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Using VR technology in the design of teaching practices for students with
disabilities in special education

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LEARNING AREAS AND SCENARIOS
FOR DIGITAL GAME



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1. The 'unBLOCKed' Project

unBLOCKed is an Erasmus+ Programme KA220-SCH Cooperation Partnership project titled "Using VR technology in the design of teaching practices for students with disabilities in special education." The project aims to improve education opportunities for children aged 8–15 with mild intellectual disabilities by using Virtual Reality (VR) and digital game-based learning. It runs for 24 months from 1 October 2025 to 30 September 2027 with a total grant of €250,000.

Main Aim

The project seeks to strengthen students':

- Daily living skills
- Personal care skills
- Social adaptation
- Independence and self-confidence
- Participation in education through innovative digital tools

Core Objectives

1. Develop a comprehensive special education curriculum supported by VR technology.
2. Create the unBLOCKed digital VR game based on real-life learning scenarios.
3. Train teachers and educators to use innovative technologies effectively in special education classrooms.

Main Outputs

- VR Curriculum for Digital Gaming
- unBLOCKed Game with 4 learning areas and 16 scenarios
- Pilot implementation in schools
- Teacher training programme
- Project website and social media channels
- Dissemination seminars and reports
- Quality management and evaluation reports

Partnership Countries

The project is implemented by six organisations from:

- Spain
- Türkiye
- Romania
- Slovenia

Innovation and Impact

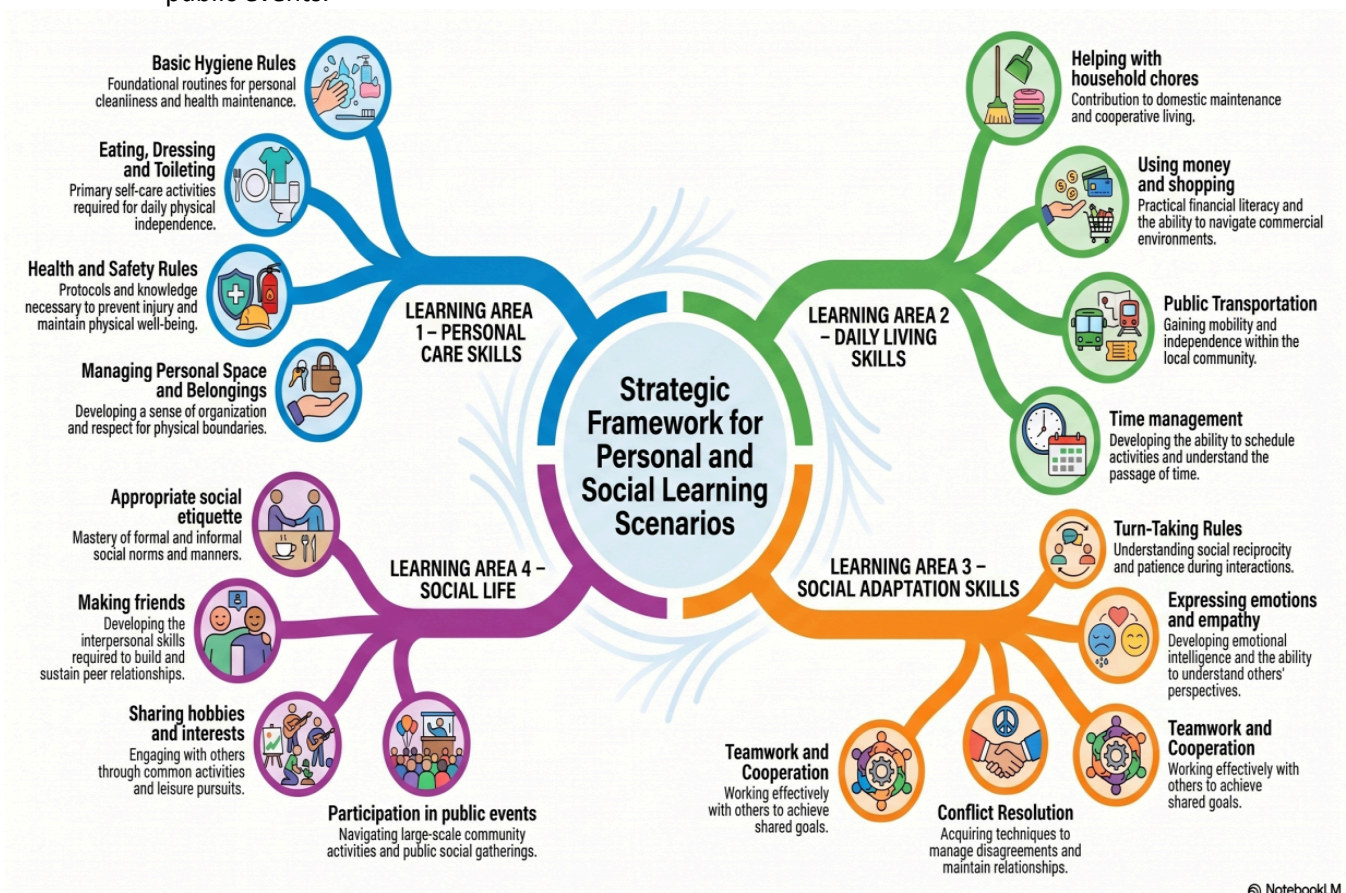
The innovative aspect of the project is the combination of VR technology, gamification, and inclusive education. Students can safely practise real-life tasks such as hygiene, communication, and social skills in virtual environments. This increases motivation, supports functional learning, and may help reduce school disengagement and exclusion.

2. Learning Areas and Scenarios

The document outlines a structured framework for personal and social development, organized into four primary Learning Areas, each containing four specific Learning Scenarios. This framework is a collaborative effort involving various partner organizations.

Here is a brief summary of the scenarios within each area:

- **Personal Care Skills:** Focuses on fundamental individual needs, including basic hygiene, self-care (eating, dressing, and toileting), following health and safety rules, and the management of personal space and belongings.
- **Daily Living Skills:** Covers practical skills for independence, such as contributing to household chores, financial literacy through using money and shopping, navigating public transportation, and effective time management.
- **Social Adaptation Skills:** Centers on interpersonal interactions and emotional intelligence. Key scenarios include understanding turn-taking, expressing emotions and empathy, resolving conflicts, and fostering teamwork and cooperation.
- **Social Life:** Aims at broader community integration by teaching appropriate social etiquette, how to make friends, sharing hobbies and interests with others, and actively participating in public events.



NotebookLM

Learning Scenario 1.1 - Basic Hygiene Rules

1. Introduction

Basic Hygiene Rules

Learning Area 1 – Personal Care Skills

Level of Difficulty: Basic

The “Basic Hygiene Rules” scenario is one of the core scenarios included under Learning Area 1: Personal Care Skills in the unBLOCKed curriculum. This scenario has been designed to support students aged 8 to 15 with mild intellectual disabilities in learning, step by step, one of the self-care skills they encounter most frequently in daily life: handwashing, and in practising it repeatedly within a safe virtual environment. The project documents clearly state that Learning Area 1 focuses on strengthening personal care and self-care skills.

This scenario was selected because handwashing is a highly concrete, universal, and directly applicable daily life skill for students. The project framework emphasizes that the target group needs support in areas such as abstract thinking, carrying out sequential tasks, sustaining attention, and independently applying daily living skills. For this reason, instruction should be concrete, experiential, repetitive, and visually strong. Handwashing provides an appropriate entry-level scenario for these needs, as it follows a clear sequence, can be completed in a short time, and can be easily transferred to real-life contexts.

The scenario is based on a simple VR setting in which the student is positioned in front of a sink within a bathroom scene in a home environment. In the sample design presented in the project, the handwashing sequence consisting of turning on the tap, taking the soap, lathering the hands, rinsing, and drying with a towel is defined as the core learning flow. This structure aims to help the student learn the skill not through complex or abstract explanations, but through a sequence-based, visually supported, and repeatable experience. The fact that the scenario is defined at a basic level also indicates that it should be structured in a simplified, clear, and guided way for entry-level learners.

Another important rationale for this scenario lies in the pedagogical advantages that VR technology offers in teaching this skill. According to the unBLOCKed approach, VR allows the student to practise the skill in a safe environment, to repeat it without being penalized for mistakes, and to reach success through step-by-step guidance. Within the curriculum framework, the digital game is expected to support learning outcomes, increase student motivation, provide individualized learning pathways, enable repetition without stigma, and offer immediate feedback. For this reason, the “Basic Hygiene Rules” scenario is not merely a hygiene activity; it is also a fundamental instructional tool that supports the development of independence, self-confidence, and functional daily living skills.

In addition, this scenario is suitable for implementation because it offers a structure that teachers can easily monitor in the classroom and transfer into real-life practice. In the sample scenario design, the teacher is expected to observe the student’s VR screen through screen mirroring, identify the steps the student finds difficult, provide brief verbal prompts when necessary, and support the transfer of

learning to the classroom or home environment. In this respect, the scenario has been designed not only to create a digital experience, but also to serve as a functional and trackable tool that special education teachers can integrate into their everyday teaching practice.

2. Participant profile

This scenario has been designed primarily for students aged 8 to 15 with mild intellectual disabilities. Its main purpose is to support the student in learning the handwashing skill required in daily life through a clear, sequential, and repeatable structure. For this target group, instruction should be concrete, visually supported, divided into short steps, and designed to provide repeated opportunities for practice.

This scenario is suitable for students who are able to understand short instructions, follow visual cues, perform simple hand and arm movements, and sustain a task step by step with adult support. The aim is not for the student to perform the task perfectly and independently from the beginning. Rather, the aim is for the student to begin learning the correct handwashing sequence through guidance and repetition, and to apply this skill more independently over time.

2.1 Special needs assessment depending on disability

In this scenario, students may experience difficulties in the following areas: confusing the sequence of the task, skipping certain steps, thinking that the task is finished too early, being unable to sustain attention throughout the whole process, understanding verbal instructions slowly, or being unable to identify the next step independently. For this reason, each task should be presented individually, too many options should not be offered at the same time, and one step should not begin before the previous one has been completed.

Before implementation, the teacher should assess certain readiness characteristics of the student. These include the ability to understand short instructions, respond to visual cues, sustain attention, adapt to the VR environment, demonstrate basic motor control, and accept support. The scenario should be adapted according to the student's individual pace and level of support needed. In this context, the teacher is the person who observes, provides brief support when necessary, and plans the transfer of learning to real-life settings.

Some students may require more support for attention, a simpler visual environment, or shorter sessions. For this reason, the bathroom setting should be simple, the objects should be designed in a large and easily selectable manner, and the prompts should be short and clear. Unnecessary details, intense stimuli, and confusing options should not be included in this scenario.

The main principle of this section is the following: the student is not given a complex task; instead, the handwashing behaviour is divided into small, understandable, and manageable steps. The student learns each step by seeing it, trying it, and repeating it when needed. In this way, the scenario becomes both applicable from the perspective of the special education teacher and clear and producible from the perspective of the game development team.

3. Pedagogical & Methodological framework

This scenario is based on the principle that students learn not by listening, but by doing. The handwashing skill is divided into small and clearly defined steps; the student carries out each step in

sequence, sees the result immediately, and repeats it when necessary. In this way, learning is grounded not in passive explanation, but in direct experience. The main aim of the scenario is to enable the student to practise a functional self-care skill that will be used in daily life within a safe and structured environment.

The main pedagogical approach applied in this section is the combined use of experiential learning, game-based learning, and inclusive teaching principles. The student is not merely someone who selects the correct answer; rather, the student is an active participant who experiences the task step by step, tries it, tries again after making mistakes, and gradually becomes more independent. For this reason, the scenario should be built not on lengthy explanations or extended texts, but on clear visual cues, object interaction, and guided practice.

The instructional logic of the scenario is based on sequential skill teaching. The handwashing behaviour is not presented as a single, undivided task. Instead, it is broken down into sub-steps such as turning on the tap, taking the soap, lathering the hands, rinsing, and drying. The student does not move on to the next step before completing the previous one. This structure is particularly necessary for students who experience difficulty in following sequential processes. Within the game, the task flow should be clear, consistent, and predictable.

The instructional language used in the scenario should be clear, simple, and brief. Each instruction should communicate only one action. Multiple tasks should not be presented at the same time. Visuals should be highly distinguishable, and objects should be placed in a large and easily selectable manner. The bathroom environment should represent real life, but it should not distract the student with unnecessary details. For this reason, simplicity, visual clarity, and a low level of stimulation should be regarded as core design principles.

In this scenario, mistakes should not be presented as failure. When the student selects the wrong object or confuses a step, they are not penalized. Instead, a short reminder, a visual cue, or an opportunity to try again is provided. Giving the student a safe space to make mistakes both preserves motivation and enables the skill to be learned without pressure. For this reason, the feedback system should be designed to be corrective, but not judgmental.

The scenario should also be individualized. Not every student progresses at the same pace. Some students may need more repetition, stronger visual cues, or shorter sessions. Therefore, the scenario should be designed in a way that allows the teacher to adjust the level of support according to the student's pace and performance. Since Scenario 1.1 is at a basic level, its structure should be more guided, simpler, and more supportive.

Within this methodological framework, the teacher is an integral part of the scenario. The teacher is not merely an observer, but someone who monitors the step at which the student struggles, provides brief verbal prompts when necessary, and connects the process to real-life classroom activities. For this reason, the scenario should be structured clearly enough to enable the teacher to observe effectively and determine the right moments for intervention. Screen mirroring, step tracking, and observable student behaviours are therefore essential.

The main conclusion of this section is as follows: the 1.1 Basic Hygiene Rules scenario should be designed as a structured, simple, safe, repeatable, visually supported learning experience that aims to promote transfer to real life. The pedagogical structure should not be built to challenge the student,

but to teach the handwashing skill through understandable steps and to provide the teacher with an observable learning process.

4. Learning objectives

The main purpose of this scenario is to support the student in learning to perform the handwashing skill required in daily life in the correct sequence. The scenario is designed to strengthen personal care and self-care skills. At the same time, it aims to help the student follow a step-by-step task, respond appropriately to visual and verbal cues, and complete a task confidently through simple VR interactions.

The learning objectives of this scenario are defined as follows:

- First objective: The student recognizes the basic steps that make up the handwashing task.

The student is expected to distinguish between the steps of turning on the tap, taking the soap, lathering the hands, rinsing, and drying. In this scenario, the skill is not presented as a single action, but as a series of clear and consecutive sub-steps.

- Second objective: The student performs the handwashing sequence correctly.

The student is expected not to move on to the next step before completing the previous one and to maintain the task in the correct order. In the core game design, progression to the next step is only possible once the current step has been completed.

- Third objective: The student maintains the hand-rubbing process with soap for an adequate amount of time.

In the scenario, the lathering stage is not limited to simply taking the soap. The student is expected to continue rubbing their hands for a certain period of time. In the current design, this duration is supported by an approximately 20-second visual countdown.

- Fourth objective: The student completes the task by making use of visual and verbal guidance.

In this basic-level scenario, full independent performance is not expected from the student. The goal is for the student to complete the process by following the brief instructions of the guide avatar, the visual cues, and the short verbal support provided by the teacher when necessary.

- Fifth objective: The student uses simple VR interactions purposefully.

The student is expected to use basic interactions such as activating the tap, selecting the soap, holding their hands under running water, and drying them with a towel within a meaningful task. This objective is also aligned with the project's aim of developing confidence in the use of digital tools.

- Sixth objective: The student begins to relate hygiene behaviour to daily life.

By the end of the scenario, the student is expected to understand that handwashing is not merely an in-game task, but a real self-care behaviour practised in daily life. Therefore, the expected outcome is not simply completing the game, but beginning to internalize the skill as a routine that can be transferred to the classroom, the school restroom, or the home environment.

Based on these objectives, the expected learning outcomes can be defined as follows:

The student distinguishes which object is used for what purpose during handwashing. They use objects such as the tap, soap, water, and towel appropriately according to their function.

The student recognizes that the handwashing process is not random, but follows a specific sequence. They begin to complete the task in an ordered manner.

The student understands the positive feedback given when they perform correctly and develops motivation to complete the task. When they make a mistake, they are given the opportunity to try again without being penalized. This supports confidence and participation in the learning process.

The student experiences being able to carry out a basic, supported VR task from beginning to end. This experience contributes to the development of self-confidence in relation to self-care skills. Within the project framework, one of the expected impacts is also an increase in learner autonomy and confidence.

To provide a brief and operational summary of this section:

By the end of Scenario 1.1, the student is expected to recognize the steps of handwashing, perform them in the correct order, follow basic guidance, complete the task through simple VR interactions, and begin to relate this skill to a daily life routine.

