Designing Effective Early Education Programs that Meet the Learning Needs of All Children: Application of Multi-Tiered and Universal Design Teaching Strategies

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The Challenge Facing Early Educators Today
Early education centers and classrooms have become increasingly diverse in terms of the children and families receiving care and education. Children from diverse backgrounds—ethnically, linguistically, and economically—and children with differing abilities are common participants in early childhood classrooms throughout the country. While diversity brings additional richness to early education programs, and better reflects the society in which we live, effectively meeting the individual learning needs of all children presents unique challenges to all early educators.

Designing early education programs that enable all children to access, engage in, and learn from all activities and lessons is the focus of this booklet. It is written from our Center’s research and experience working with early educators as they effectively design activities to fully include children who differ in their development and learning abilities. It is also written from our Center’s recent efforts to weave together two complimentary models for designing early education programs: implementation of a multi-tiered service delivery approach, and application of universal design principles. The implementation of a multi-tiered service model emphasizes the importance of designing sound early education programs for all children, but it recognizes that some children at some times will need individual accommodations and/or more intensive, individualized services. The tiers of additional services and supports needed to enable all children to learn typify this model. The application of universal design principles emphasizes the importance of advanced planning and designing activities that work for all (or most) children right from the start—planning activities that are universally sound and effective. As such, universally designed early education practices guide the design of the first tier in a multi-tiered model.

This chapter will define and illustrate the use of universal design principles and the application of a multi-tiered service model for planning early education programs that strive to meet the individual learning needs of all children. It will introduce readers to current research on emerging or evidence-based practices that illustrate these two models in action. This chapter will also introduce readers to specific practices that embody these models and are presented in greater detail in later chapters in this booklet.

Multiple Tiered Service Delivery Models.
Multiple tiered service delivery models offer early educators a comprehensive framework for designing programs that address the needs of all children. These models have been advocated for several years in the education of older children, and appear in the literature
under various names, including planning pyramids or pyramids of intervention; differentiated instruction; and more recently, in Response to Intervention (RTI) models for effectively serving children traditionally referred to and served in special education programs. Multi-tiered service models posit that educational programs need to make available multiple levels of intervention and support in order to ensure that all children can learn from a common curriculum in the general education setting. Planning pyramids put forth the need for three levels—general instruction, differentiated instruction, and specialized intervention. All children begin at the first level, receiving sound, evidence-based, universally designed (discussed below), general instruction from the classroom teacher. Through ongoing evaluation of children’s learning, if children are not learning or keeping up with their peers, then increasing levels of intervention are applied—the educator moves up the pyramid and applies more individualized and specialized interventions and supports that are sufficient for supporting children’s learning. These additional levels of support and intervention are added and integrated into the first level. Children are not removed from the general education setting, nor is the general educator asked to change his/her general instructional strategies.

Sandall, Schwartz, and their colleagues (Sandall, Schwartz, Joseph, Chou, Horn, & Lieber, 2002) provide a more recent translation of this model to early education—the Building Blocks Model. The Building Blocks model (Figure 1) includes four blocks or levels of intervention. It begins with the first block, a foundation of high quality, developmentally sound, evidence-based, universally designed early education practices for all children. It is the authors’ contention that the needs of many, if not most, children can be met when general early education programs are of high quality. As the foundation, sound early education enables the addition of supports, modifications and intense interventions when needed without fundamentally changing the basic block.

From this first building block, Sandall and her colleagues add three additional blocks representing increased levels of modifications and supports to meet the needs of all children in the general early education program. The second level, Curriculum Modifications and Adaptations, provides the early educator with strategies to make simple modifications or adaptations to their teaching. For example, providing additional information or cues to help children better understand the guidance given, allowing
children more time to complete an activity or task, or adjusting the difficulty of the task to help children who may be struggling to understand or complete the work. These simple modifications or adaptations do not represent intensive or intrusive changes to the general curriculum, but do provide simple and easy strategies for helping individual learners to learn and participate.

The third Building Block is a collection of evidence-based teaching strategies from the field of early childhood special education—Embedded Learning Opportunities. When children are not learning the curriculum as a result of high quality early education and the addition of curriculum modifications and adaptations, the early educator may determine that the child needs additional opportunities for learning. Embedded Learning Opportunities represent a class of teaching strategies “in which children’s individual goals and objectives are included within an activity or event in a manner that expands, modifies, or adapts the activity/event while remaining meaningful and interesting to children” (Bricker, Pretti-Frontczak, & McComas, 1998, p. 13). That is, teachers find other times during the day to embed teachable moments—teaching times to help the child gain the knowledge or skills s/he is struggling to learn. Embedded learning, alternative teaching opportunities, and incidental teaching are all strategies that fit in this third building block. They require the early educator to examine their schedule of activities to find other natural times during the day to embed additional teaching times for the individual child to give them the additional practice they need. Incidental instruction occurs when teachers recognize opportunities as they arise to teach the child. For example, if a child is struggling to count objects up to 10, the teacher would take advantage of times that naturally arise during all classroom routines, such as counting out cups at snack time, counting the number of paintbrushes in the art area, or counting out the number of children who are at a learning center.

