

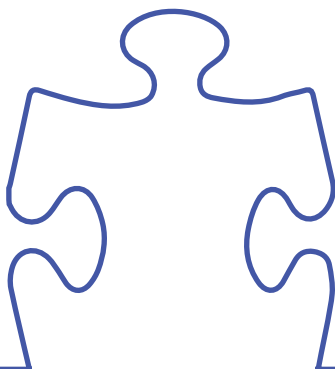
Research Study: Strategies for Effective Career and Life Education for Individuals with Autism and Other Developmental Disabilities

EVIDENCE-BASED TEACHING STRATEGIES YIELD POSITIVE OUTCOMES

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Material Development and Beta Testing

Background

Education Associates (EAI) had a very successful hands-on career education curriculum, Project Discovery, with Adapted components for students with special needs with greater challenges. EAI contracted with Dr. Amy Spriggs, Asst. Professor, Dept. of Special Education, University of Kentucky, to evaluate the current Adapted curriculum and make recommendations to make it more robust for students with autism and other developmental disabilities (DD).

Evidence-based practices

The curriculum was revised to include evidence-based practices to make the curriculum more robust and appropriate for students with autism and other developmental disabilities.

These included:

1. Video modeling – of all activities in the kits
 2. Systematic instructional procedures (system of least prompts and constant time delay)
 3. Visual supports – including visual schedules and real-life pictures
 4. Data sheets for progress monitoring and performance evaluation
 5. Activities to support social communication and behavior
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1. **Video Modeling.** Video modeling is a recorded demonstration of a skill being performed and then the student attempts to complete a skill independently. It captures the critical aspects of each step within a chained task and is a consistent method of presenting instruction. Research shows it is evidence-based for teaching social and functional skills—students know exactly what to expect and it helps to stay on-task. It is also effective for addressing several stages of learning (acquisition, maintenance, generalization). Video modeling is particularly effective for individuals with autism and other developmental disabilities due to the visual nature and reliable model. Video modeling promotes independence by allowing individuals to rely on a prompt other than a person. Video modeling of each activity in each kit has been added to the Project Discovery Adapted program to enhance student success.
 2. **Systematic instruction.** Systematic instruction includes a structured approach to teaching where stimulus or response prompts are embedded into the instruction to elicit near errorless learning. Two specific methods that have been effective in teaching students with autism and other developmental disabilities were incorporated into the curriculum. They are the System of Least Prompts and Constant Time Delay.
 - * System of Least Prompts - is used to teach chained behaviors (i.e., behaviors with more than one step). The chained task is broken into single steps and students are guided through a prompt hierarchy ending with a prompt that will ensure success. New Data sheets were designed for each activity to track and record the level of prompting needed to reach independence.
 - * Constant Time Delay – is a response prompting procedure commonly used to teach discrete behaviors (i.e., those with a specific beginning and end such as teaching vocabulary words). Trials typically begin with a 0-second delay which can last several sessions until the student responds correctly to all stimuli after the prompt. Then the delay interval is increased to a “constant” amount, typically 3-5 seconds.

Instructions in the use of Constant Time Delay and the System of Least Prompts are provided to support teachers with examples of their use in each particular kit. Data Sheets were developed to record and track the use of prompts and the student’s progress toward completion of tasks.

3. **Visual Supports.** Visual supports are anything that provides a prompt taken in thru the eyes and are very important for students with autism and other developmental disabilities. Communication skills, behavior and increased independence are enhanced when using visual supports as research has proven.

Visual Schedules are a type of visual supports. Skills within a chained task are depicted visually thru a series of pictures. Visual schedules can increase time on-task, time on schedule and independent transitions within activities. They are particularly effective for individuals with autism and other developmental disabilities due to their visual nature and simplistic depiction of steps required to complete a task. They promote independence and support the person with social and behavior issues by allowing the individual to know exactly what is expected in any given activity.

Visual schedules were developed for each activity in each kit using real-life photography drawn from the video modeling. Real-life photography is now included not only in the visual schedules, but in the student instructions and other components of the program to provide a consistent message.

4. **Data Sheets.** Data Sheets were developed for each activity with a task analysis of each step. Teachers were instructed in the System of Least Prompts (see above) and were to use the provided prompts in the order listed and record the data for each step in each activity. Prompts included independent, gesture, verbal, visual, model, partial physical and full physical with points assigned accordingly.
5. **Social Communication & Behavior Supports.** This is a common area of need for students with autism and other developmental disabilities.

