, comprehensive measure of student strengths and challenges. Along with other regularly collected data (e.g. observations, portfolios, checklists/ratings, scales), they identified the Brigance Inventory of Early Development III (Brigance-III) as an appropriate tool used to assess children's strengths and needs across broad skills including physical development, language development, literacy, mathematics, daily living, and social and emotional development. Through its partnership with the Crane Center for Early Childhood Research and Policy, the School for Early Learning offered training to teachers on administering the Brigance-III, including participating in a one-on-one mock assessment with a researcher-facilitator. In 2015, the School for Early Learning began administering the Brigance-III to children.



**... all stakeholders**, including early childhood educators, policymakers, and researchers should work in conjunction to ensure that early childhood programs are equipped with the resources and skills they need...

## Organizing Data

Under the provision of state education agencies, early childhood education programs should develop and maintain a high-quality integrated data-storage system in order to easily store and manipulate information needed for educational decisions (U.S. Department of Education, 2011). Ohio is one of 30 states that has created a longitudinal data system to securely link child-level early childhood education data with K-12 data systems, although this system can only link data for some and not all early childhood education programs in the state (Early Childhood Data Collaborative, 2014). Nonetheless, these data are still beneficial in tracking children's progress over time, improving program effectiveness, and helping policymakers address key early childhood education concerns throughout Ohio.

In addition to state-level data storage systems, local data storage systems are also encouraged because they give early childhood education programs the ability to store data in a central location where early childhood educators can more easily access information to fit specific needs. At the School for Early Learning, local data systems include both built and purchased hardware and software systems, such as ChildPlus and an additional storage system built by the Crane Center for Early Childhood Research and Policy with Microsoft Excel (Professional Head Start Management Software, 2016).

After conducting the Brigance-III in 2015, student research assistants entered individual Brigance-III child data into ChildPlus, which teachers could then access through a login and password. These assessment data was then linked with the child's other programmatic and educational records, including child enrollment, health, attendance, and other assessment data to make analyzing and interpreting the data more feasible.



## Data Analysis and Interpretation

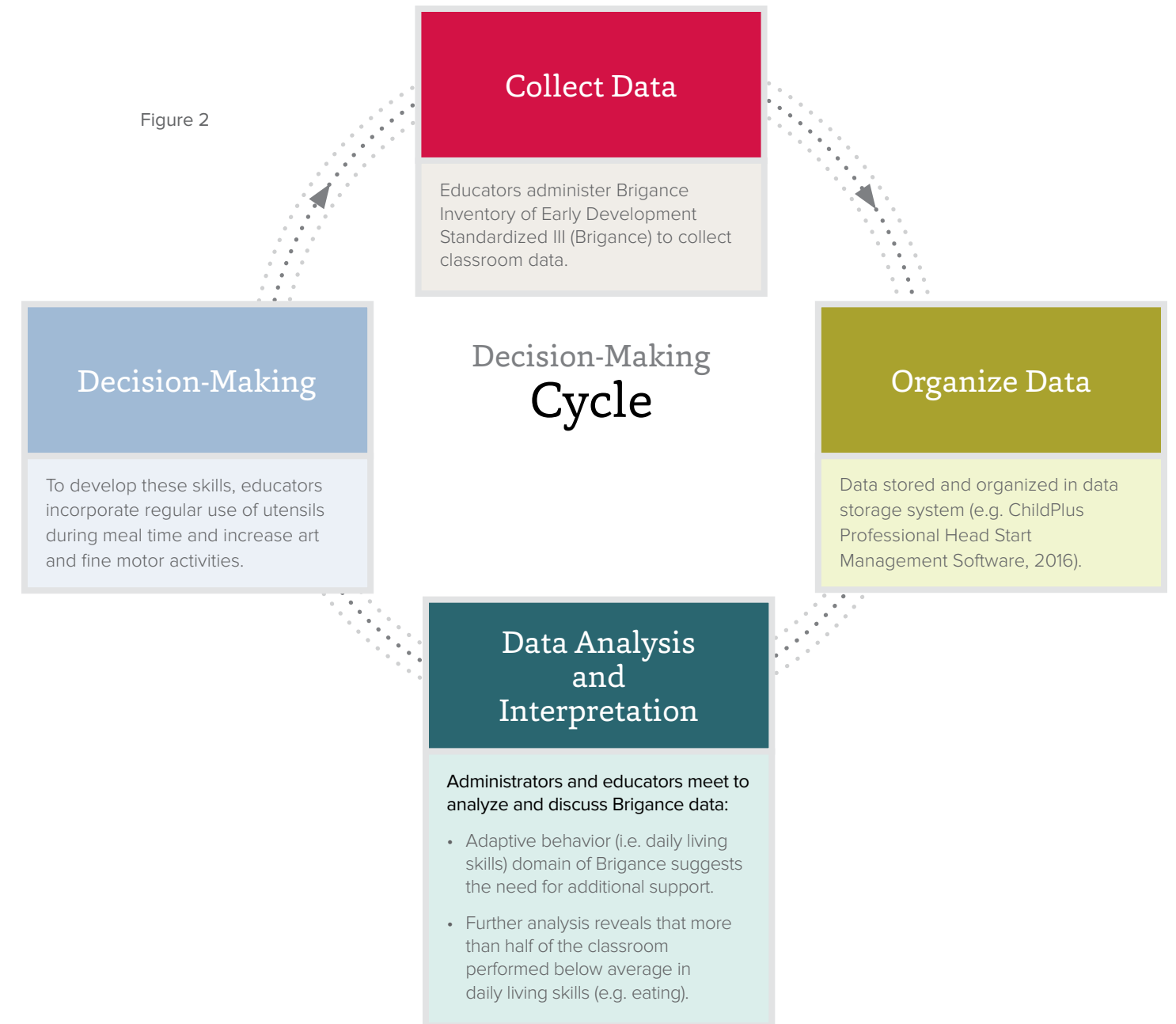
Upon collecting and organizing relevant data, early childhood educators and policymakers must analyze and interpret the data accurately in order to most effectively make decisions to improve school quality and promote school readiness. This analytic process involves the examination of patterns or themes that answer guiding questions. Often, this effort will include evaluation of disaggregated data by sub-groups (e.g., race, gender, early learning standard) to reduce the burden of analysis and more efficiently draw acceptable conclusions (Murray, 2014). At the School for Early Learning, after data were organized in ChildPlus, research staff developed a spreadsheet using Microsoft Excel that allowed educators to view assessment results by demographic variables like age, gender, race/ethnicity and identify patterns that corresponded to guiding questions or concerns for their classrooms.

