



HANDBOOK

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A Guide for Implementation of the ABA-VR Curriculum and Resources

The ABA-VR Project

The ABA-VR project is an innovative educational initiative designed to enhance the training of higher education students and practitioners in fields related to autism spectrum disorder (ASD) and special education needs. The project combines applied behavior analysis (ABA) principles with virtual reality (VR) technology to create a comprehensive training program to support adult educators in better training learners.

Key Objectives:

1. Investigate current ABA training quality through field research.
2. Develop and validate an innovative training model combining behavioral skills training (BST) with VR.
3. Conduct local trainings for special education professionals to develop their knowledge and skills in ABA.
4. Promote and disseminate accurate information about ABA.

The project brings together seven partner organizations from Denmark, Czech Republic, Cyprus, Spain, North Macedonia, and Ukraine, each contributing unique expertise in areas such as higher education, vocational training, special education, and technology development.

Main Deliverables:

- A comprehensive educational package including a curriculum and handbook.
- An e-learning platform with video tutorials.
- A VR application featuring scenarios for practicing behavior management.
- Dissemination materials and awareness campaign resources.



The project addresses a significant need in Europe, where there is currently a shortage of well-trained ABA practitioners and widespread misinformation about ABA practices. By using VR technology, the project offers a safe and controlled environment for learners to practice managing challenging behaviors without risk to themselves or clients.

Introduction to this Resource

This handbook provides comprehensive guidance for trainers implementing the ABA-VR curriculum and associated resources. It serves as a practical and detailed roadmap for educators, therapists, and practitioners aiming to integrate ABA principles with VR technology; by combining ABA's evidence-based approach to behavior change with the immersive capabilities of VR to create a dynamic and interactive learning environment. The handbook also incorporates the BST methodology, a proven framework for teaching practical skills through instruction, modeling, rehearsal, and feedback. Overall, the aim of these resources is to help experienced ABA educators refine their training approach to ensure effective and impactful training outcomes.

The “How-to”

An Overview of Training Components

The ABA-VR training program consists of the following key components:

- **Curriculum-based instruction on ABA principles:** A structured educational framework covering fundamental ABA concepts, including functions of behavior, assessment techniques, and intervention strategies. The curriculum emphasizes evidence-based practices and overviews the systematic approach to understanding and implementing behavior analysis principles in work with individuals with autism.
- **VR-based practical scenarios:** Interactive virtual reality simulations that allow students to practice managing challenging behaviors in a safe environment. The VR tool includes four different scenarios based on the functions of behavior (attention, escape, access to tangible, automatic reinforcement), enabling students to gain hands-on experience without risk to real clients.



- **BST methodology implementation:** Behavioral skills training is an evidence-based teaching approach consisting of four key components: instruction, modeling, rehearsal, and feedback. In this project, BST is integrated with VR technology to provide a systematic way of teaching behavior management skills to higher education students and professionals.
- **Video tutorials and e-learning resources:** A comprehensive digital learning package including 20 instructional videos focused on using BST, implementing VR tools, and adapting instruction based on individual needs. These resources are housed on an e-learning platform that provides self-paced learning opportunities and includes additional educational materials and tools
- **Assessment and evaluation tools:** Resources designed to track learner progress and evaluate learning outcomes. These include checklists for skill demonstrations in VR scenarios and feedback forms that help ensure training effectiveness and maintain quality standards throughout the program.

Using the Curriculum

The ABA-VR Curriculum guidebook is designed to integrate learning ABA with VR to enhance educator training, particularly for those working with autistic children. The curriculum guidebook aims to create effective, engaging, and inclusive training programs for educators. By leveraging VR technology, educators can gain practical experience, refine their skills, and ultimately improve the quality of education for autistic children.

This document can be used by educational institutions, training centers, and individual educators to design and implement VR-based ABA training programs, ensuring that educators are well-equipped to support diverse learners in various educational settings.

In brief, the curriculum includes:

Introduction to ABA and VR

History and Development of ABA: Traces the evolution of ABA from early behaviorism to its current applications in various settings, emphasizing key milestones and influential figures.

Basic Principles of ABA: Covers foundational concepts like the ABC (Antecedent-Behavior-Consequence) model, reinforcement, shaping, and extinction.

Applications of ABA in Education: Discusses how ABA techniques are used to teach communication, social interaction, self-care, academic skills, and manage challenging behaviors.



Behavior Skills Training (BST)

Components of BST: Includes instruction, modeling, rehearsal, and feedback, which are essential for teaching new skills and behaviors.

Applications of BST: Explores its use in education, healthcare, parenting, and workplace training, highlighting its effectiveness in various domains.

Introduction to Virtual Reality

Relevance of VR: Explains how VR can create immersive, engaging, and safe learning environments for practicing ABA techniques.