5. Environment description

The VR environment of this scenario should be designed as a bathroom space within a home setting. When the student enters the scene, they should be positioned directly in front of the sink. The main objects should be the tap, the soap, and the towel. This choice is appropriate because the scenario belongs to the area of personal care skills and aims to teach handwashing behaviour within its authentic daily life context. The environment should make it easier for the student to connect the experience with real life, while avoiding unnecessary details that might distract attention.

The bathroom scene should be designed in a simple, colourful, clear, and low-stimulation manner. The visual design should not include unnecessary items, excessive decoration, moving backgrounds, or complex details. Objects should be large enough to be easily noticed, clearly distinguishable from one another, and arranged in such a way that the student can immediately understand what needs to be touched. In this scenario, the aim is not to present a realistic bathroom decoration, but to make the handwashing task clear and manageable.

The sink should be placed in a central position within the student's field of view. The soap should be located near the sink and presented as the only correct option. The towel should also be placed in a fixed, accessible, and clearly visible location. Since this is a basic-level scenario, multiple objects serving the same function should not be used. For example, the scene should not include two different soaps, various cleaning products, or unnecessary cabinet options. The student should focus not on making choices, but on learning the correct sequence.

The interaction areas should be large and easily selectable. When the student approaches the tap, the soap, or the towel, these objects may be highlighted with a subtle visual cue. When the student brings their hand or controller close to an object, the system should make it clear that the object is selectable. However, this highlight should not be distracting; it should remain brief, simple, and functional. Feedback such as water flow, the appearance of foam, and the drying effect should be clear, but should not be excessively bright, loud, or tiring for the child.

Another purpose of the environmental design in this scenario is to provide a safe space for making mistakes. When the student moves toward the wrong object, the environment should not respond in a threatening way. In cases of incorrect selection, only a brief signal, a gentle prompt, and an opportunity to try again should be provided. For this reason, the scene should not include alarms, intense red warnings, or frightening effects that put pressure on the student. The overall feeling of the environment should be safe, calm, and supportive.

The sounds used in the bathroom scene should also be selected carefully. When the tap is turned on, a short and natural water sound should be heard, and gentle positive sounds should be used for correct steps. If the guide avatar speaks, the sentences should be short, clear, and slow. If background music is used, it should be kept very light; in fact, avoiding it altogether may be preferable in order to prevent distraction. In this scenario, the purpose of auditory design is not to create excitement, but to support the task. The environmental arrangement should be planned in a way that protects the student's well-being and attention.

Another technically important element in this section is screen mirroring. The teacher should be able to monitor in real time what the student is seeing in the VR environment. For this reason, the scene should be designed clearly and simply enough to be easily followed on an external screen. In order for the teacher to understand which object the student is approaching, at which step the student stops, and at which point support is needed, the visual flow should not be confusing.

In summary, the VR environment of Scenario 1.1 should be designed as a learning space located in a home bathroom, centred around the sink, simple, safe, highly distinguishable, and composed only of objects that support the handwashing skill. The main function of the environmental design is to help the student focus on the sequence of the skill and to allow the teacher to monitor the process easily.

6. Game flow

The scenario should begin with a short and clear introduction. When the student enters the bathroom scene, they should be positioned and ready in front of the sink. At this point, a brief opening prompt should be provided either on the screen or through the guide avatar. The prompt should be simple and should state the task directly. For example, a short phrase such as, "Let's wash our hands," may be used. This introduction prepares the student for the task and helps focus their attention on the first step.

- Step 1. Turning on the tap

The first task is for the student to turn on the tap. When the student approaches the correct object, the tap should activate, the water flow should become visible, and a brief water sound should be heard. At this stage, the student should not be allowed to move on to another step. It should first be clearly understood that the tap has been turned on. Since this is the starting point of the game, this step should be presented in a very clear visual manner.

- Step 2. Taking the soap

After the tap has been turned on, the student should be directed toward the soap. When the student selects the soap, foam should begin to appear on the hands. The purpose here is to help the student understand that soap is an essential part of the handwashing process. The student should not be

allowed to move on to the next step without taking the soap. For this reason, the system should operate in a way that preserves the sequence of steps.

- Step 3. Rubbing the hands

After taking the soap, the student should rub their hands. At this stage, an approximately 20-second countdown should be displayed. The countdown may be supported by a progress bar or an animated clock visual. The purpose of this part is not simply to “touch the soap,” but to help the student realize that handwashing is a process that requires time. The student should not be allowed to proceed to the next step before the countdown is completed.

- Step 4. Rinsing the hands

When the student places their hands under the water again, the foam should disappear. This visual change helps the student understand that the rinsing action has been carried out correctly. The sound of running water may continue during rinsing. At this step, the system should use the complete removal of the foam as the indicator of completion. The student should not be considered to have finished the task while their hands are still soapy.

- Step 5. Drying with the towel

After rinsing has been completed, the student should be directed toward the towel. When the student uses the towel, it should be clearly shown that the hands are being dried. In the current draft, this stage is completed with the appearance of clean and shining hands. This final step should clearly show the student that the handwashing routine has been completed.

- Completion section

When the student completes all the steps in the correct order, a short and positive closing should be provided. A simple message such as, “Great job, your hands are clean,” may appear on the screen. This may be accompanied by a positive sound, a smiling avatar, or a small visual celebration. The completion moment should not be exaggerated; however, it should clearly help the student feel that the task has been successfully completed.

The fundamental rule in this flow is as follows: the student cannot move on to the next step without completing the current one. The entire structure of the scenario should be based on sequential progression. This is especially important for basic-level users. The aim is not to encourage free exploration, but to help the student learn the handwashing sequence in the correct order. In addition, it was agreed during the project meetings that the scenarios should be differentiated not by age, but by level and need, and that entry-level scenarios should be more structured.

In brief, the scenario begins with a short prompt from the guide avatar; the student then turns on the tap, takes the soap, rubs their hands, rinses, and dries them with a towel in sequence. The student cannot move on to the next step before completing the previous one. The scenario ends with a simple and positive closing.

7. Mechanics

In this scenario, the interaction logic should be designed so that the student can complete the task step by step without confusion. The basic rule is as follows: the student cannot move on to the next step before completing the current one. This structure is necessary in order to teach handwashing as

a sequential routine. The technical logic of the scenario should function accordingly. The soap stage should not begin before the tap is turned on; lathering should not be activated before the soap is taken; rinsing should not be accepted before lathering is completed; and the drying stage should not be unlocked before rinsing is finished.

The student's interaction with objects should be simple, direct, and single-purpose. In this scenario, the main interactive objects are the tap, the soap, and the towel. When the student directs their hand or controller toward the correct object, the system should detect this clearly. Once the interaction occurs, the result should be visible immediately. Water should begin to flow from the tap, foam should appear when the soap is selected, the foam should disappear during rinsing, and it should be clear that the hands are being dried when the towel is used. The student should be able to see the relationship between their action and the resulting outcome instantly.

The control logic in this scenario should not be complex. The student should not be expected to navigate menus, manage multiple options, or read long texts. As far as possible, the interaction should follow a touch, select, apply logic. Within the project framework, VR applications are expected to include gesture-based interaction, multiple movement options, and accessible forms of use suited to the student's functional needs. For this reason, the movements and choices in Scenario 1.1 should be kept as short, clear, and understandable as possible.

The guidance system is an important component of this scenario. The student should not be left to work out what to do independently. When it is time for the correct object or the correct action, a brief visual highlight, a short sentence from the guide avatar, or a very short task cue on the screen may be used. Guidance should not be used to complete the task on behalf of the student, but to help the student notice the next correct step. Especially in a basic-level scenario, guidance should be more visible and more supportive.

In cases of incorrect interaction, the system should not function in a punitive way. When the student moves toward the wrong object, tries to move on too early, or breaks the correct sequence, there should be no loss of points, harsh warning, or negative character reaction. Instead, a brief warning sound, a gentle reminder, and an opportunity to try again should be provided. This is clearly defined in the current draft of Scenario 1.1. For example, the avatar may give a short prompt such as, "First, turn on the tap," and the student is then expected to try the same step again. This structure supports learning and maintains the student's motivation.

The lathering stage is the most clearly time-based part of this scenario. After taking the soap, the student should rub their hands not just briefly, but for an adequate period of time. For this reason, the system should include an approximately 20-second countdown. This countdown should not function as a source of pressure that makes waiting difficult for the student; rather, it should serve as a visual support that helps the student understand the process. The mechanical aim here is for the student to learn that handwashing is a process that takes time, rather than thinking, "I touched the soap and that is enough."

Within the interaction logic of this scenario, an immediate and clear cause-and-effect relationship should be maintained. When the student performs the correct action, the environment should respond positively right away. In the case of an incorrect action, the system should pause, redirect, and prepare the student for the next attempt. This structure is consistent with the project's overall approach of safe error-making, positive feedback, and gradual learning. In addition, because learning

should be based not on performance comparison but on observable progress, the game mechanics should also support this principle.

In order for the teacher to monitor the process, the interactions should be mirrored to an external screen and should be easy to understand. The teacher should be able to notice easily which object the student is approaching, at which step the student stops, and when support is needed. For this reason, the mechanics should be designed not only for the student, but also in a way that allows the teacher to observe effectively. In this scenario, screen mirroring is not a technical convenience, but a core part of the instructional process.

The operational summary of this section is as follows: Scenario 1.1 should function through sequential task locking, simple object-focused selection, immediate visual outcomes, gentle error correction, opportunities for retrying, and a clear interaction structure that the teacher can monitor from an external screen. The main purpose of the mechanics is not to make the game more complex, but to make the handwashing skill understandable, safe, and repeatable.

In this scenario, the reward and feedback system should be designed in a way that maintains student motivation, makes correct behaviour visible, and supports learning in the event of mistakes. The fundamental principle is this: correct steps should be recognized immediately, while incorrect steps should be corrected without punishment. The feedback system should not create a sense of point loss, harsh warning, or failure; instead, it should prepare the student for the next attempt.

Immediate positive feedback should be provided for every correct step. When the student turns on the tap correctly, takes the soap correctly, rubs their hands for an adequate amount of time, completes the rinsing stage, and dries their hands with the towel, the system should acknowledge this briefly and clearly. This confirmation may be given through a small glowing effect, a positive sound, a short sentence from the avatar, or a very brief confirmation message on the screen. The goal is for the student to experience the feeling of “I did it correctly” immediately.

Feedback should be brief, simple, and consistent in form. For example, during a correct step, the object may glow briefly, a soft positive sound may be heard, and the guide avatar may use a short expression such as “Well done” or “Good job.” The language used here should be instructional but simple. Long explanations should not be given at every step. Since this is a basic-level scenario, the feedback should help the student focus attention, without exposing them to an excessive stimulus load.

In the case of an incorrect action, the system should provide gentle correction. If the student confuses a step, moves toward the wrong object, or breaks the sequence, they should not lose points. Instead, a short warning sound, a brief pause, and a short cue from the guide avatar should be provided. For example, if the student tries to move on to another stage before approaching the soap, the avatar may give a clear and brief direction such as, “First, turn on the tap.” The student should then be able to try the same step again.

In this system, the right to try again should be one of the core mechanics. An incorrect choice should not be presented as the end of learning. On the contrary, it should be used as a natural teaching moment that gives the student the opportunity to try the correct behaviour again. This approach reduces the student’s anxiety, makes it easier to continue with the task, and creates a safer learning

environment. Within the overall structure of the scenario, the opportunity for repetition and learning without stigma is also treated as an important principle.

A completion reward should be provided at the end of the scenario. When the student finishes all steps in the correct order, a brief celebration should appear on the screen. In the current example structure, this is suggested in the form of a positive on-screen message and a badge unlocked in the student profile. The appropriate reward for this scenario is defined as the “Hygiene Hero Badge.” This badge is not merely a visual reward; it is a concrete marker of achievement that helps the student feel that the task has been successfully completed.

The message given at the moment of completion should also be kept simple. When the student finishes the scenario, a short and understandable message such as “Great, your hands are clean” or “You completed the task” should be provided. This may be accompanied by a smiling avatar, a light clapping sound, or a brief sparkle effect. However, the celebration effect should be short and should not be overly dynamic or distracting. The student should clearly feel their success, while the environment remains calm and safe.

Another function of the reward system is to create a sense of self-confidence and achievement in the student. In this scenario, the aim is not only to have the student complete the handwashing sequence. It also aims to develop the student’s sense of “I can do this.” At the project level, the expected impacts also include autonomy, self-confidence, motivation, and progress in daily living skills. For this reason, the reward system should not be showy, but supportive and functional.

The brief summary of this section is as follows: in Scenario 1.1, every correct step should receive immediate positive feedback, every incorrect step should be corrected gently, and opportunities to try again should be provided. At the end of the scenario, the student should be rewarded with a short congratulatory message and the Hygiene Hero Badge. The reward and feedback system should be used not to put the student under pressure, but to sustain participation, reinforce correct behaviour, and develop self-confidence.

8. Teacher’s role and learning evaluation

In this scenario, the teacher is not merely the person who observes the process. The teacher is the person who facilitates, monitors, provides brief support, and plans the transfer of learning to real-life contexts. During implementation, the teacher’s main role is to observe at which stage the student can perform the handwashing skill independently, at which stage support is needed, and how accurately the student can maintain the skill in the correct sequence. For this reason, the teacher’s role should be central to the scenario.

During implementation, the teacher should be able to monitor the student’s VR experience simultaneously on an external screen. In this scenario, screen mirroring is not a technical detail, but an essential instructional requirement. Only in this way can the teacher clearly track which object the student is approaching, which step has been completed, where the student stops, and when hesitation occurs. Without screen mirroring, immediate observation, accurate guidance, and sound evaluation become much more difficult.

During implementation, the teacher should pay particular attention to the following points: whether the student can understand the initial instruction for the task; whether the student can recognize the tap as the correct object; whether the student uses the soap at the correct time; whether the student

can maintain the hand-rubbing duration; whether the student can complete the rinsing and drying steps without skipping them; whether the student follows the task in sequence or confuses the steps; how much visual and verbal prompting is needed; whether the student can sustain attention throughout the task; whether the student can return to the task after making a mistake; and whether, upon completion, the student demonstrates behaviour indicating an understanding of the handwashing routine.

The teacher's support should be brief, clear, and only as much as necessary. Long explanations should not be given to the student. When the student gets stuck at a step, the teacher may provide short verbal prompts. For example, brief directions such as, "First, turn on the tap," "Now take the soap," "Rub a little longer," or "Now use the towel" are sufficient. The aim is not to perform the task on behalf of the student, but to help the student notice the correct step. For this reason, teacher support should remain at the level of prompting and should preserve the student's active participation as much as possible.

The teacher should also determine the level of support required by the student. Since this is a basic-level scenario, the teacher should identify during implementation whether the student needs more visual cues, more frequent verbal support, or shorter sessions. The process should be simplified when necessary, taking into account the student's attention span, motor control, level of instruction comprehension, and adaptation to the VR environment. The teacher's task is not to provide the same implementation to every student, but to adjust the level of support according to the student's needs.

Observation should not focus solely on in-game success. The teacher should look at whether the student is demonstrating functional learning. In other words, the teacher should monitor not only whether the student is touching the correct objects, but also whether the student is genuinely beginning to understand that handwashing requires a sequence and a routine. Evaluation should be based not on score comparison, but on the student's observable progress. For this reason, the teacher should record even small improvements and identify the points at which the student has become more independent compared to previous attempts.

After implementation, the teacher should conduct a brief reinforcement activity that connects the scenario to real life. This activity does not need to be lengthy. For example, short activities may be planned such as reviewing the real sink routine with visuals in the classroom, verbally listing the handwashing steps, carrying out supervised practice in the school restroom, or associating the handwashing routine with appropriate moments throughout the day. In this way, the VR experience does not remain isolated, but begins to turn into a daily life behaviour. This is where the teacher's real strength becomes evident; the teacher is the person who transfers the skill learned in VR into real life.

When necessary, brief information sharing with the family should also take place. The teacher may inform the family about the steps in which the student is more independent during handwashing and the steps in which reminders are still needed. In this way, reinforcement can also be provided at home using the same sequence and the same brief language. Consistency between school and home is important for the retention of this type of self-care skill.

The main conclusion of this section is as follows: in this scenario, the teacher acts as an observer, facilitator, and transfer agent. The teacher should monitor how the student follows the handwashing sequence, at which step difficulty arises, how much support is needed to progress, and whether the skill can be transferred to real life. For effective implementation, external screen mirroring, brief and

clear prompts, monitoring of observable behaviours, and post-implementation real-life reinforcement are essential.

In this scenario, evaluation is not based on collecting points or comparing students with one another. The evaluation process should focus on monitoring the student's progress, engagement in the task, observable skill development, and functional performance. For this reason, the teacher should observe how accurately the student applies the handwashing steps in sequence, at which stage the student remains more independent, at which stage prompts are needed, and how attentively the task is sustained. In-game indicators, teacher observation, and qualitative feedback should be used together.

