

First School

UNITING THE BEST OF EARLY CHILDHOOD,
ELEMENTARY, AND SPECIAL EDUCATION

Number Four

Issues in PreK–3rd Education



Using Developmental Science to Transform Children's Early School Experiences

Kelly Maxwell, Sharon Ritchie, Sue Bredekamp, and Tracy Zimmerman

Developmental psychology and education have grown apart. Too often, advances in developmental science are unrelated to educational programs for young children, and early childhood educational practices tend to either ignore scientific findings or reflect outdated theories and research.

The rift is even wider as we move up to elementary school. Few elementary teacher preparation programs include any significant coursework on child development. Despite the fact that research has repeatedly shown the impact of children’s development on how they learn, programs typically focus on subject matter (e.g., math, science, and literacy) or instructional strategies (e.g., how to create an effective lesson plan).

FirstSchool

FirstSchool is a pre-K–grade 3 initiative led by FPG and the UNC-CH School of Education to promote public school efforts to become more responsive to the needs of an increasingly younger, more diverse population. FirstSchool unites the best of early childhood, elementary, and special education.

www.firstschool.us

FirstSchool is part of a national PreK–3rd movement of schools, districts, educators and universities seeking to improve how children from ages 3 to 8 learn and develop in schools. While these different projects use a variety of names, all are working to connect high-quality PreK programs with high-quality elementary schools. For more resources on this movement, please visit the Foundation for Child Development’s website.

www.fcd-us.org

Who is FPG?

For more than 40 years, FPG Child Development Institute (FPG) research and outreach has shaped how the nation cares for and educates young children. We are one of the nation’s oldest and largest multidisciplinary centers dedicated to the study of children and families.

www.fpg.unc.edu

Who is the UNC-CH SOE?

The School of Education was established at the University of North Carolina at Chapel Hill in 1885 and is organized under four academic areas: teaching and learning; educational leadership; human development and psychological studies; and culture, curriculum and change.

www.soe.unc.edu

Development and Learning

Four foundations for young children’s development appear to underlie children’s competence and predict success in school from pre-kindergarten through third grade—self-regulation, representation, memory, and attachment.

Self-regulation: Self-regulation is the ability to regulate or adapt one’s behavior, emotions, and thinking according to the demands of the situation. It is the ability to stop or start doing something even if one does not want to do so. For example, a child who stops talking to his neighbor when the teacher starts reading the book is self-regulating.

Representational Thought: Representation is using one thing to stand for another. For example, the word chair represents an object with four legs to sit on. The letters of the alphabet visually represent the sounds of spoken language. Young children use gestures or speech in pretend play to represent an object, such as when a child strums an “air guitar.”

Memory: Memory and learning interact through consolidation and reconsolidation. Consolidation is the process of storing new information while it is transferred into long-term memory. It is important because when learning is “new,” it is vulnerable to forgetting. Reconsolidation is the process of revisiting what has been learned previously through additional learning or experience. It offers the opportunity to connect or integrate new learning with prior knowledge.

Attachment: From birth, children's development is influenced by the care that they receive from adults. If important adults are responsive, consistent, and sensitive to their needs, children develop secure attachment relationships that allow them to comfortably explore and learn about the world. Secure attachment relationships also help children learn self-regulation and social skills.

When, how, and to what extent children develop these abilities varies by individual. Children's experiences in their homes and communities influence individual differences in their development and learning. Therefore, early childhood programs and schools need to focus as much or more on developing these fundamentals as they do on basic skills. Developmental processes including self-regulation, representation, memory, and attachment are the real basics of education.

How Would School Be Different?

If we united what we know about child development with quality educational practices, what would school be like for young children in pre-kindergarten through third grade? Seven major differences are highlighted below. Please note that generalizations are used to paint a broad picture of today's classroom. We recognize that in reality practices vary widely.

1. Development, Content, and Process

Preschool teachers generally have a good understanding of development but are less confident of academic content, while elementary teachers generally have a good understanding of content but not development. Neither group has had access to educational experiences that help them understand that the foundational processes of learning, such as memory and

problem solving, are something that can be explicitly taught.