Integration of ABA and VR: Details how VR can be used to simulate real-world scenarios, providing educators with practical experience in a controlled setting.

Implementing VR-Based ABA Educator Training Programs

Designing VR Modules: Offers guidelines for creating VR training modules, including didactic considerations and lesson plans.

Lesson Plans: Provides detailed lesson plans for various topics, such as getting started with VR headsets, using VR in the classroom, ABA basics and ethics, prompting and fading, reinforcement techniques, task analysis, and visual schedules.

Adapting VR Modules to Different Learning Styles and Needs

Customizing VR Modules: Discusses how to tailor VR experiences to accommodate visual, auditory, and kinesthetic learners, as well as those with special educational needs.

Cultural Sensitivity and Diversity: Emphasizes the importance of creating culturally relevant VR scenarios to ensure inclusivity.

Developing VR Scenarios for ABA Educator Training

Selecting Appropriate Scenarios: Provides steps and guidelines for choosing VR scenarios that align with ABA protocols and target specific behaviors or skills.

Examples of VR Scenarios: Suggests VR activities and scenarios that can be used to practice ABA techniques.

Integrating ABA Principles into VR Activities



Prompts and Instructions: Details different types of prompts (gestural, physical, verbal, textual, visual, auditory, positional) and how to use them effectively in VR.

Reinforcement and Feedback: Explains how to implement positive and negative reinforcement, as well as immediate and formative feedback, to enhance learning and skill acquisition.

Benefits of VR-Based Reinforcement and Feedback

Enhanced Engagement: VR's immersive nature combined with reinforcement techniques can significantly boost learner engagement and motivation.

Safe Learning Environment: VR provides a risk-free space for practicing skills, making mistakes, and receiving feedback without real-world consequences.

Personalized Learning: VR allows for tailored learning experiences that adapt to individual progress and needs.

Methodology and Training Resources

Using Behavioral Skills Training (BST) Methodology

Behavior skills training (BST) is a highly effective, evidence-based method used to teach new skills and behaviors, particularly in the context of ABA. BST is widely recognized for its systematic approach, which includes four key components: instruction, modeling, rehearsal, and feedback.

Components of BST:

1. Instruction

- a. **Description:** Clear and concise instructions are provided to the trainee, outlining the desired behavior or skill. Ideally these instructions are provided in a written and verbal format. This step ensures that the trainee understands what is expected.
- b. **Application in ABA:** In ABA training, instructions might include detailed explanations of specific ABA techniques, such as discrete trial training (DTT) or functional communication training (FCT).

2. Modeling



- a. **Description:** The trainer demonstrates the correct way to perform the desired skill or behavior. This visual representation helps the trainee understand the expectations and see the behavior in action.
 - b. **Application in ABA:** Trainers might model how to implement a behavior intervention plan (BIP) or how to use reinforcement strategies effectively. This could be done in person or through video demonstrations.
3. **Rehearsal**
- a. **Description:** Trainees practice the skill or behavior under the supervision of the trainer. This hands-on practice is crucial for skill acquisition and allows trainees to apply what they have learned.
 - b. **Application in ABA:** Practitioners might rehearse conducting a functional behavior assessment (FBA) or implementing a specific ABA technique with feedback from the trainer.
4. **Feedback**
- a. **Description:** Constructive feedback is provided to the trainee based on their performance. This feedback highlights areas for improvement and reinforces correct implementation.
 - b. **Application in ABA:** Trainers provide feedback on the trainee's use of ABA techniques, such as the accuracy of data collection or the effectiveness of behavior interventions. Feedback can be verbal or written.

Effectiveness of BST in ABA Training

BST has been shown to be highly effective in training practitioners to implement ABA interventions accurately and consistently. Work in the field indicates that BST leads to improved skill acquisition, maintenance, and generalization. This means that practitioners trained using BST are more likely to apply ABA techniques correctly in real-world settings, leading to better outcomes for their clients.

Applications of BST in ABA:

- **Staff Training**
 - **Description:** BST is used to train new staff members in ABA techniques, ensuring they can implement interventions effectively from the start.



- **Example:** Training paraprofessionals to use prompting and fading techniques with students with autism.
- **Parent Training**
 - **Description:** Parents are trained to use ABA strategies at home, which helps to generalize skills across different environments.
 - **Example:** Teaching parents how to use reinforcement to encourage positive behaviors in their children.
- **Professional Development**
 - **Description:** Ongoing training for experienced practitioners to refine their skills and stay updated with the latest ABA practices.
 - **Example:** Workshops on advanced ABA techniques, such as using VR for behavior skills training.

When using BST to train practitioners in the use of ABA, whether using VR resources or not, the checklist provided as Appendix A can help you with the process.