The key points to be evaluated in this scenario are whether the student can turn on the tap at the correct time, use the soap at the correct stage, rub the hands for an adequate duration, complete the rinsing and drying steps without skipping them, and maintain the task in the correct sequence from beginning to end. In addition, the student's response to visual and verbal cues, attention span, need for repetition, and ability to return to the task after making a mistake should also be evaluated. What matters here is not simply that the student finishes the game, but that the student begins to establish handwashing as a meaningful routine.

The evaluation process should be as formative as possible. At the end of implementation, the student should not be given only a result such as "succeeded" or "failed." Instead, the teacher should note the steps in which the student is strong and the steps in which more repetition is needed. In this way, the scenario moves beyond being a one-time activity and becomes an instructional tool that tracks the student's development. This approach is consistent with the project's overall understanding of evaluation, because within the project framework the priority is not score, but learning and functional development.

9. Inclusion, transference and educative impact

Transfer to real life is one of the most important components of this scenario. It is not sufficient for the student to experience the handwashing sequence only within the VR environment. Shortly after the implementation, the teacher should repeat the same behaviour with the student in the classroom, in the school restroom, or at a real sink set-up within the educational environment. The aim is for the student to recognize in real life the same sequence experienced in the virtual environment and to begin applying the same routine across different settings. For this reason, a clear and planned connection should be established between the VR experience and daily life practice. The reference in this paragraph to school-based and real sink practice is presented as a direct implementation suggestion based on the project's emphasis on the teacher's role in supporting transfer to real life.

Transfer to the home environment should also be supported. The teacher may share with the family which steps the student can perform independently and at which steps reminders are still needed. If the same sequence, the same brief instructions, and the same routine language are used at home, learning becomes more lasting. In this way, the scenario does not remain a digital activity limited to the school setting, but begins to develop into a daily living skill for the student. This home-based transfer is also consistent with the project's approach of recognizing families as stakeholders and of extending skill transfer into real-life contexts.

The importance of this scenario stems from the fact that handwashing is both a very basic and a highly functional self-care behaviour. Handwashing is a concrete skill, short in duration, based on a clear sequence, and immediately relevant in daily life. For this reason, it is both understandable for the student and easy for the teacher to implement. At the same time, the fact that it can be completed in a short period, supported by simple VR mechanics, and monitored through screen mirroring in the classroom makes this scenario particularly strong from a practical perspective.

This scenario also serves a broader educational purpose. Handwashing is not merely a hygiene behaviour; it is also a starting point that supports the student's self-care, independence, self-confidence, and ability to build daily life routines. Since the expected impacts of the project include the development of learner autonomy, confidence, and daily living skills, this scenario, although it may appear small, represents a fundamental building block. By repeating this skill in a safe and supportive environment, the student begins to develop the feeling of "I can do this."

The brief conclusion of this section is as follows: Scenario 1.1 Basic Hygiene Rules should be monitored through observation-based formative assessment; the VR experience should be reinforced through real sink practice; and consistent repetition should be ensured between school and home. The value of the scenario lies not only in teaching the handwashing skill within the game, but in transforming that skill into a routine that is usable, functional, and supportive of independence in the student's daily life.

Learning Scenario 1.2- Eating, Dressing and Toileting

1. Introduction

Eating, Dressing and Toileting

Learning Area 1 – Personal Care Skills

Level of Difficulty: Advanced

The “Eating, Dressing and Toileting” scenario is a learning scenario included under Learning Area 1: Personal Care Skills in the unBLOCKed curriculum and defined at an advanced level. This scenario addresses three core self-care domains that support the student’s independence in daily life within a single structure: eating with the appropriate utensil, dressing appropriately for the situation, and following the correct post-toileting care sequence. Learning Area 1 focuses on the development of personal care and self-care skills, and within this area, Scenario 1.2 targets functional skills that are directly used in everyday life.

The main purpose of this scenario is to enable the student to experience self-care skills not in isolation, but within connected daily life situations. For this reason, the scenario is divided into three mini-scenes: the kitchen, the bedroom, and the bathroom/WC. In the kitchen scene, the student practises the skill of eating with the appropriate utensil. In the bedroom, the task is to choose clothing suitable for the weather conditions. In the bathroom section, the correct toileting sequence is followed, and the process is completed with handwashing. This structure transforms the scenario from the teaching of a single behaviour into a more holistic self-care routine.

The rationale for selecting this scenario is clear. Eating, dressing, and toileting skills are among the most fundamental areas for helping students function more independently in daily life. These skills are not limited to school-based learning objectives; they are functional life skills with direct relevance at home, at school, and in social settings. For this reason, the scenario has been designed to strengthen the student’s independent living skills, increase self-confidence, and support the more accurate and safer performance of daily routines. The project framework also clearly shows that the curriculum aims to strengthen personal autonomy, self-care, and functional daily living skills.

The fact that the scenario is defined at an advanced level does not mean that the target group changes. The target group remains students aged 8 to 15 with mild intellectual disabilities. The difference here is that, instead of encountering a single short behaviour, the student is presented with a self-care sequence that requires more decision-making, object selection, and sequence tracking. Therefore, although the scenario involves slightly more processes than the basic level, it should still remain clear, visually supported, repeatable, and suitable for teacher-supported implementation.

This scenario is also a strong example of the effective use of VR. Daily life settings such as the kitchen, bedroom, and bathroom can be modelled in a simple way within the VR environment, allowing the student to practise safely in these contexts. When the student makes an incorrect choice, they are not punished; instead, they are gently guided and given the opportunity to try again. This allows self-care skills to be developed not under pressure, but within a supportive learning environment. In this way, the scenario becomes not merely a technical game segment, but a functional instructional tool that supports independent living.

2. Participant profile

This scenario has been designed primarily for students aged 8 to 15 with mild intellectual disabilities. The target group consists of students who need to develop daily living skills, but who are able to learn self-care tasks step by step through clear instructions, visual support, repetition, and teacher guidance. The fact that the scenario is defined at an advanced level does not mean that the target group changes. The difference here is that, instead of following a single short task, the student is required to follow three interconnected self-care situations within the same learning flow.

This scenario is suitable for students who have a basic level of self-care awareness, can understand short instructions, follow visual cues, make simple object choices, and sustain sequential tasks with adult support. Students are not expected to perform all tasks completely independently and without error. The aim is for the student to experience core care tasks encountered in daily life settings such as the kitchen, bedroom, and bathroom within a structured flow, and to become more independent over time.

In this scenario, students may experience three different types of difficulty. First, they may struggle with object selection. For example, they may choose a fork instead of a spoon or select inappropriate clothing instead of suitable clothing. Second, they may have difficulty making context-appropriate decisions. The student may not immediately distinguish how to dress appropriately for the weather or which object should be used in a particular setting. Third, they may experience difficulty with sequential self-care routines. Especially in the post-toileting care stage, they may confuse the order of the steps, skip a step, or think the task is finished too early.

For this reason, the student profile targeted by the scenario consists of learners who need clear and simple instructions, who follow tasks more successfully when they are broken down into small steps, and who benefit from visual cues and brief verbal guidance. The student should not be presented with too many options at the same time, the task should be shown clearly in each mini-scene, and the sequential structure should be preserved especially in the bathroom section. When the student makes a choice, the result should be immediately visible so that the cause-and-effect relationship can be understood more easily.

In this scenario, attention span, ability to follow a sequence, and level of independence may vary from student to student. Some students may complete the kitchen section more easily, while needing more support in stages such as clothing selection or the post-toileting care sequence. For this reason, the scenario should be implemented according to the student's current level of autonomy. The teacher should take into account in which mini-scene the student progresses more comfortably and at which stage more verbal or visual support is needed.

The main principle of this section is as follows: the 1.2 “Eating, Dressing and Toileting” scenario has been designed to help students with mild intellectual disabilities practise the self-care skills they use most frequently in daily life within a more holistic structure that requires somewhat greater decision-making. The goal is not to challenge the student, but to guide them step by step toward functional independence in the areas of eating, dressing, and post-toileting care.

2.1 Assessment of Special Needs According to Type of Disability

This scenario has been developed primarily for students with mild intellectual disabilities. However, during implementation, each student's support needs should be assessed individually. The aim is not to label students based on diagnosis, but to determine what type of assistance, what level of guidance, and what adaptations the student needs within this scenario. For this reason, the assessment should focus on the student's ability to understand instructions, sustain attention, select objects, follow sequential tasks, use visual cues, demonstrate motor control, and participate in daily living routines.

- Assessment for mild intellectual disability

In this scenario, three areas should be examined in particular for students with mild intellectual disabilities. First, whether the student can understand short and clear instructions. Second, whether the student can select the correct object and understand the outcome of that choice. Third, whether the student can maintain the sequential self-care flow. The student may not be able to independently distinguish between a spoon and a fork, choose clothing appropriate for the weather, or sustain the correct post-toileting care sequence. In such cases, repetition, visual cues, brief verbal support, and step-by-step progression should be the main forms of adaptation.

- Assessment in relation to autism spectrum conditions

This scenario may also be beneficial for some students on the autism spectrum. In such cases, sensory sensitivities, the need for routine, difficulty with transitions, and the need for visual simplicity should be carefully considered. Since the scenario involves transitions between three mini-scenes, namely the kitchen, bedroom, and bathroom, it should be observed whether changes of environment create stress for the student. For these students, the environment should be kept simpler, distracting sounds and visuals should be minimized, tasks should be presented in a more predictable order, and transitions should be marked very clearly.

- Assessment in relation to attention deficit and hyperactivity disorder

This scenario may also be used with students who show characteristics of attention deficit and hyperactivity disorder. In such cases, it should be assessed whether the student can maintain attention throughout the task, whether they make impulsive choices, and whether they tend to abandon the task when transitioning from one scene to another. For these students, tasks should be kept short, a single goal should be emphasized in each mini-scene, and positive feedback should be provided quickly. If necessary, the number of options should be reduced and the teacher should provide more frequent brief reminders.

- Assessment in terms of motor and performance skills

In this scenario, not only cognitive ability but also motor performance is important. The student's ability to select objects, drag and drop clothing items, move toward the correct object, and maintain control during sequential tasks should be observed. If the student has difficulty with fine motor control or using VR control tools, larger interaction areas, fewer objects, and a slower pace should be preferred. The aim is not to make the task more difficult, but to make functional participation possible.

- Key conclusion for implementation

The main decision in this section is as follows: Scenario 1.2 should not be implemented in exactly the same way for every student. What matters more than the diagnosis itself is the specific areas in which the student needs support while carrying out these three self-care tasks. For this reason, the teacher should adjust the amount of support according to the student's level of attention, comprehension, object selection, sequence tracking, sensory sensitivity, and motor use. In this way, the scenario remains inclusive while also becoming appropriate to the student's actual needs.

3. Pedagogical & Methodological framework

This scenario is based on the principle that students learn self-care skills used in daily life through active participation and practice. Instruction is not built on lengthy explanations, but on gaining experience in settings that are directly connected to real life, such as the kitchen, bedroom, and bathroom. This structure supports the student in learning skills such as eating, dressing, and post-toileting care not as abstract information, but as functional daily routines. For this reason, the scenario progresses through three mini-scenes, each of which allows the student to practise a self-care behaviour necessary for independent living in a safe VR environment.

The pedagogical foundation of this section should be based on constructivist learning, experiential learning, game-based learning, and UDL principles. The student is not a passive recipient of information, but an active participant who selects objects, makes decisions, follows a sequence, and sees the outcome immediately. This approach increases learner engagement, provides opportunities for repetition, and helps establish meaningful connections with daily life. It should be clearly recognized that, especially for students with mild intellectual disabilities, instruction needs to be concrete, experiential, repetitive, and strongly supported by visual cues.

The rationale for using VR lies in the fact that these self-care skills can be practised in an environment that is highly similar to real life, yet safe. The student practises choosing the appropriate utensil in the kitchen, selecting suitable clothing in the bedroom, and following the correct care sequence in the bathroom, all within scenes that represent real-life situations. When the student makes an incorrect choice, they do not experience a real negative consequence; instead, they receive brief guidance and try again. This makes it easier for self-care skills to be learned without pressure, through repetition, and without fear of making mistakes. In addition, VR supports the experiential reinforcement of learning outcomes, increases motivation, and allows for individualized learning pathways.

In this scenario, the principles of inclusive education should be clearly maintained. Tasks should be adaptable to the student's cognitive and functional level, visuals should be clear and highly distinguishable, objects should be presented in a large and easily selectable form, and instructions should remain short and understandable. In line with the UDL approach, multiple means of representation, engagement, and action should be provided. For this reason, scenes should be kept simple, unnecessary stimuli should be avoided, tasks should progress step by step, and the level of support should be adjusted according to the student's individual pace.

The methodological structure of the scenario should be based on short, structured, and progressive task logic. In the kitchen section, the student practises eating with the appropriate utensil. In the bedroom, the student chooses clothing according to the weather conditions. In the bathroom section, the student follows the post-toileting care sequence and completes the process with handwashing. In this way, the student experiences three different self-care domains within a single

scenario as connected daily life situations. This structure enables learning to be built not as fragmented tasks, but as a functional and holistic self-care routine.

In this scenario, instruction should serve not only to help the student find the correct answer, but also to develop functional independence. Eating, dressing, and toileting skills directly affect the student's personal autonomy and their capacity to function independently in daily life. For this reason, the educational approach of the scenario should go beyond turning self-care skills into gamified tasks; it should aim to build patterns of behaviour that the student can use in daily life. This is precisely where the value of the scenario lies: it offers the student not just a game segment, but a sequence of habits necessary for independent living.

Within this methodological framework, the teacher is an integral part of the process. The teacher should observe in which mini-scene the student experiences difficulty, which choices the student makes independently, and at which steps more support is needed. By providing brief verbal prompts when necessary, adjusting the level of support, and transferring learning into real life, the teacher strengthens the impact of the scenario. For this reason, the pedagogical framework should be built not only on the relationship between the student and the game, but also on the connection between the student, the teacher, and real-life transfer.

In summary, Scenario 1.2 “Eating, Dressing and Toileting” is a self-care teaching model based on experiential, inclusive, structured, and functional learning. VR is not the goal here; it is the tool that enables the student to practise eating, dressing, and post-toileting care skills in a safe, understandable, and repeatable environment. The main objective is to support the student in becoming more independent, more orderly, and more confident in self-care behaviours in daily life.

4. Learning Objectives

The general aim of this scenario is to support the student in functioning in a more functional, organized, and independent manner across three core self-care areas frequently encountered in daily life, namely eating, dressing, and post-toileting care skills. Within Learning Area 1, the scenario contributes to strengthening personal care and self-care skills. It also aims to develop the student's ability to select objects, make context-appropriate decisions, follow sequential tasks, and engage purposefully in simple VR interactions. At the project level, the curriculum is also expected to strengthen personal autonomy, self-care, decision-making, problem-solving, and basic digital confidence.

The specific objectives of this scenario should be defined according to the three mini-scenes. In the kitchen section, the student learns to choose the appropriate eating utensil and to match basic eating behaviour with the correct object. In the bedroom section, the student learns to select clothing appropriate to the weather conditions or the given context. In the bathroom section, the student learns to follow the correct post-toileting care sequence and to complete the process with handwashing. Through this structure, the student experiences self-care skills not as isolated tasks, but as connected routines within daily life.

Another specific objective of the scenario is to help the student recognize the difference between correct and incorrect choices. The student makes choices at decision points such as selecting the appropriate utensil, choosing suitable clothing, and following the correct care sequence. Through

these choices, the student is expected not only to complete the task, but also to learn through experience why one behaviour is more appropriate than another. In this way, the scenario provides not only self-care practice, but also basic-level decision-making and functional problem-solving opportunities.

This scenario also aims to strengthen the student's ability to follow sequential tasks. This is especially important in the bathroom section, where the steps must be carried out in a specific order. The student is expected to move on to the next step only after completing the previous one, without confusing the sequence. This objective contributes to the student's ability to carry out daily routines in a more organized way and supports more independent use of self-care skills.

The scenario also seeks to develop the student's ability to complete tasks by using visual cues, brief instructions, and object interaction within the VR environment. The student engages purposefully with the digital environment through tasks such as selecting a spoon, placing clothing on the avatar, and following the bathroom sequence. This is also aligned with the project's objective of promoting basic digital competence and confidence in using digital environments.

Based on these objectives, the expected learning outcomes are as follows. The student begins to distinguish more accurately which utensil is appropriate during eating. The student recognizes the importance of making context-appropriate choices while dressing. The student begins to understand that post-toileting care is not random, but a routine completed in a specific sequence. The student associates correct choices with feedback and, when making an incorrect choice, moves closer to the correct behaviour through repeated attempts. By the end of the scenario, the student is expected to demonstrate more conscious, more organized, and better supported performance across the three self-care domains.

