



# HANDS in Autism: Development and Evolution of an Intensive Hands-On Professional Training Model



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## Background

The HANDS in Autism model of training was developed in 2004 as a result of foundational funding from the Centers for Disease Control (CDC) and is primarily supported ongoing by the Indiana Department of Education (INDOE). It was repeatedly noted that caregivers educated at traditional conferences and with excitement to implement what they had learned were not appropriately trained to apply this knowledge. They became promptly discouraged with the strategies and methods as they struggled to effectively apply and individualize them in their naturalistic setting. It was hypothesized that caregivers would benefit most from a more active learning process that would allow them to better comprehend, envision the application, maintain, and generalize information. The framework for this intensive training model have been developed over the past several years, with primary consideration provided to an intensive, hands-on training rooted in Applied Behavior Analysis (ABA) principles and evidence-based methodology and guidelines outlined in several documents (e.g., National Research Council, 2001; New York State Program Quality Indicators, 2001; Iovanne, Dunlap, Huber, & Kincaid, 2003). The program seeks to bridge the gap between information learned in more traditional didactic training modalities and hands-on practical experience. Participants learn in an active environment through didactic, intensive hands-on practice, and feedback sessions. Ultimately, participants are asked to apply the principles learned through the didactic and observation opportunities presented during the training to diverse real life situations as they interact with a variety of child participants differing in age and behavioral and developmental profiles.

The model has evolved in format and presentation over its last three years of implementation. Following each year of training, the team analyzes participants' gains in knowledge, understanding, and use of strategies taught during the training as well as participant satisfaction with the training program. That information is then integrated and incorporated into revisions for the upcoming training year. Through this careful analysis, we are able to demonstrate the efficacy of the model in facilitating participants' learning of methodologies for working with children with autism.

## Methods and Participants

Participants included educators, paraprofessionals, administrators, and other staff working with children with autism in primarily educational settings. Across all three years, 76 participants attended training. The method and format for completing the outcome measures varied across years. A summary of the differences across trainings is presented below. Participants were assessed for their gain in knowledge and use of the strategies taught during the HANDS in Autism training program. Specific areas addressed during the training include:

- Physical/visual structure
- Behavior interventions<sup>1</sup>
- Choreography<sup>1</sup>
- Social/communication skills
- Academic assessment
- Grouping<sup>1</sup>
- Generalization of skills
- Promoting independence<sup>1</sup>

<sup>1</sup> These skills were not assessed across all three years of training.

## Training Summary

### Year 1 (2005)

- **Frequency:** Participants completed a different measure at the beginning and end of each of the five training days.
- **Measure:** Open-ended questions focusing on the topics above. 5-10 items per measure, 5 different measures (one per day of training focusing on the targeted skills for that day).
- **Scoring Procedures:** Lead trainers scored responses independently based on a 4-point Likert-type scale (1 = poor; 4 = excellent). The score for each item was averaged across raters. A total score was calculated by averaging across scores from each day.

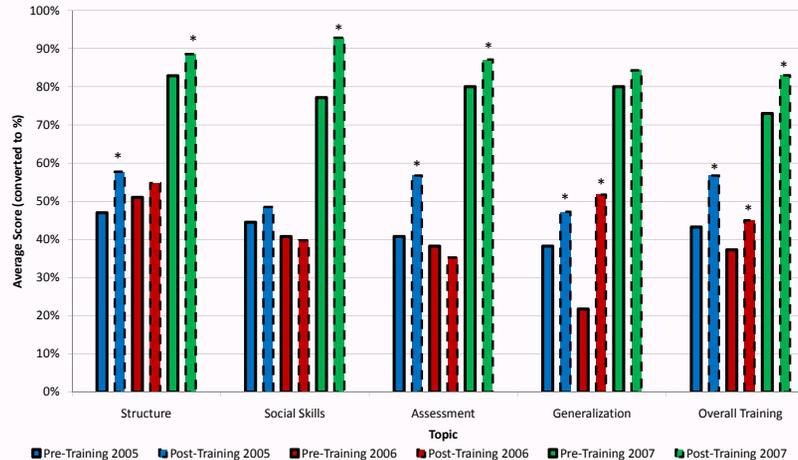
### Year 2 (2006)