Utilizing the Project's Virtual Reality (VR) Resources

The ABA-VR project integrates virtual reality technology as an innovative training tool to help learners develop practical skills in managing challenging behaviors. This approach provides a unique opportunity for learners to practice behavior management techniques in a controlled, risk-free environment before working with actual clients. Within the curriculum and the project's materials, you will be able to practice using four VR scenarios and learn how to adapt /create more scenarios to meet your needs. Regardless of the scenarios used, it is valuable to follow these guidelines/steps for practice:

1. Setting Up VR Equipment

- **Prepare VR Headsets:** Ensure that VR headsets (e.g., Oculus Quest) are charged, sanitized, and ready for use.
- **Create a Safe Space:** Set up a clear area where users can move around safely while using the VR headsets.



- **Familiarize with Controls:** Educators should become comfortable with the VR controls and navigation before starting the training modules (e.g., have some “play time” with the headsets before getting started on the training targets).

2. Introduction to VR Modules

- **Orientation Session:** Begin with an orientation session to introduce educators to the VR environment and the specific modules they will be using.
- **Overview of Objectives:** Clearly explain the objectives of each VR module and how it relates to ABA training.

3. Using Practice Scripts in VR

- **Select Appropriate Modules:** Choose the VR modules that align with the specific ABA skills or behaviors being targeted (e.g., which function of behavior).
- **Follow the Script:** Each VR module comes with a practice script that guides the user through the scenario. Follow the script to ensure consistency and thorough practice.
- **Interactive Scenarios:** Engage with interactive scenarios that simulate real-world situations. These scenarios allow educators to practice ABA techniques in a controlled, immersive environment.

4. Receiving Feedback

- **Immediate Feedback:** Provide immediate feedback on performance (e.g., as that outlined in the scripts).
- **Data Collection:** If applicable, use built-in data collection tools to track performance and progress over time.

5. Reflection and Debriefing

- **Debriefing Sessions:** After completing a VR module, hold debriefing sessions to discuss experiences, challenges, and lessons learned.
- **Reflective Practice:** Encourage educators to reflect on their performance and think about how they can apply these skills in real-world settings.

6. Continuous Improvement



Regular Practice: Schedule regular VR practice sessions to reinforce skills and ensure continuous improvement.

Update Modules: Periodically update VR modules and practice scripts to incorporate new techniques and address any emerging training needs.

If you are planning to adapt and/or make your own scripts to follow in the VR environments, you can use the checklist in Appendix B for guidance.

Video Tutorials and E-learning Resources

To support your usage of the curriculum and corresponding materials, there will also be video tutorials and e-learning resources accessible. These include:

20 Video Tutorials

- How to use Behavioral Skills Training (BST)
- How to use Virtual Reality in training
- How to adapt/differentiate instruction based on needs and incorporation of BST/VR

E-Learning Platform with these Features

- A SPOOC (Self-Paced Open Online Course) format
- Basic and advanced modules
- Content combining theoretical knowledge and practical applications
- A Personal Learning Environment (PLE) linked to at least 25 digital tools
- Customized Learning Paths based on user needs

Putting it All Together

Assessment and Evaluation



As you train staff and students in ABA techniques using the ABA-VR program resources, it is important to assess, evaluate, and ensure quality throughout the process. You might find it valuable to include knowledge checks, skill demonstrations, practice scenarios, performance rubrics, and feedback forms. A form that you may use for learner assessment within the VR scenarios can be found in Appendix C.

Also, remember to conduct regular reviews of your training process, monitor implementation, gather participant feedback, update materials as needed, keep clear documentation of training processes, track outcomes, and identify and implement changes as needed.

Comprehensive Training Implementation

The program takes a multi-modal approach to training educators in ABA, combining traditional instruction with technology. At its core, the curriculum guidebook provides the theoretical foundation, covering everything from ABA history to practical applications in educational settings. This foundational knowledge is then enhanced through the integration of BST methodology, which provides a systematic framework for skill development through instruction, modeling, rehearsal, and feedback.

The VR component serves as a practical bridge between theory and application, offering four distinct scenarios that allow educators to practice managing challenging behaviors in risk-free environments. These VR scenarios are carefully scripted to address different behavioral functions across various settings (home, store, classroom, and a barren environment), providing comprehensive exposure to different situations educators might encounter. The VR training is further supported by 20 video tutorials that specifically guide users in implementing BST, utilizing the VR technology effectively, and adapting instruction based on individual needs.

Tying these components together is an e-learning platform that provides a self-paced, structured learning environment. This platform includes both basic and advanced modules, allowing educators to progress at their own pace while accessing a Personal Learning Environment (PLE) linked to 25 digital tools. The platform creates customized learning paths that integrate the theoretical content, video tutorials, and VR practice sessions in a coherent sequence. This comprehensive approach ensures that educators not only understand the principles of ABA but can effectively implement them in practice, with multiple opportunities for feedback and refinement of their skills through the various learning modalities available.