The fourth and last block in the Building Blocks model, Child–Focused Instructional Strategies, involves more individually directed and intense teaching strategies. These teaching strategies borrow heavily from the field of special education, and have been effective in teaching new knowledge and skills to children with more significant learning challenges. Strategies include the use of task analysis for breaking complex skills into small learning steps; the use of repeated trials and practice such as instructional drills; and shaping strategies, where children are reinforced for learning each new step or part of the more complex skill. Many of these teaching strategies may be less familiar to general early educators, and may conflict with some early education philosophies. They are strategies that are effective in bringing about learning and change; but should be used sparingly and when a teacher’s evaluation of a child’s progress indicates that the previous 3 levels have not been successful.

**Universal Design of Early Education**

For many years, efforts to include children who presented learning challenges have generally relied on making changes, adaptations, and/or accommodations to the center or classroom in order to integrate the individual child (second level in the Building Blocks model). Or, if these efforts were not successful, finding additional times and places during the day for individual instruction and practice to occur to make up for previous activities
that were less individually suitable (third level in the Building Blocks model). This approach was generally supplementary in nature—changes were “added” to the regular activity to accommodate the individual child. A universal design framework suggests that activities be designed employing strategies that enable as many children as possible to participate and learn without making corrections or additions to the final lesson plan. This compliments the thinking of Sandall and her colleagues (Sandall, et.al. 2002) in beginning with high quality programs as the foundation.

This principle of Universal Design was first introduced in the field of architecture at the Center for Universal Design at North Carolina State University. There, the architects of this framework state, “The intent of universal design is to simplify life for everyone by making products, communications, and the built environment more usable by as many people as possible at little or no extra cost.” Examples of universal design exist in public spaces because of architectural requirements put forth by the Americans with Disabilities Act, which require public spaces to be accessible. Initially, this law resulted in buildings needing to be retrofitted—changed after the fact—to accommodate individuals with physical disabilities. This included curb cuts to existing sidewalks, doors widened, and elevators or long walkways added to the outside of buildings. Over time, new public spaces were designed and built with greater access right from the start. For example, curbs are eliminated in front of many stores to allow everyone to access the building in the same way.

From an educational perspective, the universal design of learning “suggests that instead of creating a curriculum and then adapting it to meet the needs of individual children in the program, it is better to start off with an instructional design which provides learners with a variety of ways to access and process information and demonstrate what they have learned” (Blagojevic, Twomey, &Lapas, 2002). This approach reframes the challenge facing early educators. It moves us from taking the approach currently practiced, where we make changes to an existing program to meet the needs of a child with unique learning challenges. Rather, the challenge is designing the program to meet the needs of all (or most) children who enter. The emphasis is less on the specific child, and more on creating programs that are flexible, responsive, and responsible.

From this perspective, we think in terms of how we can create a common early education environment—physical, social, and learning—so that most children can access, interact with, and learn in that environment right from the beginning, anticipating and minimizing the needs for patching it with modifications and adaptations after the fact. In an article we wrote (Conn-Powers et al. 2006), we stated that we should be designing early education environments “so that all children, as equal and valued members of the program, may access and engage in all learning opportunities, learn from a common curriculum according to their individual strengths and abilities, and demonstrate their learning in multiple ways.”

This reframing moves from making individual accommodations and modifications that focus on making the physical, social and learning environment work for the individual child, to one of designing a program from a universal design + perspective that works from the start.
Universal Design Principles in Action
Several authors have put forth a number of specific principles and strategies for applying a universal design framework to education. The work of the Center for Applied Special Technology (CAST) has done considerable work, particularly in applying these principles to the education of older students and the use of technology. They put forth a Universal Design for Learning framework that translates universal design principles for curriculum and instruction (Meyer and Rose, 2002). Their website states that the Universal Design for Learning calls for:

- **Multiple means of representation**, to give learners various ways of acquiring information and knowledge,
- **Multiple means of expression**, to provide learners alternatives for demonstrating what they know, and
- **Multiple means of engagement**, to tap into learners’ interests, offer appropriate challenges, and increase motivation.