- **Frequency:** Participants completed one measure on the first and last day of training.
- **Measure:** Open-ended questions focusing on the topics above but related to a fictional student described in a scenario provided to the participants. 8 items, 3 different scenarios available. Participants were randomly assigned to receive one scenario prior to training and a different scenario at the end of training.
- **Scoring Procedures:** Lead trainers scored responses independently based on a 4-point Likert-type scale (1 = poor; 4 = excellent). The score for each item was averaged across raters. A total score was calculated by averaging across scores from each day.

### Year 3 (2007)

- **Frequency:** Participants completed one measure addressing all topics listed above on the first and last day of training and 4 months following training.
- **Measure:** Multiple response exam focusing on all areas listed above. 9 items with 10 response choices for each item (7 correct answers, 3 incorrect). Participants are asked to select each of the response choices that correctly answers the question.
- **Scoring Procedures:** Scores were calculated by counting the number of correct responses, subtracting the number of incorrect responses and dividing by the total number of points possible and multiplying by 100 to get a per cent correct score. Higher scores indicated higher knowledge and use of the strategies.

Figure 1. Comparison of participants' gains in knowledge of skills assessed across all three years of training



\*p < .05 – Significant change in scores from the pre-test to the post-test.

## Results

Results are presented for each year of training. Where appropriate, scores have been converted to percentages for easier comparison across years. Figure 1 presents a comparison of scores (converted to percentages) from pre-training to post-training. Only skills assessed at each year are presented.

### Year 1 (2005)

- N = 10
- Significant improvement from the pre-test to the post-test in the following areas:
  - Communication (t=-3.30, p=.004)
  - Structure (t=-2.81, p=.012)
  - Assessment (t=-4.05, p=.001)
  - Overall training (t=-4.727, p<.001)

### Year 2 (2006)

- N = 27
- Significant improvement from the pre-test to the post-test in the following areas:
  - Generalization (Pre = 0.87, Post = 2.07, t=-3.76, p<.001)
  - Grouping (Pre = 1.15, Post = 1.88, t=-1.89) p<.05)
  - Overall training (Pre = 1.49, Post = 1.80, t=-2.23, p<.05)

### Year 3 (2007)

- N = 39
- Participants performed better at the immediate rating compared to baseline across all areas except generalization of skills (p = .172), which was already high prior to training.
- Participants scored an average of 10.7 percentage points higher on the immediate test (M = 83.75%, SD = 6.66%) compared to the baseline test (M = 72.97%, SD = 9.60%)

### Overall Summary (2005-2007)

- N = 76
- Average 12% increase overall in participant knowledge.

## Conclusions & Future Directions

Across all three years, the HANDS in Autism model, emphasizing hands-on learning through practice, coaching, and feedback, demonstrated improvements in knowledge and use of methodologies for working with children with autism.

As part of the evolution of the program, the outcome measurement was revised following each year of training. This inconsistency in measures, despite similar content, does not allow for direct comparison of scores across each year. Therefore, it is difficult to determine whether one year was better or worse than another. Starting in 2007 with the use of the Assessment of Knowledge (AoK) questionnaire, we have shifted our research protocol to include consistent measures so that future comparisons across years of training are possible.

Despite the inconsistencies in outcomes, each year of training did produce significant improvement in participant's knowledge of skills. It is difficult, however, to determine whether this knowledge influenced his or her interactions with children with autism when returning to the natural environment. Future directions being taken to solve this problem involve the use of web camera technology and self-report following the training. Through visual observations of the natural environments, we will be able to demonstrate the gains in application of skills (as opposed to just increase in the knowledge of skills) suggesting a higher level of efficacy for the HANDS in Autism training model.