What would be different if we applied developmental science? Teachers would have a solid understanding of child development from ages 3 to 8, the content of the curriculum in all areas, and the process of learning. This understanding would translate into an integrated approach to instruction and classroom practice. The foundational processes of learning, such as memory and problem solving, would be explicitly addressed in the curriculum.

2. Play (Self-Regulation)

High level socio-dramatic play promotes self-regulation and language competence. Although play is valued by early childhood professionals, there is still insufficient understanding of the benefits of different kinds of play, the critical role of teachers in ensuring that play is beneficial, and the ways that play continues to enhance children's learning as they get older.

Pretend play in small groups is particularly effective in promoting self-regulation because it requires children to regulate their own behavior, be regulated by others, and help regulate others all within the same context. For example, a group of children may play grocery store. Each child whether customer, cashier, or store manager must conform to the rules of their role as well as stick to the script. The customer can't say, "Paper or plastic?" That's the role of the cashier. For the play grocery store to function effectively, each child must engage in high-level self-regulation.

Assuming a pretend role—being another person for awhile—helps children move between their own perspective and the perspective of another. This ability is essential for success in school where children must negotiate their perspectives with those of teachers and peers. This ability is also necessary for the development of reflective thinking.

What would be different if we applied developmental science? Play would be a regular, intentionally planned, teacher-guided activity. As children become older, play becomes more representational and rule-governed. Whereas younger children may create their own dramas in the play area, older children might act out a play or dramatize a story they have read. By understanding the development of children’s play and the role of play in learning, teachers can effectively use play as an instructional tool.

3. Understanding Misconceptions (Representational Thought)

Teachers tend to focus on the right answers, often correcting children without providing an explanation. Yet for children to understand a concept, they need to know more than the correct answer—they need to be able to apply it.

Tapping into representational thought can reveal how much a child actually understands. An example from the *Hundred Languages of Children*¹ demonstrates this approach. After many days of rain, teachers asked children, “Where do you think rain comes from?” Children expressed several theories,

among them: “It comes from God.” “It comes from the devil.” One five-and-a-half year old explained, “The sun heats the rain that has fallen and that’s how it goes away afterwards, it goes back into the clouds and then it starts to rain again.” From her explanation, it seems that she has a good understanding of the rain cycle.

Yet when the teacher had the children draw pictures of where the rain comes from, her detailed drawing included pipes or tubes going up from the ground to the sky to convey the water. By engaging children in graphic representation of their theories, the teacher got a much clearer picture of the child’s misconceptions despite her seemingly accurate verbal representation.

What would be different if we applied developmental science? Teachers would spend considerable time asking children questions in order to understand where misconceptions occur. Effective teachers understand children’s naïve or partial thinking so that they can provide the experiences and explanations that specifically address their misconceptions.

4. Covering The Real Basics (Memory)

Teachers want and expect children to remember many things throughout the school day, but very few intentionally teach children how to be good at remembering or purposefully set up an instructional activity to maximize children’s ability to consolidate and reconsolidate.

What would be different if we applied developmental science? Teachers would use specific, deliberate strategies to improve children’s memory. These could be simple strategies such as asking children to talk about what they remember or more complex strategies in which children reflect on their own memory processes. They would structure activities and questions specifically to help children remember key aspects. Teachers also would help children make connections among concepts to help with the reconsolidation of information—increasing the likelihood that children would remember the correct information and that their understanding of the concept would be deepened each time it was addressed in class.

5. Relationships (Attachment)

Although most teachers acknowledge the importance of the social context of the classroom, their efforts in this area are too often limited to behavior management rather than developing positive relationships with and among the children. If relationships and feelings are addressed, they are often covered in social skills lessons taught in isolation (e.g., counselor comes to the class once a week to read a book and talk about being a good friend).

What would be different if we applied developmental science? Social development would not simply be scheduled into the day or ignored outright, but would be addressed throughout the day as opportunities emerged for conflict resolution and expressions of feeling. Teachers would work to develop positive relationships with

each child, creating many opportunities for extended conversations and interactions between herself and the children—and among the children themselves. Teachers would be willing and able to explore more effective ways to interact with challenging children. Difficult behavior would be viewed as a child’s way of communicating problems, rather than as misbehavior or an opportunity for discipline.