The operational outcome of this section is as follows: the 1.2 "Eating, Dressing and Toileting" scenario aims to develop the student's ability to eat with the appropriate utensil, dress appropriately for the situation, follow the correct post-toileting care sequence, make functional choices, and sustain self-care routines more independently. The scenario provides a holistic self-care learning experience that strengthens personal autonomy and daily living competence.

5. Environment Description

The environment of this scenario should be structured within a home context. Rather than taking place in a single setting, the scenario should progress through three consecutive mini-scenes: the kitchen, the bedroom, and the bathroom/WC. This structure allows the student to experience eating, dressing, and post-toileting care skills within the natural flow of daily life. The fact that the scenario is defined at an advanced level also requires that, instead of focusing on a single self-care behaviour, three interconnected life situations be included within the same learning sequence.

The kitchen scene is the first part of the scenario. In this section, the student should be placed in a simple kitchen environment where the eating task will be carried out. Since the main focus is on helping the student choose the appropriate eating utensil, only task-related objects should be included in the scene. The food container and the correct utensil should be clearly visible; unnecessary kitchen details, distracting decorations, and excessive objects should be avoided. It should be immediately clear to the student what they are expected to focus on.

The bedroom scene is the second part. In this section, the environment should be designed as a simple and understandable personal space in which the student can make a dressing-related decision. Since the main task is to choose clothing appropriate to the weather conditions or the given context, the scene should contain only those elements that direct the student's attention to this decision. Clothing options should be presented clearly, the avatar or character should be visible, and the selection process should not be made confusing. The purpose of this scene is not to encourage wardrobe exploration, but to support the skill of choosing appropriate clothing.

The bathroom/WC scene is the third and most sequential part of the scenario. In this section, the student follows the post-toileting care sequence and completes the process with handwashing. For this reason, the toilet, the necessary cleaning-related elements, the sink, the soap, and the materials needed for drying should all be clearly present in the scene. Since the bathroom section relies more explicitly than the other two scenes on a step-by-step sequence, the environmental arrangement should also support this order. From the layout of the scene, the student should be able to understand which object is to be used and at what point.

The shared design principle across all three mini-scenes should be simplicity, clarity, and low stimulation. Each scene should include only the objects that directly support the task; too many options, unnecessary decoration, and complex backgrounds should be avoided. Objects should be large, easily selectable, and presented in a way that makes their function understandable. In this scenario, the purpose of the environmental design is not to create a realistic home decoration, but to make it easier for the student to focus on the self-care task.

Transitions between scenes should also be clear. When the student completes one mini-scene, the transition to the next should not be sudden or ambiguous. The transition may be supported by a brief prompt, a simple visual cue, or a short explanation from the guide avatar. This is especially important for students who may have difficulty coping with changes in the environment. Since the scenario is defined at an advanced level and therefore involves more decision-making, environmental transitions should not create confusion.

In each scene, the interaction areas should be clear and predictable. The student should be able to easily recognize which object can be interacted with. A brief visual highlight may be used when the student moves toward the correct object; however, this highlight should not be distracting. In particular, object placement should remain consistent for utensil selection in the kitchen, clothing selection in the bedroom, and sequential care steps in the bathroom. In this way, the student can focus on carrying out the task rather than trying to understand the scene.

In summary, the environment of the 1.2 "Eating, Dressing and Toileting" scenario should consist of three clearly defined mini-scenes within a home context: the kitchen, the bedroom, and the bathroom/WC. Each scene should be designed in a simple, task-focused, and low-stimulation manner in order to make it easier for the student to choose the correct object, make appropriate decisions, and follow the care sequence. The main function of environmental design is to enable the student to experience self-care skills within a structure that is both understandable and closely connected to real life.

6. Game Flow

The scenario should begin with a short and clear introductory sentence from the guide avatar. The student should be told that they will complete three daily life tasks today. The first task takes place in the kitchen, the second in the bedroom, and the third in the bathroom. The opening statement should not be long; it should simply prepare the student for the next task. In this section, the avatar should direct the student's attention to the sequence of tasks and make the transitions easy to understand.

1. Kitchen scene

The student first enters the kitchen scene. On the table, there is a plate, a spoon, and food. The task is to begin the eating behaviour by using the appropriate utensil. In this scenario, the correct choice is the spoon. When the student selects the spoon, the task progresses correctly. If the student selects a fork instead, the guide avatar should provide a brief and gentle correction. The message should be simple and direct, such as, "A spoon is more suitable for this food." When the correct choice is made, a positive response should be given, and the student should be prepared for the next scene.

2. Bedroom scene

After the kitchen task is completed, the student moves to the bedroom. In this scene, the student is expected to choose clothing appropriate to the weather conditions or the given context. For example, a coat may be selected for winter, or a T-shirt for summer. When the student chooses the correct clothing, the guide avatar gives a positive response and the selected clothing appears on the avatar. If the student makes an incorrect choice, the system should not punish the student; instead, it should encourage them to reconsider through a short and clear prompt. For example, if thin clothing is selected for cold weather, a snowflake symbol may appear and a short phrase such as, "You may feel cold, choose something warmer," may be used.

3. Bathroom/WC scene

After the bedroom task is completed, the student moves to the bathroom scene. In this section, the task should proceed in a sequential way. The student first sits on the toilet, then completes the cleaning step, and afterwards washes their hands with soap. This scene is the part that requires the clearest sequence tracking among the three mini-sections. When the student confuses the steps, the guide avatar should intervene gently. For example, if the student attempts to wash their hands too early, a short prompt such as, "First clean yourself, then wash your hands," should be provided. This structure supports the student in understanding that post-toileting care is not random, but a routine completed in a specific order.

- Transitions and flow logic

The transitions between the three scenes should be clear. The next scene should not begin until the previous one has been completed. At the end of each section, a brief positive transition message may be given. In this way, the student can more easily understand where they are, which task has been completed, and what comes next. Although the scenario is at an advanced level and the tasks are therefore more holistic than a single-skill activity, the flow should still remain clear, brief, and predictable.

- Correct and incorrect responses

In this section, correct responses should be immediately visible. Correct utensil selection, correct clothing selection, and the correct care sequence should be reinforced through a positive sound, a brief visual highlight, and a supportive response from the avatar. In cases of incorrect responses, however, there should be no harsh warning, punishment, or sense of failure. Incorrect choices should be met only with a brief cue, a gentle correction, and an opportunity to try again. This approach ensures that the scenario remains both safe and instructional.

- Scenario completion

The scenario should end once the student has completed the kitchen, bedroom, and bathroom tasks. In the closing section, the guide avatar briefly congratulates the student and states that they have successfully completed the daily living skills tasks. The end of the scenario should be designed in a way that helps the student feel that they have completed three different self-care areas as part of one holistic daily life routine. The completion moment should be simple, positive, and motivating.

7. Mechanics

In this scenario, the mechanical structure should be designed so that the student can complete the self-care tasks across the three mini-scenes in a clear, simple, and step-by-step manner. According to the guide document, this section should explain the logic of correct and incorrect responses, VR interaction, and the reward system together. In the current draft of Scenario 1.2, the mechanics are defined exactly along these lines: object selection, drag-and-drop placement of clothing, sequential task progression in the bathroom section, visual cues, guide avatar support, and a non-punitive repetition structure.

In the kitchen scene, the core mechanic should be object selection. The student selects the correct utensil in relation to the plate and the food. In this scene, the correct choice is the spoon; when the fork is selected, the system should not respond with harsh negative feedback, but should instead provide a brief and gentle correction through the guide avatar. When the correct choice is made, the object may receive a short visual highlight and a positive sound may be played. In this way, the student immediately sees the outcome of the choice and can establish the cause-and-effect relationship more easily.

In the bedroom scene, the core mechanic should be drag and drop, that is, selecting the clothing item and placing it on the avatar. When the student chooses appropriate clothing, it should appear on the avatar and the guide avatar should respond positively. If unsuitable clothing is selected, the system should not be punitive; rather, it should invite the student to try again through a brief visual cue and a guiding message. In the current draft, a small weather-related icon and a short reminder are suggested for this purpose. This mechanic supports not only the selection of an item, but also context-appropriate decision-making.

In the bathroom/WC scene, the mechanical structure should be more explicitly sequence-based. In this section, the student should follow the sequence of sitting on the toilet, cleaning themselves, and then washing their hands with soap. The core rule of the system is this: the next step should not be unlocked before the current step has been completed. If the student breaks the sequence, the guide avatar should provide a brief and clear prompt, after which the student should be given the

opportunity to try again. This mechanic is necessary in order to teach self-care behaviour not as something random, but as a functional routine.

The general VR interaction should be designed to be as simple, predictable, and cognitively low-demand as possible. The project's conceptual framework emphasizes that instruction for students with mild intellectual disabilities should be concrete, experiential, repetitive, and visually strong; the UDL approach also highlights the need for multiple means of action and high distinguishability. For this reason, interaction in Scenario 1.2 should not rely on navigating menus or reading long texts, but should proceed through touching, selecting, dragging, and following a sequence. Objects should be large, easy to select, and clearly functional.

The logic of correct responses should be immediate, visible, and understandable in every scene. When the student selects the correct utensil, identifies appropriate clothing, or follows the bathroom sequence correctly, the system should show this positively right away. The current draft suggests a brief glow on the object and the use of a positive sound for correct choices. This immediate feedback strengthens the student's sense of "I did it correctly" and helps sustain the flow of the scenario.

The logic of incorrect responses, by contrast, should be based on non-punitive correction and the right to retry. In Scenario 1.2, a system involving point loss, harsh warnings, or a sense of failure is not recommended for incorrect choices. Instead, brief reminders, guidance from the guide avatar, and the opportunity to try again should be provided. This structure supports a safe error-making cycle while also preserving student motivation. The project's general approach also emphasizes repetition without stigma and with immediate feedback.

The reward system should be considered as part of this mechanical structure. Small positive reinforcements may be given for each correct step, but these should not be so strong as to become distracting. At the end of the scenario, it is recommended that the student receive the Independent Living Hero badge. This badge symbolizes that the student has completed three different self-care tasks within a single daily life flow. In the draft, the purpose of this badge is to help create a sense of confidence in the student's ability to manage daily life more independently.

Another function of the mechanics in this scenario is to facilitate teacher observation. Correct and incorrect choices should be clear enough to be monitored from an external screen. The teacher should be able to notice easily in which mini-scene the student struggles, which choices are made quickly, and at what point guidance is needed. Indeed, the sample draft identifies it as a core requirement that the teacher should be able to watch the student's VR display on a screen and provide support when necessary.

The brief conclusion of this section is as follows: in the 1.2 "Eating, Dressing and Toileting" scenario, the mechanics should operate through object selection, drag and drop, sequential task progression, visual cues, guide avatar guidance, immediate positive feedback, non-punitive correction, and an end-of-scenario badge reward. The main purpose of the mechanics is not to make the game more complex, but to enable the student to learn eating, dressing, and post-toileting care skills in a clear, safe, and repeatable way.

8. Teacher's Role and Learning Evaluation

In this scenario, the teacher is not merely an observer. The teacher is the person who monitors, provides brief support, adapts the process, and plans the transfer of learning to real-life contexts. The Learning Scenario Guide also requires that the teacher's role, evaluation indicators, and follow-up tools be clearly described in this section. Within the unBLOCKed framework, teachers are defined as facilitators, observers, and mediators; in other words, the teacher's role is not simply to start the game, but to understand and guide the student's learning process.

During implementation, the teacher should be able to monitor the student's VR experience in real time through screen mirroring. In this scenario, screen mirroring should be considered essential. Only in this way can the teacher see in real time which utensil the student selects in the kitchen, which clothing item the student chooses in the bedroom, and how the student follows the care sequence in the bathroom. The current draft of Scenario 1.2 also defines it as a core requirement that the teacher should be able to support the student by viewing the VR display on a screen or TV.

The teacher's first responsibility is to observe the student's performance separately in each of the three mini-scenes.

In the kitchen section, the teacher should observe whether the student can select the appropriate eating utensil. Can the student understand the difference between a spoon and a fork? Can the student make the correct choice without prompting? After making an incorrect choice, can the student understand the guidance and correct it? These points should be monitored. The draft of Scenario 1.2 also clearly states that the kitchen task is fundamentally based on selecting the appropriate utensil.

In the bedroom section, the teacher should observe the student's ability to make context-appropriate decisions. Can the student choose clothing suitable for the weather? Is the correct choice made randomly, or does the student actually distinguish the appropriate option? When an incorrect choice is made, can the student understand the feedback and make a new selection? These points should be followed closely. This section provides an important opportunity not only for observing clothing selection, but also for observing appropriateness and decision-making.

In the bathroom section, the teacher should focus on whether the student can maintain the sequential self-care routine. Does the student confuse the steps? Skip a stage? Think the task is finished too early? Can the student understand the brief corrective prompts given by the guide avatar? These points should be carefully observed. This scene is the strongest assessment area of the scenario, because it makes visible not only object selection, but also functional sequence tracking.

Teacher support should be brief, clear, and only as much as necessary. When the student gets stuck at a stage, short verbal prompts should be given instead of long explanations. For example, sentences such as "Look at the spoon," "It's cold, choose something warmer," or "First clean yourself, then wash your hands" are sufficient. The aim is not to make decisions on behalf of the student, but to help the student notice the correct choice and the correct sequence. In general, the unBLOCKed approach expects the teacher to adapt the activity, provide guidance, and support learning.

Evaluation in this scenario should be formative. In other words, the teacher should not provide the student only with a "right" or "wrong" result, but should note in which scene the student is more independent, in which scene more support is needed, and how the student progresses over time. The

unBLOCKed framework bases evaluation not on performance comparison, but on observable skill development, participation, and functional performance. Observation, in-game indicators, and qualitative feedback should be used together.

The main evaluation indicators for this scenario should include the following:

- Can the student choose the appropriate eating utensil?
- Can the student distinguish clothing appropriate to the weather?
- Can the student follow the correct post-toileting care sequence?
- How does the student respond to visual and verbal cues?
- Can the student return to the task after making an incorrect choice?
- Can the student complete the three mini-scenes while maintaining attention?
- Can the student progress with gradually less support?

These indicators are both functional from a special education perspective and observable from the perspective of the game development team. The guide also specifically requires that this section include evaluation indicators and follow-up instruments.

The follow-up tools should also be simple and practical. The teacher may use a short observation form. In this form, the three mini-scenes should be listed separately, and for each one there should be brief marking categories such as “completed independently,” “completed with brief prompting,” and “completed with intensive support.” In addition, the teacher may take short notes. Notes such as “Selected correctly in the kitchen,” “Hesitated during clothing selection,” or “Confused the bathroom sequence but corrected it with prompting” are sufficient. From the perspective of the unBLOCKed approach to continuous improvement and feedback, such brief monitoring records are useful.

The teacher should also conduct a short follow-up activity after the scenario. This activity does not need to be long. A brief classroom discussion may be held with the student. Questions such as “Which utensil did you use while eating?”, “What do we wear in cold weather?”, or “What do we do after using the toilet?” can help make the learning visible. Afterwards, the teacher can reinforce the connection between VR and real life by observing the same skills in real-life activities. This method is consistent with the follow-up and transfer logic also seen in the other sample scenarios.

The brief conclusion of this section is as follows: in the 1.2 “Eating, Dressing and Toileting” scenario, the teacher is the person who monitors in real time through screen mirroring, provides brief support, evaluates performance separately in the three mini-scenes, and transfers learning into real life. Evaluation should be based not on points, but on level of independence, accuracy of choice, sequence tracking, need for prompting, and functional progress. For this reason, it is appropriate for the teacher to use observation forms, brief notes, and post-implementation follow-up activities.

9. Inclusion, Transference and Educative Impact

This scenario should be implemented in line with the principle of inclusion, within a structure that allows each student to participate not in exactly the same way, but according to their own level of support needs. The unBLOCKed framework envisages learning areas that are flexible, adaptable, and competence-based, and it also requires VR use to be arranged in accordance with the student’s functional needs. For this reason, Scenario 1.2 should be capable of being simplified or additionally supported in the kitchen, bedroom, and bathroom sections according to the student’s level of

attention, comprehension, object selection, decision-making, and sequence tracking. Inclusion here does not merely mean providing access; it means establishing a learning structure in which the student can genuinely participate and succeed.

This scenario has strong potential for transfer to real life because the three skills it addresses are directly embedded in everyday life. Eating with the appropriate utensil, dressing according to the weather, and completing the post-toileting care sequence are all self-care behaviours that students encounter every day at home, at school, and in social life. The aim of the scenario is not only to have students perform these behaviours within VR, but also to help them recognize and begin to apply them as part of their daily life routine. The overall goals of the project also clearly emphasize strengthening daily living skills, personal autonomy, and the capacity for independent living.

