Evidence-Informed Professional Development for Improving Early Childhood Intervention Practices

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Purpose of Breakout Session

• Summarize the results from research syntheses of adult learning and in-service professional development studies for improving learner outcomes

• Describe the implications of the results for promoting the use of evidence-informed professional development for improving early childhood intervention practices
Major Sources of Research Evidence

- Meta-analysis of four types of adult learning studies to identify which practice characteristics were associated with the largest effect sizes with the study outcomes

- Meta-analysis of studies investigating the effects of inservice professional development on parents’ and practitioners’ use of assistive technology with young children with disabilities

- Meta-synthesis of 15 research reviews of the influence of inservice professional development on educator and student outcomes


Characteristics Used to Code and Evaluate the Adult Learning Methods

Planning

**Introduce**  Engage the learner in a preview of the material, knowledge, or practice that is the focus of instruction or training

**Illustrate**  Demonstrate or illustrate the use or applicability of the material, knowledge, or practice for the learner

Learner Application

**Practice**  Engage the learner in the use of the material, knowledge, or practice

**Evaluate**  Engage the learner in the process of evaluating the consequence or outcome of the use of the material, knowledge, or practice

Deep Understanding

**Reflection**  Engage the learner in self-assessment of his or her knowledge and skills as a basis for identifying “next steps” in the learning process

**Mastery**  Engage the learner in a process of assessing his or her experience in the context of some conceptual or practical model or framework, or some external set of performance standards or criteria

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Research Synthesis of Adult Learning Studies

• Research synthesis of studies of accelerated learning, coaching, guided design, and just-in-time-training

• 58 randomized control design studies

• 2,095 experimental group participants and 2,213 control or comparison group participants

• Combination of studies in university and nonuniversity settings

• Study outcomes included learner knowledge, skills, attitudes, and self-efficacy beliefs

• The influences of the adult learning methods on the learner outcomes were determined by weighted Cohen’s $d$ effect sizes for the differences on the post test scores for the intervention vs. nonintervention group participants
# Most Effective Adult Learning Method Practices

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Practice</th>
<th>Mean Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Out of class activities/self-instruction</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>Classroom/workshop presentations</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>Pre-class learner exercises/experiences</td>
<td>0.54</td>
</tr>
<tr>
<td>Illustration</td>
<td>Instructor role playing/simulations</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>Learner informed input</td>
<td>0.53</td>
</tr>
<tr>
<td>Practicing</td>
<td>Real life learner application</td>
<td><strong>0.94</strong></td>
</tr>
<tr>
<td></td>
<td>Real life learner application/role playing</td>
<td><strong>0.86</strong></td>
</tr>
<tr>
<td>Evaluation</td>
<td>Self assessment of strengths/weaknesses</td>
<td><strong>0.94</strong></td>
</tr>
<tr>
<td>Reflection</td>
<td>Identify performance improvement goals</td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td>Journaling/behavior suggestions</td>
<td><strong>0.82</strong></td>
</tr>
<tr>
<td>Mastery</td>
<td>Standards-based assessment</td>
<td><strong>0.86</strong></td>
</tr>
</tbody>
</table>
Cumulative Effects of Different Combinations of the Most Effective Adult Learning Method Practices
Other Important Findings from the Meta-Analysis

- Training provided to a small number of learners (< 10) was much more effective than training provided to a larger number of learners.

- Training provided on multiple occasions over a period of time (> 10 weeks) for a total of 10 hours or more was more effective than one-time training.

- Training provided in the context of real-life (authentic) application in learners’ work settings was more effective than “outside” training.
Assistive Technology Meta-Analysis


Research Synthesis of Assistive Technology Studies

- 25 group design studies and 15 single participant design studies that included information about the type of training to promote adult use of assistive technology and adaptations.
- The 40 studies included 820 adult participants (practitioners, parents, students) and 1,075 child participants.
- Same set of characteristics used in the adult learning synthesis were used to code and analyze the study results.
- Cohen’s $d$ effect sizes were used to evaluate the effects of the professional development/inservice training practices on adult use of assistive technology and adaptations and child outcomes.
<table>
<thead>
<tr>
<th>Methods</th>
<th>Practices</th>
</tr>
</thead>
</table>
| **Introduction** | Participant needs assessment of their knowledge of the AT/A  
Trainer description/presentation/lecture on the AT/A |
| **Illustration** | Real-life demonstration/real-life demonstration and role playing using AT/A  
Role playing/simulation using the AT/A  
Participant input/experience used to explain or describe the AT/A  
Teacher instruction on how to use the AT/A  
Multimedia presentation/video illustrating the use of the AT/A |
| **Practicing** | Real-life use of and/or role playing with the AT/A  
Trainer-guided participant practice using the AT/A  
Participant developed activity/implemented use of the AT/A  
Participant elicited trainer explanation/discussion of the AT/A |
| **Evaluation** | Joint trainer-participant evaluation of using the AT/A  
Participant assessment of their strengths and weaknesses using the AT/A  
Trainer feedback to participants in response to using the AT/A  
Participant group discussion of the understanding and abilities using the AT/A |
| **Reflection** | Participant journaling about their experiences with the AT/A  
Participant standards-based self-assessment of their knowledge and skills |
| **Mastery** | Participant self-assessment of knowledge or practice |
# Cohen’s *d* Effect Sizes Between the Most Effective Training Practices and the Adult and Child Outcomes