Social communication- means the verbal and nonverbal behaviors used during social exchanges. It's important to provide ways to communication in an individual's mode of communication (ex. pictures, words, communication device).

Project Discovery provides many components to support social communication and behavior issues. There are vocabulary boards and cards with real-life pictures from the video models or kit materials to support communication. Digital files are provided so teachers can import materials into communication devices or customize as needed.

It is also important to provide ways to practice these skills....such as taking someone's order at a restaurant. Project Discovery provides these real-job activities for skill development using real tools found on the job. In addition, job scenarios are provided for further real-life experiences including Role Playing, Games, and Situation Cards to practice situations found on the job. This enhances social communication skills and job appropriate decisions and behaviors.

Behavior issues - pose challenges to learning which can be seen in adherence to routine and aberrant behavior. Many behavior issues occur due to deficits in communication so providing multiple means of expression is crucial. A curriculum should have a predictable order of implementation and include visual supports to depict the differences within it. This will increase appropriate behaviors as research has proven. Project Discovery includes a predictable order of implementation which supports behavior challenges often associated with individuals with autism and other developmental disabilities (e.g., First look, student instructions, video model, live model, visual schedule). It creates an environment of known expectations and routines, as research has proven are essential to helping social communication and behavior issues. It also includes visual supports as noted above.

Additional Supports

In addition to the evidence-based practices listed above, additional components were included in the curriculum. A new Pre-Post test was designed (see Data Collection below) with four choice responses to mimic the requirements of the Kentucky Alternate Assessments. Many activities were rewritten to include a more rigorous scope and sequence and include more tasks of workers in the career areas.

1. Differentiated Instruction – Universal Design for Learning

The program includes several components designed to meet the needs of a diverse group of learners. To address the needs of learners with varying abilities, curricula must provide multiple components and levels. The Project Discovery program provides multiple components and different functioning levels, such as beginning, intermediate, advanced and adapted for more severely challenged learners. It also allows for customization. Teachers may use the components they choose for their students' particular needs. This makes it very attractive to today's busy teachers who do not have time to adapt curricula for multiple levels.

To further support differentiation, Project Discovery addresses the components of UDL. (*Universal Design for Learning*):

The goal of Universal Design for Learning is to provide flexible instructional strategies to the classroom so that all students benefit. Students' different learning styles must be acknowledged and supported and the curriculum must be flexible and multi-faceted. This is particularly important to students with special needs. With UDL, access to various learners is increased. The three principles of UDL include:

1. Multiple means of representation (i.e., the curriculum is presented in various ways). Project Discovery supports this by including video modeling, teacher modeling, pictures and text with audio supports—all embedded in the curriculum and its procedures.
2. Multiple means of expression (i.e., students can show mastery in several ways). Project Discovery supports this by allowing students the opportunity to say an answer, point to a picture, complete a worksheet, or complete a hands-on task.
3. Multiple means of engagement (i.e., activities vary with materials and types of activities to engage students). Project Discovery is a dynamic, hands-on program that engages learners of all types with its real-world activities, tools and tasks. Students become active learners and are engaged and motivated to learn. In addition, the video modeling component is extremely engaging to students and increases interest.

Each Project Discovery kit offers activities that utilize multiples means of representation, expression and engagement.

2. Supports for Teachers

To implement a curriculum with ease, supports for teachers must be in place.

- Programs must provide all necessary materials with clear directions for use. Project Discovery includes Pre-post tests, progress monitoring and Data collection sheets for both knowledge –based assessments and functional performance tasks, with clear directions and procedures. Activity templates are provided along with teacher instructions. Hands-on tools and materials are included to perform activities.
- Multiple components must be included for differentiation of instruction – such as video modeling, text and pictures, and audio supports. Project Discovery provides all of these multiple components.
- Ease of use/customization. Project Discovery also provides digital files for ease of customization.

Scope of the Beta Project

During the school year 2015-2016, the new materials for the Project Discovery Adapted curriculum were beta tested in nine sites in three states, Kentucky, Minnesota and Wisconsin. Dr. Spriggs trained teachers and administrators on-site in Kentucky and via webinar for those implementing in Minnesota and Wisconsin.