To support transfer to real life, the teacher should carry out brief but planned reinforcement activities after the scenario. Following the kitchen section, the teacher may review which utensil is appropriate in the real classroom setting or during mealtime. After the dressing section, an activity on choosing clothing according to the weather may be conducted. After the bathroom section, the post-toileting care sequence may be revisited through visuals or through a real sink routine. This approach is consistent with the view that the teacher is not merely the person who manages the game, but the person who transfers the skill into real life.

The family dimension is also important. The project framework explicitly identifies families as a secondary target group and includes them in the feedback and implementation process. For this reason, the teacher may share with the family in which parts the student is more independent and in which parts reminders are still needed. If the same brief language and the same sequence logic are used at home, learning becomes more durable. In this way, the scenario becomes a skill-teaching tool that begins at school, is reinforced at home, and extends into daily life.

The educational impact of this scenario is significant because, although the skills taught here may appear small, they are fundamental to independent living. The current scenario draft also emphasizes the importance of this section and states it clearly through the phrase “Essential daily skills, critical for independence.” As the student repeats behaviours such as selecting the correct utensil, making an appropriate clothing choice, and following the correct care sequence, they do not merely complete tasks; they also develop confidence in their ability to manage daily life more independently. The Independent Living Hero badge awarded at the end of the scenario also serves as a symbolic reinforcement of this sense of independence.

The conclusion of this section is as follows: Scenario 1.2 “Eating, Dressing and Toileting” is a high-impact self-care scenario that can be adapted inclusively, transferred directly to real life, and used to strengthen the student’s independence in daily life. Its value lies not only in presenting three tasks within VR, but in helping eating, dressing, and post-toileting care skills become usable, repeatable, and gradually more independently performed in the student’s everyday life.

Learning Scenario 1.3 - Health and Safety Rules

1. Introduction

Health and Safety Rules

Learning Area 1 – Personal Care Skills

Level of Difficulty: Basic

The “Health and Safety Rules” scenario is designed to support students in developing fundamental awareness of health and safety rules within a familiar home environment. Through guided interaction in a virtual reality setting that includes a kitchen and living room, learners are introduced to everyday objects and are encouraged to distinguish between those that are safe and those that may present potential danger. The scenario focuses on building early risk recognition skills, which are essential for independent functioning and personal safety.

Understanding safety in the home is one of the most critical aspects of early life skills development. Environments such as kitchens and living rooms contain a variety of objects that can be harmless or hazardous depending on how they are used. For many learners, particularly those with mild intellectual disabilities, recognising these differences is not always intuitive. This scenario addresses this challenge by providing a structured and immersive environment where students can explore, make decisions, and receive immediate feedback without exposure to real-world risks.

The use of virtual reality (VR) enhances the learning experience by allowing students to engage actively with their surroundings. Rather than passively receiving information, learners participate in a process of discovery, which improves retention and understanding. The scenario aligns with inclusive educational practices and supports the broader goal of fostering independence, confidence, and safety awareness in everyday life.

2. Participant Profile

This scenario is intended for children between the ages of six and twelve, particularly those with mild intellectual disabilities or developmental delays. It is especially suitable for learners who are in the early stages of developing autonomy and require structured guidance to understand their environment and make safe choices.

Students participating in this activity are expected to have basic interaction skills, such as the ability to follow simple instructions and engage with objects through pointing or selecting. While they may demonstrate emerging independence, they often require support in recognising risks, understanding consequences, and regulating their behaviour when interacting with unfamiliar or potentially dangerous items.

Learners in this group may experience challenges related to attention, impulse control, and comprehension of cause-and-effect relationships. For example, a child may recognise an object such as a knife but may not fully understand why it can be dangerous. Similarly, they may be attracted to visually interesting elements such as electrical sockets or cleaning products without recognising the associated risks.

To address these needs, the scenario incorporates a range of supportive design features, including simple and clear language, strong visual cues, and consistent feedback mechanisms. The inclusion of a guide avatar further supports comprehension by providing explanations and reinforcing correct responses. The overall design follows Universal Design for Learning principles, ensuring that the experience remains accessible, engaging, and adaptable to different learning profiles.

3. Pedagogical and Methodological Framework

The pedagogical foundation of this scenario is based on experiential and game-based learning approaches, combined with inclusive education principles. The central idea is that students learn most effectively when they are actively engaged in meaningful tasks and are able to observe the consequences of their actions in a safe and supportive environment.

Virtual reality plays a key role in this process by creating an immersive setting in which learners can interact with objects as they would in real life. This approach allows students to develop practical understanding through direct experience, rather than relying solely on abstract explanations. By repeatedly identifying safe and dangerous objects, learners gradually build a clearer understanding of safety rules and their importance.

The methodology emphasises structured guidance and gradual progression. The presence of a guide avatar ensures that students are not left to navigate the environment independently without support. Instead, they are guided through each step of the activity, with clear instructions and immediate feedback that reinforce learning. Incorrect responses are not penalised but are used as opportunities for reflection and improvement, encouraging a positive and supportive learning experience.

In terms of inclusivity, the scenario integrates Universal Design for Learning principles by offering multiple forms of representation and engagement. Visual cues, such as colour changes and object highlighting, support comprehension, while audio feedback reinforces understanding through verbal explanation. The simplicity of the interaction design reduces cognitive load and allows learners to focus on the key learning objectives.

This approach also supports functional learning, as the skills developed within the scenario are directly applicable to real-life situations. By practising safety awareness in a familiar context, students are better prepared to apply these skills in their own homes, contributing to increased independence and reduced risk of accidents.

4. Learning Objectives

General Objectives

The general objective of this scenario is to develop students' ability to recognise and understand basic safety rules within a home environment. It also aims to strengthen their capacity to make safe decisions and respond appropriately when encountering potentially dangerous objects in everyday situations.

Specific Objectives

- Identify common household objects in the kitchen and living room
- Distinguish between safe and dangerous items

- Understand basic safety rules related to everyday objects
- Develop appropriate responses when encountering hazards
- Improve attention and awareness of the surrounding environment
- Build confidence in making safe choices

Expected Learning Outcomes

After completing the scenario, students will be able to:

- Recognise and correctly identify dangerous household objects such as knives, electrical sockets, hot stoves, and detergents
- Identify safe objects such as toys and books without hesitation
- Demonstrate appropriate reactions when interacting with different objects
- Show increased awareness of potential risks in a home environment
- Apply learned safety rules in similar real-life situations
- Display greater confidence and independence when making safety-related decisions

5. Environment Description

The virtual environment is designed to replicate a typical home setting, focusing on two key areas: the kitchen and the living room. These spaces are familiar to most learners and provide a relevant context for exploring safety-related concepts.

The kitchen includes objects such as a hot stove, a sharp knife, and cleaning detergent, all of which represent common household hazards. The living room contains items such as a toy, a book, a chair, and an electrical socket, offering a mix of safe and potentially dangerous elements. The selection of objects is intentional, as it reflects situations that students are likely to encounter in their everyday lives.

The visual design of the environment balances realism with simplicity. The spaces are colourful and engaging, helping to maintain the learner's attention, while unnecessary details are minimised to avoid cognitive overload. Dangerous items are presented in a way that makes them noticeable without being frightening. For example, they may appear slightly more detailed or visually distinct, encouraging the learner to focus on them.

Interaction within the environment is supported through clear visual and auditory cues. When the learner approaches or selects an object, it responds with colour changes and sound effects that indicate whether the choice is correct or incorrect. This immediate feedback helps reinforce learning and guides the student toward the correct understanding of safety rules.

6. Game Flow

The scenario begins in a familiar home setting, where the learner is placed inside a virtual kitchen and living room. The transition into the activity is guided and structured to ensure that the student understands both the objective and the expectations of the task.

Start

The guide avatar appears on the screen and introduces the activity in a clear and encouraging tone:

“Today you will explore your home and learn how to stay safe. You will find objects and decide which ones are safe and which ones can be dangerous.”

The avatar briefly looks around the environment together with the learner, pointing out that some objects are safe to use, while others require caution. This introduction sets the context and prepares the learner for active participation.

Step One – Exploring the Living Room and Identifying Safe Objects

1. The learner begins in the living room, where several familiar objects are placed within reach, such as a toy, a book, a chair, and an electrical socket. The environment is calm and visually clear, allowing the learner to focus on each object individually.
2. The guide avatar prompts the learner:

“Let’s look around. Can you find something that is safe to use?”

3. When the learner focuses on a toy or a book, two simple interaction options appear implicitly through action:

(A) Select the object.

(B) Move away and look at another item.

4. If the learner selects a safe object such as the toy, the object softly glows green, and a positive sound is played. The avatar responds:

“Great! This is safe. You can play with toys.”

5. If the learner instead selects the electrical socket, the object immediately emits a red glow, accompanied by a gentle alert sound. The avatar intervenes calmly:

“Careful. This can be dangerous. We should not touch electrical sockets.”

6. To reinforce understanding, the avatar may add a short explanation:

“Electricity can hurt you, so we stay away from this.”

7. If the learner hesitates or repeatedly selects incorrect objects, the avatar provides additional guidance:

“Look carefully. Which objects do you use every day without getting hurt?”

8. This step continues until the learner demonstrates an understanding of safe versus unsafe objects in the living room.

Step Two – Recognising Hidden Dangers in Familiar Spaces

1. As the learner continues exploring the living room, attention is gradually directed toward less obvious dangers. The guide avatar shifts the focus:

“Some objects may look simple, but they can still be dangerous. Let’s look again.”

2. The learner is encouraged to re-examine the electrical socket and other items. If the learner correctly identifies the socket as dangerous during this stage, the feedback is reinforced more strongly:

“Well done. You remembered that this is dangerous. That helps keep you safe.”

3. If the learner still struggles, the avatar may visually highlight the object before prompting:

“This one needs extra attention. What do you think?”

4. This step ensures that learning is not based on guessing but on understanding and recognition.

Step Three – Transition to the Kitchen and Identifying Hazardous Objects

1. The scene smoothly transitions into the kitchen, where the learner encounters objects such as a hot stove, a sharp knife, and a bottle of cleaning detergent. The environment remains structured but slightly more complex, reflecting a higher level of risk.
2. The guide avatar explains:

“The kitchen has many useful things, but some of them can be dangerous if we are not careful.”

3. The learner is then prompted:

“Let’s find the objects that can hurt us.”

4. When the learner selects the knife, it glows red, and a clear alert sound is heard. The avatar responds:

“Careful. This is a knife. It is sharp and can cut you.”

5. If the learner selects the hot stove, a subtle visual effect (such as heat waves) appears, and the avatar explains:

“This is hot. You can burn your hand if you touch it.”

6. If the learner selects the cleaning detergent, the avatar provides a contextual explanation:

“This is not for playing. It can be harmful if you touch or drink it.”

7. If the learner incorrectly identifies one of these objects as safe, the avatar gently corrects them:

“Let’s think again. This object can be dangerous. What should we do instead?”

8. The learner is then given another opportunity to respond correctly.

Step Four – Making Safe Choices Through Guided Decision-Making

1. At this stage, the learner is encouraged to actively make decisions based on what they have learned. The guide avatar introduces a reflective prompt:

“Now you know more about these objects. Let’s see if you can choose what is safe and what is dangerous.”

2. The learner is presented with a sequence of objects from both the living room and the kitchen. Each interaction requires the learner to apply previously acquired knowledge.
3. For example, when the learner approaches a book, the correct interaction leads to green feedback and the message:

“Yes, this is safe.”

4. When approaching the stove or knife, the correct recognition leads to red feedback and a reinforcing explanation.
5. If the learner makes an incorrect choice, the system does not penalise but instead pauses briefly. The avatar then provides guidance:

“Remember what we learned. Some objects can hurt us. Let’s try again.”

6. This repetition strengthens learning through practice and reflection.

Step Five – Completion and Reinforcement of Learning

1. Once the learner has successfully identified all objects, the scenario moves toward completion. The guide avatar reappears in a central position and summarises the activity:

“Today you learned how to find safe and dangerous objects in your home. You were able to recognise things that can hurt you and things that are safe to use.”

2. The avatar briefly revisits key examples:

“You saw that toys and books are safe, but knives, hot stoves, and electrical sockets can be dangerous.”

3. At this point, a reward animation appears, and the learner receives a symbolic achievement:

“You are now a Safety Detective!”

4. A badge appears on the screen, accompanied by a positive sound effect, reinforcing the learner’s success.
5. The avatar concludes:

“Great job. Now you can stay safe at home.”

6. The scenario ends with a calm visual transition, allowing the learner to exit the experience with a clear understanding of the key concepts.

7. Mechanics

The mechanics of the scenario are intentionally simple to ensure accessibility for all learners. Interaction is primarily based on pointing and selecting objects within the virtual environment. This intuitive approach allows students to focus on the learning content rather than the complexity of the controls.

Visual cues play a central role in guiding the learner. Safe objects are consistently associated with green colouring, while dangerous objects are highlighted in red. These colour associations are reinforced throughout the scenario, helping students build clear and consistent understanding.

Audio feedback complements the visual elements by providing immediate reinforcement. Positive sounds and encouraging messages are used to acknowledge correct choices, while gentle alert sounds signal incorrect responses. The guide avatar serves as a constant source of support, offering explanations and prompts when needed.

The reward system is designed to motivate learners and enhance engagement. Correct responses are celebrated through simple animations and sound effects, creating a sense of achievement. At the completion of the scenario, the learner receives a symbolic reward, such as a “Safety Detective Badge,” which reinforces their success and encourages continued participation.

8. Teacher’s Role and Learning Evaluation

The teacher plays an essential role in facilitating and supporting the learning experience. During the VR activity, the teacher observes the student’s interactions through screen projection, allowing them to monitor decision-making processes and identify areas where additional support may be needed.

In situations where the student struggles to understand a concept, the teacher can provide further explanation using simple and concrete examples. For instance, they may explain that a knife is dangerous because it is sharp and can cause injury. This additional guidance helps bridge the gap between the virtual experience and real-world understanding.

The teacher is also responsible for adapting the level of difficulty according to the learner’s needs. This may involve reducing the number of objects in the environment or gradually introducing more complex scenarios as the student’s confidence increases.

Evaluation is primarily based on observation. The teacher assesses the student’s ability to correctly identify safe and dangerous objects, respond to feedback, and demonstrate increasing independence. These observations can be supported by simple assessment tools such as checklists or reflective discussions following the activity.

9. Inclusion, Transference and Educational Impact

This scenario is designed with a strong focus on inclusion, ensuring that all learners, regardless of their cognitive abilities or developmental profile, can actively participate and benefit from the experience. The use of simple language, clear visual cues, and immediate feedback reduces cognitive barriers and supports understanding. The structured and guided nature of the activity allows learners to progress at their own pace, while repetition and consistent reinforcement provide additional support for those who require it. By offering a safe and predictable environment, the scenario helps

reduce anxiety and encourages engagement, making it accessible to a wide range of learners, including those with mild intellectual disabilities.

The scenario also places significant emphasis on the transfer of learning to real-life situations. The objects and environments presented in the virtual setting are intentionally familiar, reflecting everyday home contexts such as the kitchen and living room. This connection between the virtual and real world supports learners in recognising similar situations outside the classroom. By repeatedly practising how to identify safe and dangerous objects, students develop skills that can be directly applied in their daily lives, such as avoiding contact with hazardous items or seeking help when unsure. Teachers and caregivers can further support this transfer by reinforcing these concepts in real environments, encouraging students to apply what they have learned during the VR experience.

From an educational perspective, the scenario contributes to the development of essential functional life skills, particularly in the area of personal safety and independent living. It promotes not only knowledge acquisition but also behavioural change, as learners begin to internalise safety rules and apply them more consistently. The interactive and immersive nature of the activity increases motivation and engagement, which in turn enhances learning outcomes and retention. Furthermore, the scenario provides valuable opportunities for teachers to observe students' decision-making processes and identify areas where additional support may be needed.

Overall, this learning experience has a meaningful impact on students' autonomy and confidence. By equipping learners with practical safety skills in a supportive and engaging environment, the scenario supports their ability to navigate everyday situations more independently and safely, contributing to their overall inclusion and well-being.

Learning Scenario 1.4 – Managing Personal Space and Belongings

1. Introduction

Managing Personal Space and Belongings

Learning Area 1 – Personal Care Skills

Level of Difficulty: Advanced

The "Managing Personal Space and Belongings" learning scenario aims to support students in developing the ability to organise and manage their personal space effectively. Through guided interaction in a virtual bedroom environment, learners practise recognising where personal belongings should be placed and how to maintain an organised and functional living space.

Managing personal space is a key component of independent living and personal responsibility, particularly for adolescents who are gradually developing autonomy. For students with mild intellectual disabilities, tasks such as organising belongings, maintaining order, and understanding the purpose of different storage areas can present challenges. This scenario provides a structured and supportive VR environment where these tasks are broken down into clear, manageable actions.