<table>
<thead>
<tr>
<th>Adult Learning Methods/Practices</th>
<th>Adult Outcomes</th>
<th>Child Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trainer descriptions/presentations</td>
<td>0.93</td>
<td>1.12</td>
</tr>
<tr>
<td>Needs assessment</td>
<td>1.48</td>
<td>1.43</td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learner-informed input</td>
<td>1.50</td>
<td>1.48</td>
</tr>
<tr>
<td>Role playing</td>
<td>1.61</td>
<td>1.58</td>
</tr>
<tr>
<td>Real-life/role playing</td>
<td>1.69</td>
<td>1.49</td>
</tr>
<tr>
<td><strong>Practicing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real life/real-life + role playing</td>
<td>1.01</td>
<td>1.54</td>
</tr>
<tr>
<td>Trainer-guided practice</td>
<td>1.17</td>
<td>1.86</td>
</tr>
<tr>
<td>Trainer engagement</td>
<td>1.37</td>
<td>1.19</td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trainer Feedback</td>
<td>1.09</td>
<td>1.55</td>
</tr>
<tr>
<td>Trainee-requested feedback</td>
<td>0.61</td>
<td>1.07</td>
</tr>
<tr>
<td>Joint evaluation</td>
<td>0.57</td>
<td>1.06</td>
</tr>
<tr>
<td>Assess strengths/weaknesses</td>
<td>0.51</td>
<td>1.27</td>
</tr>
<tr>
<td><strong>Reflection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journaling</td>
<td>0.63</td>
<td>1.23</td>
</tr>
<tr>
<td>Group discussion</td>
<td>0.54</td>
<td>1.78</td>
</tr>
<tr>
<td><strong>Mastery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generalization test</td>
<td>3.00</td>
<td>3.35</td>
</tr>
<tr>
<td>Trainee self-assessment</td>
<td>0.55</td>
<td>1.10</td>
</tr>
</tbody>
</table>
Relationship Between the Use of Different Combinations of Training Practices to Promote Adult Use of Assistive Technology and Adaptations and the Adult and Child Outcomes

- Child Outcomes
- Adult Outcomes

The metasynthesis included:

- 15 research reviews of different types of inservice professional development
- The 15 reviews included 555 studies
- 50,000+ early intervention, preschool, elementary, and secondary education teachers, educators, and practitioners
Characteristics of Inservice Professional Development Coded in the Metasynthesis

Inservice Setting: Job-embedded or non job-embedded inservice training

Inservice Characteristics: Trainer introduction and illustration of a practice; authentic educator/practitioner learning opportunities and learner reflection; and professional development specialist coaching, mentoring, or performance feedback during the inservice training

Ongoing Supports: Extended learner supports in the educators’ schools or classrooms, or practitioners’ intervention settings to reinforce initial inservice learning

Dosage: Inservice dosage of a sufficient amount distributed over time to provide multiple opportunities to learn to master the focus of inservice training

Outcomes: Educator/practitioner outcomes and student/child outcomes
Method of Analysis of the Inservice Reviews

- A multiple case study research design (Yin, 2014) was used to identify which inservice professional development characteristics under which conditions were associated with positive educator and child/student outcomes.

- Replication logic (Hak & Dul, 2010) and pattern matching (Hak & Dul, 2010) were used to determine if the same or similar inservice characteristics in the different reviews were found to be associated with the same or similar study outcomes.


Characteristics of Effective Inservice Professional Development

- Professional development specialists’ descriptions and illustrations of the specific content knowledge and practice to be learned
- Active and authentic job-embedded practitioner opportunities to learn to use a practice and to engage in evaluation of their experiences
- Explicit inclusion of different types of practices for engaging practitioners in reflection on their understanding and mastery of a practice
- Coaching, mentoring, or performance feedback by a professional development specialist during inservice training
- Ongoing follow-up supports by professional development specialists, coaches, supervisors, peers, etc. to reinforce inservice learning
- Inservice professional development of sufficient duration and intensity to provide multiple opportunities to become proficient in the use of a practice
From Research to Evidence-Informed Professional Development

• The findings from the two research syntheses and meta-syntheses as well as results reported by others were used to revise and refine a professional development model and set of practices for improving inservice training to promote early childhood practitioners’ use of evidence-based early childhood intervention practices.