Collaborative efforts are encouraged to support this analytic process. Teaming of early childhood educators is recommended in order to facilitate discussion aimed at individual and organizational improvement. This team within the school, may include, but not be limited to, families, educators, directors, and other support staff. Teams may exist outside the school, where policymakers may collaborate with early childhood educators in the adoption or revision of early learning standards or the creation of professional development opportunities. The research community may collaborate with early childhood education programs to evaluate current data skills and capacity, and to better implement local professional development opportunities. Exploring shared data opportunities among these teams may also allow early childhood educators and policymakers to develop their analytic skills and to more effectively brainstorm and produce strategies.

Administrators at the School for Early Learning have recently developed teams by child age (infant/toddlers, preschool) to facilitate data analysis and interpretation. Headed by respective educators, these teams are responsible for the analysis and interpretation of classroom level data. Moreover, weekly classroom meetings between school administrators and educators provide additional support for decisions related to child- or classroom- related goals. These collaborative efforts strengthen shared learning goals and expectations across classrooms and throughout the school.

As shown in Figure 2, when analyzing data collected from Brigance-III at the School for Early Learning, a data team comprised of administrators and educators determined that children's performance in daily living skills, such as eating properly with utensils, was below developmentally-appropriate levels.

Figure 2



## Decision-Making

After analyzing and interpreting the data, professionals must use these findings to inform their decision-making (see Figure 2). Once all possible explanations are discussed, early childhood educators and policymakers then decide on the best possible solution to address the area of concern. After administrators and educators at the School for Early Learning met to examine the data from Brigance-III, they determined multiple strategies to improve daily living skills within the classroom. They decided to incorporate regular usage of utensils into meal time and provide additional opportunities for children to engage in art and fine motor activities that support these skills.

For other early childhood education programs, strategies might also include modifying curriculum or even implementing evidence-based interventions. It is crucial that the effectiveness of the implemented solution be continuously assessed to determine whether the action should be modified or if an alternative solution should be employed (University of Massachusetts Dartmouth, 2016). Educators at the School for Early Learning are currently monitoring growth in this area in the classroom, and will administer the Brigance-III again this year to measure overall growth.



# Conclusion

In recent years, assessment and data collection have been increasingly emphasized in early childhood education to improve school quality and promote children's school readiness. Although data-informed decision-making continues to be adopted in early childhood education programs, policies may be implemented at the state and program level to support a data culture that will better meet children's needs. Policymakers should continue refining professional development opportunities and legislation that will expand on early childhood educators' capacity and skills to implement data-informed decision-making. Overall, all stakeholders, including early childhood educators, policymakers, and researchers should coordinate efforts to ensure that early childhood programs are equipped with the resources and skills they need to make decisions based on accurate information that will better prepare students for formal schooling.

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# Author Note

The activities of the Crane Center for Early Childhood Research and Policy are supported in part by a generous gift of the Crane family to The Ohio State University. We would like to thank the research team and the many administrators, teachers, and families without whom this study would not have been possible. Correspondence about this work may be sent to: Lucki M. Ratsavong, Email: [ratsavong.4@osu.edu](mailto:ratsavong.4@osu.edu)

## The Crane Center for Early Childhood Research and Policy (CCEC)

The Crane Center for Early Childhood Research and Policy (CCEC), in the College of Education and Human Ecology, is a multidisciplinary research center dedicated to conducting high-quality research that improves children's learning and development at home, in school, and in the community. Our vision is to be a driving force in the intersection of research, policy and practice, as they relate to children's well-being.

The CCEC white paper series provides original research and thinking to practitioners and policymakers on matters of pressing concern. The recommended citation for this paper is:

Ratsavong, L., Myrtil, M., Gugiu, M., & Schachter, R. (Winter 2016). *Bridging the Gap between Data and Instruction to Promote School Readiness*. Columbus, OH: Crane Center for Early Childhood Research and Policy, The Ohio State University.