6. Experimentation, Explanation, and Explicit Instruction

Many preschool teachers have been taught that children construct knowledge from their own experiences. They often implement this concept by acting as facilitators of children’s learning as they explore the classroom environment and materials. Teachers may facilitate children’s thinking by asking basic questions but rarely probe fully enough to promote a deep understanding of concepts. There is little explicit instruction, except for letter names, counting, and days of the week.

By contrast, elementary school teachers engage regularly in explicit instruction and provide little time for exploration. When experiments are conducted, children are often expected to understand the concepts from their own trial and error.

What would be different if we applied developmental science? Preschool and elementary school teachers would be intentional about when best to provide explicit instruction and when to promote experimentation or independent exploration. Experimentation would

include appropriate teacher or peer support. Teachers would provide explanations and be purposeful as to when and how they do so. Explicit instruction would be one of a range of tools teachers use to foster children's knowledge. It would not be seen as the "be all and end all" or as the "never ever to do" but rather as an efficient way to ensure that children master certain concepts.

7. Deciding What to Teach

Some skills are harder to master than others. In developing literacy skills, for example, learning to recognize letters is much easier than building vocabulary. Children must learn thousands of new words per year to acquire the vocabulary necessary for later reading comprehension and learning across subject matter. Yet teachers of young children often spend considerable time on letter recognition and much less time intentionally teaching new vocabulary words. In elementary school, teachers emphasize various science facts (e.g., frogs are amphibians) with minimal attention to the overall scientific method (e.g., hypothesis testing).

What would be different if we applied developmental science? Teachers would spend more time on the skills of a

specific subject that are harder to acquire. Furthermore, teachers and researchers would work together to determine the more challenging aspects of each curriculum area and use the information as guides for use of instructional time in classrooms for children across the 3 to 8 age span.

Conclusion

Infusing knowledge about child development into the education system for young children would transform early schooling and help all children achieve and succeed. A developmental approach to early education is not prescriptive, nor is it one size fits all. Given the pressures of No Child Left Behind and the limited existing knowledge of child development within much of the school system, moving toward such an approach will require a long-term commitment and deliberate steps. For veteran teachers, this means including child development knowledge in professional development and supporting their work with other education and related disciplines (e.g., health professionals, special education) to develop a holistic approach to children's learning. For institutions preparing future teachers, this means providing coursework and experiences that lead to a deep understanding of children's developmental and learning processes in early childhood and elementary education—and supporting a repertoire of effective strategies for applying this important knowledge across pre-k through third grade.

Notes

Adapted from a chapter, "Rethinking early schooling: Using developmental science to transform children's early school experiences" written by Sharon Ritchie, Kelly Maxwell, and Sue Bredekamp to be published in *The handbook of developmental science and early schooling: Translating basic research into practice* (O. Barbarin & P. Frome, Eds.)

¹Landry, C. E., & Forman, G. (1999). Research on early science education. In C. Seefeldt (Ed.), *The early childhood curriculum: Current findings in theory and practice* (pp. 133-158). New York: Teachers College Press.

© 2009 by Kelly Maxwell, Sharon Ritchie, Sue Bredekamp, & Tracy Zimmerman | Design & Layout: Gina Harrison, FPG Publications Office

The *Issues in PreK-3rd Education* series is supported by the Foundation for Child Development. FirstSchool is also supported by the W. K. Kellogg Foundation, The University of North Carolina at Chapel Hill, and private donors. The views expressed in this paper may not represent the views of the funders. We would like to thank all of the people who participated in the FirstSchool planning process. From the beginning, we have worked in collaboration with many individuals and have benefited from their experience and expertise. The thinking represented in this series was shaped by their multiple contributions.

Suggested citation: Maxwell, K. L., Ritchie, S., Bredekamp, S., & Zimmerman, T. (2009). *Issues in PreK-3rd education: Using developmental science to transform children's early school experiences (#4)*. Chapel Hill: The University of North Carolina, FPG Child Development Institute, FirstSchool.