A recent position statement from the Division for Early Childhood has provided additional clarification and support of these three principles. As stated in their position statement (DEC, 2007), “When multiple means of representation are provided, the presentation of the instruction, the interactions between adults and children, the materials and toys, and the environment are all designed to offer different and various opportunities that allow children to participate most effectively.” In regards to multiple means of engagement, the authors state, “Since children’s interests and abilities vary, the curriculum framework should provide flexible options that appeal to children with different abilities, developmental levels, preferences, and cultural backgrounds.” Finally, multiple means of expression recognizes that “A flexible curriculum framework encourages all children to communicate and show what they know and are able to do using any method they can or prefer.” This position statement provides helpful examples that expand on the examples provided below.

Mason, Orkwis, and Scott (2005) took each of the seven architectural principles put forth by the Center for Universal Design and illustrated their education application. Chief among these principles are:

- **Equitable Curriculum**—instruction uses a single curriculum that is accessible to students with widely diverse abilities; curriculum does not unnecessarily segregate students.
- **Success-oriented curriculum**—The teacher encourages engagement with curriculum by eliminating unnecessary barriers to engagement.
- **Appropriate environment for learning**—Classroom environment and the organization of curricular materials allow for variations in physical and cognitive access by students.
Our work (Conn-Powers et al, 2006) applied these principles to early education settings. In our article, we stated that:

1. The physical, social, and learning environment should enable all children to have access and equitable opportunities for full participation and membership in all activities.
2. The teaching environment provides multiple avenues for children to receive information, for engaging in activities, and for demonstrating what they know.

Darragh (2007) built on these principles and emphasized the importance of access and equity. She added two additional principles of importance:

1. Multiple means of access to high quality early childhood care and education
2. Experiences that support accountability for equity and success are necessary in the field.

These additional principles focus on the larger context of providing sound inclusive care and early education for all children; and to do it in ways that promote success and accountability for all children.

So what do these principles look like in action? The two tables below provide information to enable the early educator to understand key principles and actions. Table 1 lists the key principles and provides questions early educators can ask themselves in comparing traditional and universal design practices.

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<thead>
<tr>
<th>Principle</th>
<th>Do you… (Traditional)</th>
<th>Or do you… (Universal Design)</th>
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<tbody>
<tr>
<td>1. Equitable curriculum</td>
<td>Group children by ability level and use different curricula, activities, and teaching times to meet the diverse array of individual needs in your program?</td>
<td>Use a single curriculum and common teaching activities to keep all children together and not segregate or stigmatize any child because of individual differences?</td>
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<td>2. Accessible environments</td>
<td>Design your program environment with an “average” or typical child in mind, using materials, furniture, and equipment that children at that age are typically able to use?</td>
<td>Design your environment thinking about all of the types of children who might come into your program, including children with physical or sensory disabilities, or children from different cultures and linguistic backgrounds?</td>
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<td>3. Multiple means of representation</td>
<td>Present information or directions in one way, usually verbally, and using language that is typically understandable to children at that age your program serves?</td>
<td>Present information using multiple formats—verbally, and visually, and perhaps tactualy; giving the same information more than once, using words that reflect multiple native languages or different developmental levels?</td>
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<td>4. Multiple means of engagement</td>
<td>Design activities that provide a single way for children to interact or engage?</td>
<td>Design activities that offer multiple ways children can engage that tap their interests and offer appropriate challenges?</td>
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<td>5. Multiple means of expression</td>
<td>Design activities that allow only one way for children to demonstrate their learning and success?</td>
<td>Design activities that provide children with alternatives for demonstrating what they know?</td>
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<td>6. Success-oriented curriculum</td>
<td>Provide the same type and level of instruction and support to all children, recognizing that some children may not succeed at times?</td>
<td>Look for possible barriers to learning and engagement, eliminate them, and provide ongoing assistance and scaffolding to enable all children to succeed?</td>
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Table 2 provides more specific questions for early educators to ask in assessing how well their program is universally designed. It also offers example of early education practices that illustrate universal design principles in action.