Students with varying levels of autism and other developmental disabilities participated. For the Child Care kit, 40 participants ages 14-21 participated and for the Table Service kit, 51 participants ages 11 to 21 participated. The purpose of the Beta test was to determine if the adaptations made to the curriculum were sufficient in increasing awareness of career areas and teaching functional career ready skills for adolescents and young adults with autism and other developmental disabilities. The implementation process was provided to teachers. They were to do this process exactly as follows during the first session: Introductory activities, First Look, Student Instructions, Video model, Teacher model, and student performance of the task using the Visual Schedule. After the first session, they were free to use the appropriate component materials for their students' needs.

Data Collection

Data were collected on a variety of measures:

1. Pre-Post test. The PowerPoint Pre-Post test was redesigned as a multiple choice test with four possible answers (to simulate alternate assessment measures). It assesses general knowledge of that career area's tasks and tools and includes audio supports.
2. Skill development data were also collected on each activity using the System of Least Prompts. Data Sheets were developed for each activity with a task analysis of each step. Teachers were to use the provided prompts in the order listed and record the data for each step in each activity. Prompts included independent, gesture, verbal, visual, model, partial physical and full physical with points assigned accordingly.
3. Social Validity Questionnaire. Teachers and other stakeholders were asked to rate a series of statements using a Likert scale related to the curriculum, perceived outcomes and future implications.

Outcomes/Results

Data clearly demonstrated an **increase in both knowledge and skill levels gained across multiple sites for each kit.**

1. Pre-Post data

Significant gains were made in pre-post test scores. Child care – data for 38 students across three states were collected. **The average % increase across all students was 61.7%.**

Table service – data for 49 students across three states were collected. **The average % increase across all students was 55.3%.**

2. Performance data:

Data were collected on how independently each step in each task analysis was performed for each student. To determine growth, each student's first score on the task analysis was compared to the last score. These data were aggregated for each activity for each site. **Each site showed growth from the first lesson to the last lesson across all activities for both kits.** (Child care – N = 38 completed each activity. Table service – N = 38 completed each activity).

3. Social Validity questionnaire – was designed to learn results from teachers' perspectives (Likert scale 1-5, 5 being highest). Questions included such areas as....

"my students were taught skills to obtain gainful employment after graduation"....mean 4.

"video modeling helped students learn to perform the tasks with more independence" ...mean 4.2

"activities had a positive impact on transition services in IEP development" ...mean 3.6.

"materials were easy to use with my students with disabilities including autism" ...mean 4.25.

"Students can make better informed decisions for postsecondary outcomes after using these materials" ...mean 4.

Success Stories

- Teachers and students all reported enjoying the activities and will not only use the materials again but were interested in securing more kits.
- They found them beneficial to more than just career exploration, such as learning life ready skills for at home use.
- Some students began seriously thinking about potential jobs as a result of kit activities.
- Student preferences for career tasks were influenced by kit activities. Several students reported having a new interest in a career after completing a kit.
- One student reported liking the table service kit and it made her interested in being a waitress. Her teacher reported that she would not have known about this interest had it not been for the Project Discovery kits.

Career Ready and Life Skills

Project Discovery teaches career ready and life skills—these are crucial skills for students with disabilities because their post-school outcomes are not promising—individuals with disabilities are 8 times less likely to be gainfully employed than those without disabilities. Individuals with autism are the least likely to become employed as adults.

Research has shown that participation in vocational training or job-related activities in high school can lead to better post-school outcomes for individuals with autism and other developmental disabilities. Research shows there are several steps to creating positive school-based employment opportunities for adolescents with disabilities.

1. Align your program to established standards – Project Discovery integrates academic skills into the activities and the curriculum is aligned to common core and alternate assessment standards.
2. Connect activities to real-life experiences (teach the way it is taught on a job). Project Discovery uses real tools to perform real job tasks students would experience on the job (e.g., Child care-diaper and dress a baby, table service-set and bus a table).
3. Use evidence-based practices when teaching job skills. Project Discovery includes many evidence-based practices (see section above) including systematic instruction using constant time delay and system of least prompts, video modeling and visual schedules to promote independence of task completion, and social and communication supports.
4. Integrate activities into the school community. Project Discovery can provide the foundation for school-based enterprises and including the school community in culminating activities per kit. For example, one site set up a restaurant experience for teachers one day after exploring the table service kit and students greeted, served and bused tables.
5. Natural reinforcement – Project Discovery provides skills for students to be better prepared to make informed career decisions, achieve gainful employment and better job performance...which will make it more likely for them to receive praise and have enhanced self-esteem.

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