By engaging in repeated, guided practice, students develop organisational habits and a sense of responsibility for their personal environment. The scenario aligns with the objectives of inclusive education by promoting functional independence, daily living skills, and self-management through an engaging and immersive learning experience.

2. Participant Profile

This scenario is designed for adolescents aged 13 to 17 with mild intellectual disabilities or similar learning profiles. It is particularly suitable for learners who are developing independence in managing their personal environment but may still require guidance and structured support.

Students are expected to demonstrate emerging autonomy in everyday tasks, such as dressing themselves, managing personal items, and following basic routines. However, they may experience difficulties in organising their belongings, maintaining order over time, or understanding the importance of tidiness in daily life.

Common challenges include reduced attention to detail, difficulty categorising items, and limited motivation to complete organisational tasks. Learners may also struggle to understand the long-term benefits of maintaining an organised space, often focusing only on immediate actions.

To address these challenges, the scenario incorporates clear visual structures, defined storage areas, and immediate feedback. The use of a guide avatar supports understanding and provides consistent guidance throughout the activity. The design follows Universal Design for Learning principles, ensuring accessibility, clarity, and engagement for a wide range of learners.

3. Pedagogical and Methodological Framework

This scenario is grounded in experiential learning, task-based learning, and inclusive education principles. It emphasises learning through active participation, allowing students to engage directly with tasks that reflect real-life responsibilities.

The use of virtual reality enables learners to practise organising their personal space in a safe and controlled environment. This immersive approach allows students to experiment, make mistakes, and learn from them without real-world consequences. The scenario promotes repetition and gradual mastery, which are essential for developing habits and routines.

The pedagogical approach is structured and supportive, with the guide avatar providing step-by-step instructions and feedback. This ensures that learners are not overwhelmed and can focus on one task at a time. Immediate feedback reinforces correct behaviour and gently redirects incorrect actions, promoting a positive learning experience.

In terms of inclusivity, the scenario integrates Universal Design for Learning principles by offering clear visual cues, simple interactions, and consistent guidance. The environment is designed to minimise distractions while maintaining engagement, allowing learners to focus on the task.

The scenario also supports functional learning, as the skills developed are directly applicable to real-life contexts. By practising how to organise personal belongings, students develop habits that contribute to independence, responsibility, and self-care.

4. Learning Objectives

General Objective

The general objective of this scenario is to develop students' ability to organise their personal space and manage their belongings effectively. It also aims to promote responsibility and independence in maintaining a clean and functional environment.

Specific Objectives

- Identify different types of personal belongings
- Recognise appropriate storage locations for each item
- Develop organisational skills through categorisation
- Practise placing objects in correct locations
- Improve attention to order and cleanliness
- Build responsibility for personal space

Expected Learning Outcomes

After completing the scenario, students will be able to:

- Correctly place items such as clothing, books, and personal objects in appropriate locations
- Demonstrate understanding of how an organised space is structured
- Show increased ability to complete organisation tasks independently
- Maintain focus while completing multi-step tasks
- Apply organisational skills in real-life bedroom or personal environments
- Display increased responsibility for personal belongings

5. Environment Description

The scenario takes place in a virtual bedroom designed to reflect a typical adolescent's personal space. The room initially appears disorganised, with clothing, books, and various personal items scattered across the floor and furniture.

Key elements of the environment include a wardrobe for clothing, a bookshelf for books and study materials, and storage containers or drawers for miscellaneous items. Additional elements such as a bed, desk, and chair are present to create a realistic and relatable setting.

The visual design is structured and clear, with specific areas subtly highlighted to guide the learner. Storage zones such as the wardrobe and bookshelf use visual cues, including soft glowing effects and colour accents, to indicate their function. These cues are designed to attract attention without overwhelming the learner.

The environment balances realism with simplicity, ensuring that learners can easily identify objects and understand their purpose. Interaction is supported through visual and auditory feedback, which helps reinforce correct actions and guide decision-making.

6. Game Flow

Start

1. The scenario begins with the learner standing in the middle of a messy bedroom. Clothes are scattered on the floor, books are left on the bed and desk, and personal items are out of place.
2. The guide avatar appears and introduces the task:

"This is your room. It looks a bit messy right now. Let's organise it and put everything in the right place so it feels comfortable and easy to use."

3. The avatar briefly points to key areas in the room, such as the wardrobe, bookshelf, and storage spaces, helping the learner understand their purpose.

Step One – Recognising Items and Their Purpose

1. The learner begins by observing the room and identifying different types of objects. The guide avatar prompts:

“Let’s start by looking at the things in your room. What do you see?”

2. As the learner focuses on an item, such as a piece of clothing on the floor, the avatar asks:

“Where do you think this belongs?”

3. If the learner hesitates, the wardrobe softly glows, providing a visual hint.

Step Two – Organising Clothing

1. The learner is guided to pick up clothing items and place them in the wardrobe.
2. When the learner selects a piece of clothing and places it correctly, the wardrobe glows, and a soft confirmation sound is played. The avatar responds:

“Good job. Clothes belong in the wardrobe. This keeps them clean and easy to find.”

3. If the learner attempts to place clothing on the bookshelf or another incorrect location, the item does not stay, and the avatar gently intervenes:

“Let’s think again. Clothes should go in the wardrobe.”

4. The learner is then encouraged to try again until the correct placement is made.

Step Three – Organising Books and Study Materials

1. The focus then shifts to books placed on the bed and desk.
2. The guide avatar explains:

“Books are important for learning. Let’s put them where they belong.”

3. When the learner places a book on the bookshelf, the shelf sparkles slightly, and a positive sound is played. The avatar reinforces:

“Great. Books belong on the shelf so you can find them easily.”

4. If the learner places the book in the wrong location, such as inside the wardrobe, the system prevents the action, and the avatar provides guidance:

“Books don’t go here. Where do you usually keep your books?”

Step Four – Managing General Belongings and Making the Bed

1. At this stage, the learner is introduced to additional tasks, including organising smaller personal items and improving the overall appearance of the room.
2. The guide avatar introduces a new task:

“Now let’s make the room even better. Look at the bed and the small items around.”

3. The learner is prompted to straighten the bed by pulling the blanket into place. When completed, the bed becomes visually neat, and the avatar responds:

"Excellent. A made bed makes the room look clean and ready."

4. The learner also places remaining items into appropriate storage spaces. Each correct action is reinforced through visual and auditory feedback.

Step Five – Completing the Organisation Task

1. As the learner completes all tasks, the room gradually transforms into a clean and organised space. Lighting becomes brighter, and the overall atmosphere changes to reflect completion.
2. The guide avatar summarises:

"You organised your room by putting everything in its place. Now your space is clean, comfortable, and easy to use."

3. The learner is then rewarded with a badge:

"You are now a Master of Order."

4. A visual reward appears, accompanied by a positive sound effect, reinforcing the learner's achievement.

Step Six – Maintaining Organisation and Reflecting on Choices

1. After the room has been fully organised, the guide avatar introduces a short reflective phase to reinforce learning and promote long-term habits:

"Now that your room is clean, let's see how we can keep it this way."

2. The learner remains in the tidy environment, and a few objects are intentionally placed slightly out of order again, such as a book left on the bed or a piece of clothing placed on a chair.
3. The avatar asks:

"What should we do to keep the room organised?"

4. Two possible actions are implied through interaction:

(A) Leave the item where it is.

(B) Put the item back in its correct place.

5. If the learner chooses to leave the item, the room slightly loses its neat visual effect, and the avatar gently comments:

"If we don't put things back, the room can become messy again."

6. If the learner chooses to return the item to its correct place, the room maintains its clean appearance, and the avatar reinforces the behaviour:

“Great choice. Putting things back helps keep your space organised every day.”

7. This step encourages the learner to understand that organisation is not a one-time action but an ongoing habit.

Step Seven – Applying Organisation Skills to Daily Life Situations

1. In the final step, the scenario introduces a brief real-life connection to strengthen transfer of learning. The guide avatar presents a simple situation:

“Imagine you come home from school. You take off your jacket and take out your books. What should you do next?”

2. The learner is guided to interact with newly appeared objects, such as a backpack, jacket, and notebook.
3. If the learner places the jacket in the wardrobe and the notebook on the shelf, the avatar responds:

“Well done. This is how you keep your room organised every day.”

4. If the learner places items incorrectly or leaves them on the floor, the avatar gently prompts:

“Let’s think about where these belong so your room stays clean and easy to use.”

5. The learner is given the opportunity to correct their choices, reinforcing the application of learned skills.
6. At the end of this step, the avatar concludes:

“You now know how to organise your room and take care of your belongings every day.”

7. This final stage strengthens the connection between the virtual experience and real-world behaviour, encouraging learners to apply these organisational skills in their own daily routines.

7. Mechanics

The scenario is based on simple and accessible VR interactions that guide the learner through different stages of organising their personal space and managing their belongings. Interaction is primarily driven through exploration and direct manipulation of objects within the environment. As the learner moves around the bedroom, they are encouraged to observe, select, and place items in appropriate locations, gradually building an understanding of order and structure through active participation.

When the learner approaches key elements such as the wardrobe, bookshelf, or storage areas, subtle visual cues appear to guide their attention. These cues include soft glowing effects, light animations,

or gentle highlighting of the correct placement zones. When an object is picked up, the system supports the learner by visually linking the item to its intended location, helping them make associations between object type and storage function. For example, clothing items naturally align with the wardrobe, while books are visually drawn toward the bookshelf.

Interaction is supported through intuitive drag-and-drop mechanics using the VR controller. The learner can pick up objects, move them freely within the space, and attempt to place them in different locations. When an item is placed correctly, it smoothly “locks” into position, accompanied by a soft confirmation sound and a brief visual effect, such as a glow or sparkle. This immediate feedback reinforces correct behaviour and provides a sense of progress.

When an incorrect placement is attempted, the system responds in a supportive and non-punitive way. The object does not attach to the incorrect location and gently returns to the learner’s hand or original position. At the same time, the guide avatar provides a short verbal hint, such as “Books belong on the shelf” or “Clothes go in the wardrobe.” This approach encourages reflection and retry rather than discouragement, allowing the learner to learn through correction.

The scenario provides continuous visual and sensory support through clear and consistent cues. Storage areas are visually differentiated through colour accents and subtle animations, making them easily recognisable. The guide avatar plays an important role in directing attention, especially when the learner appears uncertain or inactive. Through simple prompts and reminders, the avatar ensures that the learner remains engaged and understands the purpose of each action.

The progression of the activity is structured and sequential. The learner begins by identifying objects in a disorganised space, then moves on to categorising and placing items correctly, and finally completes additional tasks such as making the bed and refining the overall organisation of the room. Each stage builds upon the previous one, reinforcing learning through repetition and gradual complexity.

The scenario also incorporates elements of task completion and transformation to maintain motivation. As the learner correctly places items, the room gradually becomes more organised, creating a visible sense of improvement. This transformation acts as a form of intrinsic reward, as the learner can clearly see the results of their actions.

Throughout the experience, a reward system reinforces engagement and achievement. Correct actions are acknowledged through visual and auditory feedback, while the overall completion of the task results in a more significant reward. Once the room is fully organised, the environment becomes brighter and more visually appealing, symbolising success. At the end of the scenario, the learner receives the “Master of Order Badge,” which serves as a clear and motivating representation of their accomplishment.

In addition to external rewards, the scenario is designed to promote internal satisfaction. The act of transforming a messy space into an organised one provides a sense of control, responsibility, and achievement. This emotional reinforcement is an important component of the learning process, as it encourages learners to apply the same behaviours in their real-life environments.

8. Teacher's Role and Learning Evaluation

The teacher plays a central role in observing and supporting the learner throughout the activity. Using screen projection, the teacher can follow the learner's actions in real time and identify areas where support may be needed.

The teacher provides additional explanations when necessary and helps the learner understand the reasoning behind each action. For example, they may explain why keeping clothes in the wardrobe helps maintain cleanliness and organisation.

The level of difficulty can be adjusted by modifying the number of items or the complexity of the task. Evaluation is based on observation of the learner's ability to complete tasks, make correct decisions, and demonstrate increasing independence.

Follow-up activities may include discussions about personal organisation and applying these skills in real-life environments.

9. Inclusion, Transference and Educational Impact

This scenario promotes inclusion by providing a structured and accessible learning environment tailored to the needs of learners with diverse abilities. The use of clear visual cues, guided instructions, and immediate feedback ensures that all students can participate effectively and experience success.

The scenario strongly supports the transfer of learning to real-life contexts. By practising organisation in a familiar environment, students develop skills that can be directly applied in their own rooms and daily routines. Teachers and caregivers can reinforce this learning by encouraging students to organise their personal spaces outside of the virtual environment.

From an educational perspective, the scenario contributes to the development of essential life skills related to independence, responsibility, and self-care. It promotes behavioural change by encouraging learners to adopt organisational habits that improve their daily functioning.

Overall, the scenario has a meaningful impact on students' autonomy and confidence, supporting their ability to manage their personal space and belongings effectively in real life.

Learning Scenario 2.1 – Helping With Household Chores

1. Introduction

Helping with Household Chores

Learning Area 2 – Daily Living Skills

Level of Difficulty: Basic

This learning scenario aims to support students in understanding and practising basic household responsibilities within a shared home environment. Through guided interaction in a virtual kitchen and living room, learners engage in tasks such as laying the table and tidying up common areas, developing practical skills related to daily living and cooperation within the family.

Helping with household chores is an essential component of independent living and social responsibility. For adolescents with mild intellectual disabilities, participating in shared tasks can be challenging due to difficulties in sequencing actions, recognising object categories, and understanding expectations in shared spaces. This scenario provides a structured and supportive VR environment where these activities are broken down into clear and manageable steps.

By practising these skills in a safe and repeatable environment, students gain confidence and develop a sense of contribution and belonging within the household. The scenario aligns with inclusive education principles and supports functional independence, responsibility, and cooperation through experiential learning.

2. Participant Profile

This scenario is designed for adolescents aged 13 to 17 with mild intellectual disabilities or similar developmental profiles. It is particularly suitable for learners who are developing independence in everyday life but still require guidance in completing multi-step tasks and understanding shared responsibilities.

Learners are expected to have emerging autonomy, including the ability to follow simple instructions and interact with objects. However, they may experience challenges in organising tasks, distinguishing between object categories, and maintaining attention throughout longer activities. They may also find it difficult to understand the importance of contributing to shared environments such as the kitchen or living room.

Common challenges include difficulty sequencing actions, confusion between similar objects, reduced motivation for routine tasks, and limited awareness of how their actions impact others. Some learners may also struggle with transitioning between different tasks or environments.

To address these needs, the scenario incorporates structured guidance, clear visual cues, and step-by-step progression. The guide avatar provides continuous support, while the environment is designed to reduce cognitive load and enhance clarity. The design follows Universal Design for Learning principles, ensuring accessibility and engagement for a wide range of learners.

3. Pedagogical and Methodological Framework

This scenario is grounded in experiential, task-based, and game-based learning approaches. It emphasises learning through active participation, allowing students to engage directly with realistic tasks that reflect everyday responsibilities.

Virtual reality provides a highly effective medium for practising household chores, as it allows learners to experience tasks in a realistic but controlled environment. Students can repeat actions, make mistakes, and receive immediate feedback without real-world consequences. This supports gradual learning and builds confidence.

The pedagogical approach is structured and sequential. Tasks are broken down into manageable steps, and learners are guided through each stage with clear instructions and feedback. The guide avatar plays a central role in supporting understanding and maintaining engagement.

Inclusive education principles are embedded throughout the design. Visual cues, simple interactions, and consistent feedback reduce barriers to learning. The environment is designed to be clear and accessible, ensuring that learners with different cognitive profiles can participate effectively.

The scenario strongly supports functional learning and independent living. Skills such as laying the table, organising shared spaces, and understanding responsibility within the home are directly transferable to real-life contexts. By practising these behaviours in VR, students are better prepared to apply them in their daily routines.

4. Learning Objectives

General Objective

The general objective of this scenario is to develop students' ability to participate in basic household chores within shared environments. It also aims to promote responsibility, cooperation, and independence in daily living activities.

Specific Objectives

- Recognise common household objects used in daily chores
- Understand the purpose of different objects in kitchen and living room settings
- Practise sequencing tasks such as laying the table and tidying up
- Develop categorisation skills when organising items
- Improve attention and task completion skills
- Build a sense of responsibility in shared environments

Expected Learning Outcomes

After completing the scenario, students will be able to:

- Correctly place table items such as plates, glasses, cutlery, and napkins
- Demonstrate ability to tidy shared spaces by organising objects appropriately
- Show improved understanding of object categories (toys, clothes, magazines, kitchen items)
- Complete multi-step tasks with reduced support
- Apply learned skills in real-life home environments
- Display increased confidence and responsibility in helping with household chores

5. Environment Description

The scenario takes place in a virtual home environment consisting of two main areas: the kitchen and the living room. These spaces represent common shared environments where household chores typically occur.