Wrapping Up





Additional Support Resources

There are many web resources available to support your use of behavior analysis and virtual reality.

Here are a few selected valuable resources:

Behavioral Skills Training (BST): Step-by-Step Guide:

<https://masteraba.com/behavioral-skills-training/>

ABA Skill Acquisition: <https://www.brighterstridesaba.com/blog/aba-skill-acquisition>

Using Behavioral Skills Training as a Tool for Effective Learning:

<https://howtoaba.com/behavioural-skills-training/>

Shaping Skills in an Immersive Virtual Reality Environment:

<https://www.mdpi.com/2227-7102/14/11/1228>

How To Access Virtual Reality Without A Headset: 3 Alternative Options:

<https://roundtablelearning.com/how-to-access-vr-three-alternative-options/>

Appendices

Appendix A. Checklist for BST Usage in Practitioner Training

Pre-Training Phase

- Conduct needs assessment (e.g., probe a skill or conduct a knowledge check) to identify specific skills to be taught
- Define clear, observable, and measurable target behaviors
- Gather/prepare necessary training materials and resources
- Set mastery criteria for each skill/procedure
- Prepare written protocols and instructions



- Set up training environment

Instructions Phase

- Provide written instructions/protocols to trainees
- Review each component of the target skill/procedure
- Check for understanding through questions
- Clarify any misconceptions
- Define success criteria

Modeling Phase

- Demonstrate complete procedure at normal pace
- Break down complex skills into smaller components
- Demonstrate each component with commentary
- Highlight common errors to avoid
- Model multiple examples
- Demonstrate in different scenarios/contexts
- Answer questions about the demonstration

Rehearsal Phase

- Provide structured practice opportunities
- Start with simple scenarios
- Gradually increase complexity
- Allow sufficient practice time



- Document areas needing improvement
- Ensure multiple opportunities for repetition

Feedback Phase

- Provide immediate feedback after each attempt
- Start with positive aspects of performance
- Give specific, constructive feedback
- Demonstrate corrections if needed
- Have trainee practice corrections immediately

Assessment & Follow-up

- Conduct formal assessment of skills (similar to that done in the needs assessment phase)
- Compare to mastery criteria
- Document competency achievement
- Gather trainee feedback on the process



Appendix B. Checklist for Creating VR Scenario Scripts

1. Basic Structure Setup

- Specify duration (10-15 minutes recommended)
- Identify setting (home, store, classroom, etc.)
- Define function of behavior or other ABA-based skill to be targeted
- List all character roles needed (Trainer, Teacher, Child)

2. Child Profile Development

- Include basic demographic information
- List current skill levels
- Describe challenging behaviors
- Note preferred reinforcers
- Specify communication abilities

3. Scene Organization

- Break into 5-6 distinct scenes
- Include introduction/briefing scene
- Create initial practice scene
- Include implementation scenes
- Add escalation practice scenes
- End with debrief scene

4. Script Elements

- Write clear stage directions in brackets
- Include specific dialogue for each character
- Add trainer feedback points



- Include pause points for instruction
- Show both correct and incorrect responses

5. Success Criteria

- List key learning points
- Define specific success criteria

Appendix C. VR Scenario Performance Assessment Tool

Learner Information

- Name: _
- Date: _
- Trainer: _

Technical Implementation Score

Rate the learner's technical implementation of behavioral procedures on a scale of 1-5:

- 1 = Needs significant improvement
- 2 = Needs some improvement
- 3 = Meets basic expectations
- 4 = Exceeds expectations
- 5 = Demonstrates mastery

Client Interaction

- _ Maintains appropriate affect
- _ Uses clear communication
- _ Demonstrates professionalism
- _ Shows flexibility when needed



- _ Maintains therapeutic boundaries

Score: __/25

Procedure Implementation

- _ Accurately implements the specified behavioral procedure
- _ Maintains consistency throughout the session
- _ Follows protocol even during challenging moments
- _ Demonstrates understanding of behavioral principles
- _ Adapts appropriately to client responses

Score: __/25

Scenario-Specific Competencies

Add specific items based on scenario focus (e.g., for extinction procedure):

- _ Ignores target behavior consistently
- _ Reinforces alternative behaviors
- _ Manages extinction burst appropriately
- _ Maintains safety during escalation
- _ Implements proactive strategies

Score: __/25

Trainer Feedback

- Strengths: _
- Areas for Improvement: _
- Recommendations: _

Learner Reflection



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- What did you find challenging about this scenario?: _
- What strategies helped you manage the behavior effectively?:
- How will you apply what you learned in real-world settings?: _



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