Table 2

<table>
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<tr>
<th>1. Equitable curriculum</th>
<th>Questions for Early Educators</th>
<th>Early Education Examples</th>
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<tbody>
<tr>
<td></td>
<td>a. Do you use a single common curriculum/program that engages and benefits all students?</td>
<td>• The early educator employs the Creative Curriculum for all children in her classroom, finding ways to ensure all children learn.</td>
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<td></td>
<td>b. Can children with a wide range of abilities access your program and curriculum?</td>
<td>• The three learning centers (art, science, and manipulatives) include and engage all children, and no child is segregated or stigmatized.</td>
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<td>c. Does your program segregate or stigmatize any child because of differences in abilities, language, or cultural background?</td>
<td>• For the three children who have not been exposed to the same social rules and structure used in the classroom, the teacher provides the clear guidance and support to help them learn the new rules and expectations.</td>
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<td></td>
<td>• The early educator employs the Creative Curriculum for all children in her classroom, finding ways to ensure all children learn.</td>
<td>• A child with a disability and a child who is an English language learner are fully included at circle time and given the opportunity to develop equitable relationships with the other children and adults.</td>
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<th>2. Accessible environments</th>
<th>Questions for Early Educators</th>
<th>Early Education Examples</th>
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<tbody>
<tr>
<td></td>
<td>a. Does the physical design of your classroom provide all children easy access to spaces and materials?</td>
<td>• The furniture and layout of the room allow all children easy access to all areas, including children who get around by crawling, toddling, and/or the use of walkers or wheelchairs.</td>
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<td></td>
<td>b. Are all children able to access and fully participate in all social activities in the classroom? Are all children full and equal members of the program?</td>
<td>• Materials in the art area are stored on shelves and in containers that are within comfortable reach for any seated or standing child, including children who may have motor difficulties in reaching for these materials.</td>
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<td></td>
<td>c. Are learning activities designed to ensure all children have cognitive access to the instruction and materials?</td>
<td>• During story time, the teacher reads the book, repeating passages using simpler language or words aid in everybody’s understanding.</td>
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<td>d. Is all teaching and instruction simple and intuitive, where the complexity of what is taught is adjustable to children at different language/learning levels?</td>
<td>• During story time, the teacher reads the book, highlights pictures that illustrate what is being said, and uses real objects for children who need to touch things to assist in their learning.</td>
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<th>3. Multiple means of representation</th>
<th>Questions for Early Educators</th>
<th>Early Education Examples</th>
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<tbody>
<tr>
<td>a. Is the information presented to children in different ways and using different modalities (verbally, visually, tactiley)?</td>
<td>• During story time, the teacher reads the book, responds to questions, and provides examples.</td>
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<tr>
<td>b. Do children have multiple ways for acquiring information and knowledge?</td>
<td>• During transition times, the teacher pairs her verbal directions with a sign that with words and pictures of each step the children are to complete.</td>
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<td>c. Is the information and curriculum presented flexibly to accommodate a range of developmental levels and child preferences?</td>
<td>• During learning centers, children have the opportunity to listen to the teacher, look over the book or materials themselves, or work with peers in order to access the information in multiple ways.</td>
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Principle | Questions for Early Educators | Early Education Examples
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4. Multiple means of engagement | a. Do children have multiple ways for interacting/playing with the materials?  
b. Are the activities designed to tap into the broad array of individual interests?  
c. Are the activities designed to provide a range of appropriate challenges for all children?  | • During learning centers that focus on early number skills, children can go to a center in which they count objects to put in different size containers, count items they color on a worksheet and trace the number, or build block structures and count the number of blocks they need (or the number of yellow, blue, or red blocks).  
• During art time, children have the opportunity to learn their colors by painting (messy), cutting and pasting (with others), or coloring (quiet, individual).  
• During large group time, the teacher is working on time concepts (before, after, today, yesterday, tomorrow), with some children expected to use these words in complete sentences, some expected to answer simple questions using these words, and some children describing what just happened or will happen next.

5. Multiple means of expression | a. Do children have multiple ways for completing the activity/work?  
b. Are children provided alternative ways for expressing or demonstrating what they know and have learned?  | • During the large group time with the teacher working on time concepts, some children are expected to use complete sentences, some children will use phrases, some may sign, and some may only need to point to the correct picture  
• During the art activity, some children may spend a long period of time and complete an elaborate painting with multiple colors, some children may cut and paste simple shapes using a few colors of construction paper, and some children who lack fine motor skills may direct another child to paste cut-out shapes into a picture.

6. Success-oriented curriculum | a. Does the teacher review each activity beforehand to eliminate unnecessary barriers to children’s engagement?  
b. Does the curriculum employ evidence-based teaching practices?  
c. Does the teacher encourage engagement among all students, providing individualized support and scaffolding when needed?  
d. Does the teacher carry out ongoing assessment of children’s learning, making immediate changes to the curriculum and instruction when necessary?  | • During large group time while working on the time concepts, the teacher observes the amount of time she is spending and the quality of the children’s attention to note when she should shift to a more active activity.  
• During art time, the teacher encourages the children to try one more color or add one more shape to their artwork.  
• During learning centers, the teacher provides a model by counting out the objects and saying the correct number, and supports the child who is struggling to try it.  
• Before story time, the teacher collects real objects for children with minimal language skills to see and touch.

The application of universal design principles, much like developmentally appropriate and evidence-based practices, guide early educators to design high quality, effective programs.
for all children. This is the first level or building block in a comprehensive program that provides an array of modifications and supports to ensure all children are full members in all early education settings.
Bibliography