In the kitchen scene, the learner encounters a dining table along with objects such as plates, glasses, cutlery, a water jug, and a napkin holder. These items are placed within reachable areas such as cupboards and countertops, allowing the learner to interact with them easily.

In the living room scene, the environment includes a coffee table, sofas, scattered magazines, toys on the floor, a laundry basket, and pieces of clothing. The arrangement reflects a slightly disorganised space, providing a clear context for tidying tasks.

The visual design is simple, colourful, and high contrast, ensuring that objects are easily distinguishable. Object categories are clearly defined, helping learners identify where items belong. Distances between objects are short, reducing physical and cognitive effort during interaction.

Interactive elements are supported through visual cues and sensory feedback. Objects gently glow when the learner looks at them, and selection is reinforced through vibration or sound. These features guide attention and support engagement throughout the activity.

6. Game Flow

Start

1. The learner enters the virtual home environment and finds themselves standing between the kitchen and the living room. The guide avatar appears and greets the learner in a friendly and supportive tone:

“Today you will help at home. We will work together to prepare the kitchen and tidy the living room. Helping at home is important because it makes life easier for everyone.”

2. The avatar briefly pauses and then asks:

“Are you ready to start helping your family?”

3. Two response options appear on the screen:

(A) “Yes, I’m ready.”

(B) “I’m not sure what to do.”

4. If the learner selects the first option, the avatar responds:

“Great! Let’s begin.”

5. If the learner selects the second option, the avatar reassures:

“That’s okay. I will guide you step by step.”

Step One – Understanding the Kitchen Task

1. The learner moves into the kitchen. The dining table is empty, and objects are visible on the counter and in cupboards.
2. The avatar explains:

“We are going to prepare the table for a meal. Let’s think—what do people need when they sit down to eat?”

3. Three options appear:

A) Plates and glasses

B) Shoes

C) Laundry basket

4. If the learner selects the correct option, the avatar confirms:

“Exactly. Let’s start with that.”

5. If the learner selects an incorrect option, the avatar gently redirects:

“Let’s think again. What do we use when eating?”

6. The learner is guided to choose correctly before continuing.

Step Two – Placing Plates with Spatial Understanding

1. The learner selects a plate and approaches the table.
2. As they move the plate, two possible placement zones become subtly visible.
3. If the learner places the plate correctly in front of a chair, it snaps into place and the avatar says:

“Well done. Each person needs their own plate.”

4. If the learner places the plate in the center of the table or stacks plates incorrectly, the object does not settle. The avatar explains:

“If the plate is here, will someone be able to eat comfortably? Try placing it in front of a seat.”

5. The learner retries until correct placement is achieved.

Step Three – Building the Table Setup

1. The learner continues by placing glasses, cutlery, and napkins.
2. At this stage, more decision-making is introduced. When holding an item such as cutlery, the avatar asks:

“Where should this go?”

3. Two visual zones appear (for example, left and right side of the plate).
4. If the learner places the item correctly, the avatar responds:

“Good. This makes the table easy to use.”

5. If incorrect, the avatar gives functional reasoning:

“If it is placed here, it might be difficult to reach. Let’s try another position.”

6. This step reinforces both categorisation and spatial awareness.

Step Four – Handling Incorrect Object Choices

1. The learner may attempt to place unrelated objects such as a pot or jug incorrectly.
2. If the learner tries to place a pot on the table, the avatar intervenes:

“This is used for cooking, not for eating at the table. Let’s choose something else.”

3. The learner must then select a more appropriate object.
4. If the learner correctly identifies the water jug as appropriate, the avatar says:

“Good thinking. This can be used on the table.”

Step Five – Completing the Kitchen Task

1. Once all items are correctly placed, the table transforms visually. It becomes brighter and more organised.
2. The avatar summarises:

“You set the table for two people. Now it is ready for a meal.”

3. A soft “Ready” message appears on the table.

Step Six – Transition to the Living Room

1. The avatar guides the learner into the living room:

“Now let’s help tidy up here. This is a shared space, so keeping it clean is important for everyone.”

2. The learner observes toys, magazines, and clothes scattered around.

Step Seven – Choosing What to Tidy First

1. The avatar asks:

“What should we clean first?”

2. Three options appear:

A) Toys on the floor

B) Magazines on the table

C) Clothes on the sofa

3. All answers are acceptable, allowing autonomy. The learner chooses the order of tasks.

Step Eight – Sorting Toys with Categorisation

1. The learner picks up toys.
2. If placed in the toy box, the object locks into place and the avatar says:

“Great. Toys go in the box when we finish playing.”

3. If placed incorrectly (e.g., on the sofa), the toy slides off and the avatar explains:

“If we leave toys here, someone might trip. Let’s put them in the right place.”

Step Nine – Organising Magazines with Visual Structure

1. The learner collects magazines.
2. If placed neatly on the coffee table, they align automatically and the avatar responds:

“Nice work. Now the table looks tidy.”

3. If placed randomly or dropped, the avatar prompts:

“When things are messy, it is harder to find them. Try placing them neatly.”

Step Ten – Managing Clothes with Real-Life Logic

1. The learner picks up clothes from the sofa or floor.
2. The avatar asks:

“What do we do with clothes after using them?”

3. Two options appear:

A) Put them in the laundry basket

B) Leave them on the sofa

4. If correct, the avatar reinforces:

"Yes. This helps keep the room clean."

5. If incorrect, the avatar explains:

"If we leave clothes here, the room becomes messy. Let's try again."

Step Eleven – Time Awareness and Efficiency

1. A subtle progress indicator appears showing remaining tasks.
2. The avatar encourages:

"You are doing well. Let's finish the remaining tasks."

3. If the learner pauses too long, the avatar gently prompts:

"Look around. Is there anything left to organise?"

Step Twelve – Final Review and Self-Correction

1. Before completion, the avatar asks:

"Let's check the room. Is everything in the right place?"

2. The learner scans the environment and corrects any mistakes independently.

Step Thirteen – Completion and Reflection

1. The room becomes fully organised and brighter.
2. The avatar concludes:

"You helped your family by setting the table and cleaning the living room. This makes the home comfortable for everyone."

3. A summary appears:

"You set the table.

You collected the toys.

You organised magazines and clothes."

4. The learner receives the Home Helper Badge.

7. Mechanics

The scenario is based on simple and accessible VR interactions that guide the learner through different stages of participating in household chores within a shared home environment. Interaction is primarily driven through exploration, object manipulation, and guided decision-making. As the

learner moves through the kitchen and living room, they are encouraged to observe their surroundings, identify relevant objects, and perform actions that reflect real-life responsibilities.

When the learner approaches key elements such as the dining table, toy box, coffee table, or laundry basket, these areas provide subtle visual cues, including soft glowing outlines or light animations. These cues help direct attention without overwhelming the learner. Objects themselves respond dynamically when focused on, gently highlighting to indicate that they can be interacted with. When selected using the controller, the object becomes active, and a light vibration or sound confirms the action.

Interaction is primarily based on drag-and-drop mechanics. The learner picks up objects and moves them freely within the environment, attempting to place them in appropriate locations. When an object is correctly placed, it smoothly snaps into position and triggers a short visual effect and sound, reinforcing success. Incorrect placements are handled in a supportive manner: the object does not attach and instead returns to the learner's control, while the guide avatar provides a brief explanation to support understanding.

Decision-making is integrated into the interaction through contextual prompts. At key moments, the learner is asked to choose between different actions, such as deciding what items belong on the table or where clothes should be placed. These choices are presented clearly and are immediately followed by feedback, allowing the learner to understand the consequences of their decisions in a safe environment.

The scenario also incorporates sequencing and task progression. The learner must complete the kitchen task before moving to the living room, and within each space, tasks are structured in a logical order. This supports the development of organisational thinking and helps learners understand how complex activities can be broken down into smaller steps.

Visual and sensory feedback is consistent throughout the experience. Correct actions are reinforced through glowing effects, alignment animations, and positive sound cues, while incorrect actions trigger gentle guidance rather than penalties. The environment itself reflects progress, gradually becoming more organised and visually appealing as tasks are completed.

Time awareness and task completion are subtly supported through progress indicators and avatar prompts. These elements encourage the learner to remain engaged and complete all tasks without creating pressure or stress.

At the end of the scenario, a reward system reinforces achievement. The learner receives the "Home Helper Badge," accompanied by visual and auditory feedback. In addition to external rewards, the transformation of the environment—from disorganised to clean—provides intrinsic motivation and a sense of accomplishment. This reinforces the value of helping with household chores and encourages the transfer of these behaviours to real-life situations.

8. Teacher's Role and Learning Evaluation

The teacher plays a key role in observing and supporting the learner throughout the VR experience. Through screen mirroring, the teacher can monitor the learner's actions in real time and identify areas where additional support is needed.

Observation focuses on the learner's ability to recognise objects, complete tasks, and follow sequences. The teacher also evaluates how the learner responds to feedback and whether they can complete tasks independently.

Support is provided through verbal guidance when necessary. The teacher may also adjust the difficulty level based on the learner's performance.

Evaluation is based on observation, supported by checklists, notes, and follow-up discussions. Additional activities may be used to reinforce learning in real-life contexts.

9. Inclusion, Transference and Educational Impact

This scenario promotes inclusion by providing a structured and accessible environment where all learners can participate meaningfully. The use of clear visual cues, guided instructions, and immediate feedback ensures that learners with diverse abilities can engage successfully.

The scenario strongly supports transfer to real-life contexts. Tasks such as setting the table and tidying shared spaces are directly applicable to everyday life. By practising these activities in VR, learners gain confidence and are more likely to apply these skills at home.

From an educational perspective, the scenario supports the development of functional independence, responsibility, and cooperation. It encourages learners to take an active role in their household and contributes to their sense of belonging and usefulness.

Overall, the scenario has a significant impact on the learner's ability to participate in daily living activities, promoting independence and improving quality of life.

Learning Scenario 2.2- Using Money and Shopping

1. Introduction

Using Money and Shopping

Learning Area 2 – Daily Living Skills

Level of Difficulty: Advanced

This learning scenario aims to support students in developing essential skills related to using money and participating in everyday shopping activities. Through guided interaction in a virtual supermarket environment, learners practise selecting items from a shopping list, understanding prices, and completing a payment process at the cashier.

Shopping is a fundamental life skill that combines multiple competencies, including decision-making, number recognition, basic calculation, and following instructions. For adolescents with mild intellectual disabilities, these combined demands can present challenges, particularly when navigating real-world environments that may be fast-paced or overwhelming. This scenario provides a structured, safe, and controlled setting in which these skills can be practised step by step.

The use of virtual reality allows learners to experience a realistic shopping situation without pressure, enabling repetition and gradual understanding. By engaging with familiar objects and receiving immediate feedback, students build confidence and independence. The scenario aligns with inclusive education principles and supports functional learning, preparing learners for participation in real-life community activities.

2. Participant Profile

This scenario is designed for adolescents aged 13 to 17 with mild intellectual disabilities or similar learning needs. It is particularly suitable for learners who are developing independence in daily living skills but require support in tasks involving money, sequencing, and decision-making.

Learners are expected to have basic understanding of numbers and the ability to follow simple instructions. However, they may experience difficulties in recognising prices, calculating totals, managing money, or maintaining focus on a structured task such as shopping from a list.

Common challenges include difficulty distinguishing between necessary and unnecessary items, confusion when handling money, limited understanding of value, and challenges in completing multi-step processes. Learners may also struggle with attention and may be distracted by irrelevant stimuli in the environment.

To address these needs, the scenario provides clear visual support, simplified numerical information, and guided interactions. The guide avatar plays a key role in maintaining focus and supporting understanding. The design follows Universal Design for Learning principles, ensuring accessibility and engagement for diverse learners.

3. Pedagogical and Methodological Framework

This scenario is grounded in experiential and task-based learning approaches, combined with inclusive education principles. It emphasises learning through doing, allowing students to actively participate in a realistic shopping experience.

Virtual reality is particularly effective for this scenario, as it simulates a real-world environment while removing external pressures such as time constraints or social expectations. Learners can practise at their own pace, repeat tasks, and receive immediate feedback, which supports gradual mastery.

The pedagogical approach is structured and sequential, guiding learners through each stage of the shopping process. The guide avatar provides instructions, prompts, and feedback, ensuring that learners understand each step before moving on.

Inclusive design principles are integrated throughout the scenario. Visual cues, large text, simplified numbers, and clear object categorisation support comprehension and reduce cognitive load. Interaction is designed to be intuitive, allowing learners to focus on the learning objectives.

The scenario strongly supports functional learning and independent living. Skills such as following a shopping list, recognising prices, and paying for items are directly applicable to real-life situations. By practising these skills in VR, learners gain confidence and are better prepared to apply them in everyday contexts.

4. Learning Objectives

General Objective

The general objective of this scenario is to develop students' ability to perform basic shopping tasks independently, including selecting items and using money correctly. It also aims to build confidence in handling real-life purchasing situations.

Specific Objectives

- Recognise items from a shopping list
- Understand basic price labels
- Select appropriate products from shelves
- Practise simple addition related to total cost
- Develop money handling skills
- Follow a structured sequence of tasks

Expected Learning Outcomes

- Correctly select items based on a shopping list
- Demonstrate understanding of product prices
- Calculate or recognise total cost with support
- Provide correct payment using available money
- Complete a full shopping sequence independently

- Apply these skills in real-life shopping situations

5. Environment Description

The scenario takes place in a small and calm virtual supermarket designed to reflect a simplified real-life shopping environment. At the entrance, the learner finds shopping baskets, which can be selected to begin the activity.

Inside the supermarket, shelves are arranged with basic everyday products such as bread, milk, fruit juice, fruits, vegetables, and yoghurt. Each item is clearly visible and accompanied by large, readable price labels. The layout is compact, with short distances between shelves, allowing easy navigation.

The cashier area includes a conveyor belt, a cashier screen displaying items and totals, a payment area, and visual representations of coins and banknotes. The total amount is displayed in large numbers, ensuring clarity.

The design is simple, colourful, and high contrast, supporting accessibility and reducing visual overload. Interaction is enhanced through visual cues, such as glowing objects and highlighted items, and sensory feedback, such as sounds and vibrations.

6. Game Flow

Start

1. The guide avatar appears on the screen and explains the task.

“Today we will do a small shopping trip. We will take the items written on the list and then pay correctly at the cashier.”

2. The avatar shows the learner a shopping list prepared with simple pictures and icons. For example:

- Bread
- Milk
- Fruit juice

3. The amount of money the learner has is also shown:

“Your total money: 20 units.”

4. The avatar asks:

“Are you ready to start shopping?”

5. If the learner hesitates, the avatar reassures:

“I will help you step by step.”

Step 1 – Taking the shopping basket

1. The learner looks at the baskets at the entrance.
2. The learner selects one basket and takes it.
3. When the basket is taken, a light sound is heard.
4. The guide avatar says:

“Great, now let us find the items on the list.”

Step 2 – Understanding the shopping list

1. The avatar points to the list again.
2. The learner is asked:

“What should we find first?”

3. Two or three options appear based on the list items.
4. If the learner selects correctly, the avatar says:

“Yes, let us find that item.”

5. If the learner selects incorrectly, the avatar gently says:

“Let us look at the list again and choose one of these items.”

Step 3 – Moving through the supermarket and selecting products

1. The learner walks through the supermarket.
2. Only the items on the list glow slightly on the shelves.

Task:

- Take one bread from the bread shelf
 - Take one milk from the milk shelf
 - Choose one fruit juice from the fruit juice shelf
3. Each product has a large and clear price label. For example:
Bread – 5 units
Milk – 6 units
Fruit juice – 7 units
 4. When the learner selects the correct item, the basket briefly glows and a positive sound is heard.
 5. The avatar says:

“Good, this item is on the list.”

6. If the learner tries to take an item that is not on the list, the item is gently pushed back.
The avatar says:

"This item is not on the list, let us first complete the items on the list."

7. If the learner hesitates for a longer time, the avatar gives a hint:

"Look at the list. Which item have we not taken yet?"

Step 4 – Optional decision and attention control

1. The learner may notice additional products on the shelves (e.g. snacks or other drinks).
2. The avatar asks:

"Do we need this item?"

Two options appear:

(A) "Yes, take it."

(B) "No, it is not on the list."

3. If the learner selects the incorrect option and tries to take the item, the avatar gently explains:

"If we take things that are not on the list, we may spend too much money. Let us focus on what we need."

4. The learner is guided back to the list.

Step 5 – Completing the shopping list

1. As each correct item is placed in the basket, a tick mark appears next to the item on the list panel.
2. When all items are collected, the avatar says:

"Great, we have everything we need."