• The professional development practices have been used with practitioners in both home-based and center-based early childhood intervention programs to promote their use of different types of early childhood practices.
The Professional Development Model and Practices are Described in a Number of Different Journal Articles and Web-Based Reports


## Key Characteristics of Evidence-Informed Inservice Professional Development

<table>
<thead>
<tr>
<th>Key Characteristics</th>
<th>Main Focus</th>
</tr>
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<tbody>
<tr>
<td>Introducing and Illustrating a Practice to Practitioners</td>
<td>Method(s) for describing the key characteristics of a practice and demonstrating or illustrating how to use the practice</td>
</tr>
<tr>
<td>Authentic and Active Practitioner Learning Experiences</td>
<td>Multiple practitioner opportunities to learn to use a practice in authentic real-life settings</td>
</tr>
<tr>
<td>Practitioner Understanding of a Practice</td>
<td>Practitioner description(s) of their use of a practice, what worked, and what child/student benefits were observed</td>
</tr>
<tr>
<td>Opportunities to Become Proficient in the Use of a Practice</td>
<td>Procedures used to engage practitioners in reflection on their use of the key characteristics of a practice for developing deep understanding of the practice</td>
</tr>
<tr>
<td>Professional Development Specialist (PDS) Supports, Feedback, and Guidance</td>
<td>PDS support (encouragement) during both inservice training and follow-up sessions to reinforce practitioner understanding and use of a practice</td>
</tr>
<tr>
<td>Professional Development (PD) of Sufficient Duration and Interest</td>
<td>PD that included multiple learning opportunities spread out over time for practitioners to become proficient in the use of a practice</td>
</tr>
</tbody>
</table>
### Professional Development Activity Planning Process Checklist

This checklist includes a series of questions that can be used to think about and identify professional development activities to promote practitioners’ knowledge and use of the practice constituting the focus of inservice training. Which activities will be used to accomplish each of the following (if appropriate) for the practice that is being taught to participants?

#### Introduce and Illustrate

1. Describe the practice in sufficient detail and provide multiple examples of the practice?
2. Provide the practitioners a list of the key characteristics of the practice and the expected outcomes?
3. Use photographs, videos, or other multimedia tools to illustrate the use of the practice?
4. Demonstrate or illustrate how to use the key characteristics of the practice?
5. Use learner experiences to illustrate the use of the practice?

#### Practitioner Use and Evaluate

6. Use simulations or other exercises to have practitioners use the practice?
7. Provide the practitioners authentic learning opportunities to use the practice?
8. Engage the practitioners in multiple opportunities to use the practice during the training?
9. Observe or have the practitioners record the real-time use of the practice?
10. Engage the practitioners in evaluation of their experiences using the practice?

#### Reflection and Mastery

11. Use a performance checklist or another method to have the practitioners’ self-assess mastery of the practice?
12. Engage the practitioners in discussions about the use and benefits of the practice?
13. Facilitate the practitioners’ reflection on their understanding of the practice?
14. Use real-life teaching moments to promote the practitioners’ deep understanding of the practice?
15. Promote an understanding of the importance of becoming a reflective practitioner?

#### Ongoing Learning Opportunities

16. Jointly identify with the practitioners’ ongoing opportunities to improve their use of the practice?
17. Incorporate ongoing learning opportunities into follow-up training sessions over repeated occasions?
18. Provide the practitioners opportunities to identify different ways of using the practice?
19. Provide opportunities for the practitioners to receive ongoing feedback on their use of the practice?
20. Engage the practitioners in discussions of ways to best support ongoing use of the practice?
Effectiveness of the Inservice Professional Development Model and Practices

• Different generations of the professional development model and practices have been used to promote early childhood intervention practitioners’ (and parents’) use of different kinds of practices to improve parent, family, and child outcomes.

• Professional development specialists’ use of the inservice training practices with fidelity has consistently been found to be associated with practitioner and parent adoption and use of early childhood intervention practices.

• The *lesson learned* from the various applications of the inservice professional development practices is that effective inservice training requires (demands) careful planning and considerable amounts of effort to produce sustainable changes in early childhood intervention practices.
The Use of the Inservice Professional Development Practices Has Been Described in a Number of Journal Articles and Web-Based Reports


Pattern of Results in the Use of the Inservice Professional Developmental Practices

Fidelity of Use of the Professional Development Practices

Practitioner or Parent Fidelity of Use of Intervention Practices

Child, Parent, Parent-Child, and Family Outcomes
Pattern of Results in the Use of the Inservice Professional Development Practices, continued

- PDS Social Validity Judgments
- Fidelity of Use of the Professional Development Practice
- Practitioner or Parent Social Validity Judgments
- Practitioner or Parent Fidelity of the Use of the Intervention Practice
- Child, Parent, Parent-Child, and Family Outcomes
Participant Questions, Comments, Reflections, Etc.
PowerPoint available at
www.puckett.org/presentations