Step 6 – Going to the cashier

1. The avatar points towards the cashier area and says:

"Now let us go to the cashier to pay."

2. The learner walks to the cashier and places the basket on the conveyor belt.
3. The items automatically pass through the scanner.
4. The cashier screen shows each item with a symbol and price, followed by the total:

"Total: 18 units."

Step 7– Understanding the total amount

1. The avatar asks:

"How much do we need to pay?"

2. The learner looks at the cashier screen.
3. If the learner hesitates, the avatar says:

"The total amount is shown here. Let us read it together."

Step 8 – Making the correct payment

1. A money panel appears with coins and banknotes (1, 2, 5, 10 units).
2. Task:
Choose the correct amount of money to pay the total cost.

Level A (exact payment):

1. The learner selects money that adds up to the total (e.g. $10 + 5 + 2 + 1$).
2. As the learner selects money, the total selected amount is shown on the screen.
3. If correct, the avatar says:

"Well done, that is the correct amount."

4. If the learner selects too little money, the cashier screen turns red.
5. The avatar says:

"This payment is less than the total, you need to add more money."

6. If the learner selects too much money, the avatar says:

"This is more than needed. Can you try to match the exact amount?"

Level B (payment with change):

1. The learner may choose a larger banknote (e.g. 20 units).
2. The cashier screen shows:

"Change: 2 units."

3. Two coins appear automatically in the change area.
4. The avatar explains:

"You paid more, so you receive change back."

Step 9 – Finalising payment

1. When the correct payment is made, the cashier screen turns green.
2. The message "Payment successful" appears.
3. A short applause sound is heard.

Step 10 – Ending and summary

1. The avatar congratulates the learner:

“You chose the correct items and paid correctly at the cashier. You have successfully completed the shopping.”

2. A summary appears on the screen:

You followed the shopping list.

You selected the correct items.

You paid the correct amount.

3. A shopping bag appears with the selected items inside.
4. The learner receives the “Shopping Expert Badge.”

7. Mechanics

The scenario is based on simple and accessible VR interactions that guide the learner through different stages of a structured shopping experience. Interaction is primarily driven through exploration, object manipulation, and guided choices within the supermarket environment. As the learner moves through the space, they are encouraged to observe shelves, recognise relevant items, and follow a clear sequence of actions, from selecting products to completing payment at the cashier. When the learner approaches key elements such as the shopping basket, product shelves, or cashier desk, subtle visual cues and short messages appear, helping to reinforce understanding of each step.

Communication is supported through guided prompts and simple choice-based interactions. At key moments, such as identifying items from the shopping list, deciding whether to take a product, or choosing how to pay, the learner is presented with clear options or questions. These prompts are supported by the guide avatar, which provides short explanations and reinforces correct decisions. In this way, the learner experiences how their choices affect the outcome of the task, particularly in relation to selecting the correct items and making appropriate payments.

The scenario provides continuous visual and sensory support through clear and consistent cues. Items on the shopping list are highlighted with a soft glow, while irrelevant products remain neutral, helping the learner focus attention. Price labels are presented in large, readable numbers, and when necessary, the guide avatar can read them aloud. At the cashier, items appear on the screen with both symbols and numerical values, supporting the understanding of how individual prices contribute to the total. Interaction is further reinforced through light sound effects and controller vibration when selecting objects or completing actions.

Understanding of quantity and value is supported through dynamic visual feedback. As the learner selects coins and banknotes, the total amount of the chosen money is displayed in real time, allowing comparison with the required total. When incorrect payments are made, immediate feedback is provided through colour changes on the cashier screen and verbal guidance from the avatar. In more advanced levels, the concept of change is introduced visually, with coins appearing in the payment area and a clear indication of the remaining balance.

The experience follows a structured, step-by-step progression. It begins at the supermarket entrance, where the learner takes a shopping basket and reviews the list. It then continues through the product selection phase, where the learner identifies and collects the correct items while ignoring distractions. After completing the list, the learner moves to the cashier, where they observe the total and complete the payment process. The scenario concludes with confirmation of successful payment and a summary of the completed tasks, reinforcing the full sequence of the shopping experience.

Throughout the scenario, a reward system reinforces engagement and positive behaviour. Correct actions, such as selecting the right product or placing the correct amount of money, are acknowledged through visual highlights and short positive sounds. The environment reflects progress, as the basket fills with selected items and the transaction is completed successfully. At the end of the scenario, the learner receives the “Shopping Expert Badge,” providing a clear and motivating representation of their achievement. In addition to external rewards, the scenario promotes a sense of independence and competence, encouraging learners to apply these skills in real-life shopping situations.

8. Teacher’s Role and Learning Evaluation

The teacher plays a central role in guiding, monitoring, and supporting the learner throughout the VR shopping experience, as well as ensuring that the acquired skills are reinforced and transferred to real-life situations. During the activity, the teacher observes the learner’s actions in real time through screen mirroring on a projector or large display. This allows the teacher to closely follow how the learner navigates the supermarket, selects items, interprets the shopping list, and approaches the payment process.

Particular attention is given to the learner’s ability to recognise relevant products, ignore distractions, and follow the sequence of tasks. The teacher observes whether the learner can correctly identify items from the list, understand price labels, and maintain focus while moving through the environment. At the cashier stage, the teacher monitors how the learner interprets the total amount, selects money, and adjusts their choices when feedback is provided.

The teacher’s role also includes providing targeted support when necessary. If the learner struggles with a specific step, such as calculating the correct payment or distinguishing between money units, the teacher can offer verbal prompts or guiding questions. For example, the teacher might suggest starting with a larger banknote or encourage the learner to compare the selected amount with the total displayed on the screen. The level of support is adjusted according to the learner’s needs, ensuring that guidance enhances learning without reducing independence.

From an evaluation perspective, assessment is primarily based on observation of the learner’s behaviour and decision-making throughout the scenario. Key indicators include the ability to follow the shopping list, recognise and select correct items, understand prices, calculate or approximate totals, and complete the payment process. The teacher also evaluates the learner’s persistence, response to feedback, and ability to correct mistakes independently.

To support learning beyond the VR environment, follow-up activities can be implemented in the classroom. These may include practising with real or toy money, role-playing shopping situations, or

creating simple shopping lists and completing them in a structured setting. These activities help reinforce the skills developed during the scenario and promote generalisation to real-life contexts.

From a technical perspective, access to screen mirroring is essential. Without it, the teacher cannot effectively observe the learner's actions, identify difficulties, or provide timely support. Ensuring this functionality is available is therefore critical for both the educational value of the scenario and the effectiveness of the learning process.

9. Inclusion, Transference and Educational Impact

This scenario is designed to be inclusive and accessible for learners with diverse cognitive and developmental profiles. The use of clear visual cues, large numerical displays, and structured step-by-step guidance supports understanding and reduces cognitive load. The presence of the guide avatar ensures that learners receive continuous support, helping them stay engaged and confident throughout the activity. By creating a predictable and supportive environment, the scenario allows learners to participate actively and successfully, regardless of their individual learning pace.

The scenario strongly supports the transfer of learning to real-life situations. The supermarket setting closely reflects everyday experiences, allowing learners to practise skills that are directly applicable outside the virtual environment. By following a shopping list, selecting items, and completing a payment process, learners engage in a full sequence of actions that they can later apply in real shops. Teachers and caregivers can reinforce this learning by providing opportunities to practise similar tasks in real contexts, such as using money, identifying products, or participating in simple shopping activities.

From an educational perspective, the scenario contributes to the development of essential daily living skills, including basic financial understanding, decision-making, and task sequencing. It also promotes independence and self-confidence, as learners experience success in completing a meaningful real-life task. The combination of guided interaction, repetition, and positive reinforcement supports long-term learning and encourages learners to apply these skills beyond the classroom, contributing to greater autonomy and social inclusion.

Learning Scenario 2.3- Public Transportation

1. Introduction

Public Transportation

Learning Area 2 – Daily Living Skills

Level of Difficulty: Advanced

This VR scenario guides students through the complete sequence of using public transportation: navigating a bus stop, validating a travel card, boarding the bus safely, choosing an appropriate seat, and managing the entire bus ride. The scenario emphasizes autonomy, decision-making, and confidence in real-world travel.

Scenario 2.3: Public Transportation is a component of Learning Area 2 – Daily Living Skills. Using Virtual Reality (VR) to teach public transportation skills is particularly justified for students with Mild Intellectual Disability (MID), including those with Learning Disabilities (LD) and ADHD, because it directly addresses their cognitive, behavioral, and emotional learning needs. These students often struggle with multi-step tasks, attention regulation and understanding abstract concepts. Public transportation requires exactly these abilities: sequencing actions, interpreting symbols, managing social expectations, and staying focused in dynamic environments.

For these reasons, public transportation is essential for independent living, but real-world practice can be overwhelming. VR provides a safe, predictable, and engaging environment where students can learn step-by-step, repeat actions, and build functional mobility skills without real-world risks. VR transforms these abstract, stressful, or unpredictable situations into a safe, structured, and highly accessible learning experience.

2. Participant

Profile

Age Groups:

- Primary school level: 8–12 years
- Lower secondary level: 13–15 years

Cognitive Profile:

- Mild Intellectual Disability (MID), IQ 50–69

This scenario is designed for students with Learning Disabilities and/or Attention Deficit Hyperactivity Disorder (ADHD) capable of learning reading, writing, manual skills, vocational tasks, and independent living skills with adapted instruction.

General Challenges:

- Difficulty following multi-step sequences
- Limited working memory
- Reduced attention span (especially ADHD)
- Difficulty interpreting signs and symbols
- Anxiety in crowded or noisy environments

- Challenges with impulse control (ADHD)
- Need for repetition and clear structure
- Sensitivity to loud or sudden sounds (bus engine, brakes, crowd noise)
- Visual overstimulation (bright lights, fast movement, crowded scenes)
- Difficulty filtering background noise
- Discomfort with unexpected sensory changes

Special needs assessment depending on disability are:

- Students with Mild Intellectual Disability (MID)
 - requires simplified instructions
 - benefits from repetition and visual cues
 - needs predictable routines
 - learns best through hands-on experience
- Students with Autism Spectrum Conditions (ASC), who experience sensory hyper sensitivity or hypo sensitivity, depending on
 - vary sensory processing
 - communication style
 - cognitive profile
 - emotional regulation
- Students with ADHD
 - Short attention span
 - Needs fast, engaging interactions
 - Requires immediate feedback
 - Benefits from movement-based tasks and gamification

3. Pedagogical & Methodological framework

Using Virtual Reality in this learning context is particularly beneficial for students with Mild Intellectual Disabilities (MID), students with Autism Spectrum Conditions (ASC) and students with ADHD because it creates a safe and supportive environment where they can practice real-life tasks without the pressure or risks associated with real public transportation. VR allows educators:

- to control sensory input,
- reducing overwhelming stimuli such as noise, crowds, or unpredictable events, which often create anxiety for these learners
- repeating actions as many times as needed, without frustration.

The immersive nature of VR also enables students to repeat, until they feel confident and capable.

The framework applies the Principles of Inclusive Education such as:

- Universal Design for Learning - UDL is structured around three main principles to support diverse learners:
 - Multiple Means of Engagement (Why of Learning): Motivating learners and keeping them interested by providing choices and relevant, stimulating tasks;
 - Multiple Means of Representation (What of Learning): Presenting information in various formats—such as text, audio, video, or hands-on practice—so it is accessible to everyone;
 - Multiple Means of Action and Expression (How of Learning): allowing students to demonstrate their knowledge in different ways, such as through writing, speaking, or video, rather than a single method.
- Multisensory input (visual, auditory, haptic) - an approach that engages multiple senses simultaneously to take in new information, rather than relying on a single sense
- Adapted pacing - a self-management technique designed to balance energy expenditure with rest
- Error-friendly environment - a context that treats mistakes as inevitable, natural, and valuable learning opportunities rather than as failures to be punished
- Scaffolded learning - an instructional technique to provide temporary, structured support to help students master new concepts or skills.

The educational approach used in this VR scenario is grounded in experiential learning, allowing students to acquire skills through direct interaction with realistic situations rather than through abstract explanations. By immersing learners in a virtual bus stop and bus environment, the scenario encourages them to explore, practice, and internalize each step of the travel sequence in a meaningful and memorable way. This experiential component is supported by modeling and guided practice: the guide avatar demonstrates the correct actions, provides clear instructions, and offers support as students repeat the tasks until they feel confident.

Relationship with functional learning and independent living

The scenario teaches essential skills for:

- Using public transportation independently
- Navigating community environments
- Participating in school, work, and social activities
- Building confidence and autonomy

4. Learning Objectives

General Objectives

- To develop advanced public transportation skills
- To strengthen sequencing, attention, and decision-making
- To increase independence in community mobility

Specific Objectives, students will learn to:

- Identify the correct bus at the bus stop
- Validate a travel card correctly
- Board the bus safely
- Choose an appropriate seat
- Follow safety rules during the bus ride
- Respond to the guide avatar's instructions

Expected Learning Outcomes

By the end of the scenario, students are expected to demonstrate a clear understanding of the full sequence required for independent bus travel. They will be able to complete the steps to validate the card → board the bus → sit without assistance, showing that they can follow a structured routine in a real-life context.

Throughout the experience, students will also display safe and appropriate behavior, such as waiting their turn, respecting personal space, and choosing a suitable seat.

In addition, the scenario aims to strengthen their attention and ability to follow tasks in the correct order, helping them manage multi-step actions more effectively. Ultimately, the skills practiced in the virtual environment will transfer to real-life bus travel, supporting greater independence and confidence in community mobility.

5. Environment Description

VR Setting: Bus Station and Bus Environment

The virtual environment is structured into several interconnected scenes that guide the student through the complete bus-travel experience.

The first scene is the VR Bus Stop, designed with simplicity and clarity in mind to avoid sensory overload. The space includes a clean layout with a visible bus stop sign, a timetable, and the route number displayed in large, easy-to-read characters. A few virtual passengers are present to simulate a realistic setting, but their number and movement are intentionally limited to maintain a low sensory load. As the student waits, an approaching bus animation provides a clear visual cue that the scenario is progressing.

The second scene transitions to the Bus Entrance Area, where students encounter the card validator, designed with large, intuitive icons to support learners with reading or processing difficulties. The driver's cabin is visible but non-interactive, helping students understand the real-world layout without adding unnecessary complexity. The bus doors are wide and open slowly, ensuring easy navigation and reducing anxiety for students who may struggle with timing or coordination.

The Bus Ride Environment is designed to offer students a calm and accessible introduction to the experience of traveling on a moving bus. The movement of the vehicle is intentionally smooth, helping learners remain comfortable and focused throughout the scenario. To further support students who may be sensitive to sound or easily overwhelmed, the environment includes reduced background noise, creating a quieter and more predictable atmosphere. Additionally, an optional sensory-friendly mode is available, allowing educators to adjust visual and auditory stimuli to match each learner's individual needs. This ensures that every student can engage with the bus ride in a way that feels safe, manageable, and supportive of their learning goals.

Interactive Elements

- Travel card
- Card validator
- Bus doors
- Seat selection
- Stop request button

Visual Design & Accessibility

- High-contrast colors
- Large icons
- Subtitles
- Slow, clear animations
- Optional simplified mode for younger students

6. Game Flow

- Introduction of the Guide Avatar

The avatar appears at the bus stop.

She explains the goal in simple language:

“We will practice taking the bus. First validate your card, then board the bus, then find a seat. I will help you.”

- Sequence of Activities

Step 1: Waiting at the VR Bus Stop

- The avatar asks the student to look at the bus number.
- The bus approaches slowly.
- Students with ADHD receive a short, engaging animation to maintain focus.

Step 2: Validating the Travel Card

- The student holds the card to the validator.
- A green light and “ding” sound confirm success.

If incorrect, the avatar says, “Try again. Hold the card closer.”

Step 3: Boarding the Bus

- Students wait for passengers to exit.
- The avatar reminds them: “Let people get off first.”
- They board safely, avoiding the doors.

Step 4: Choosing a Seat

- Students choose between:
 - priority seat
 - regular seat
 - standing with handrail
- The avatar explains why some seats are reserved.

Step 5: Bus Ride Starts

- The bus begins moving.
- Students must stay seated or hold the rail.
- The display shows the next stop.
- ADHD students receive short prompts to maintain attention.

Step 6: Requesting the Stop

- When the correct stop appears, the student presses the stop button.
- A light and sound confirm the request.

Step 7: Exiting the Bus

- Students wait for the bus to stop fully.
- They exit safely and complete the scenario.
- Main interactions
 - Card validation
 - Seat selection
 - Stop request button
 - Responding to Monica’s prompts
- Examples of Correct Responses
 - Validating the card immediately
 - Letting others exit first
 - Choosing a regular seat when appropriate

- Pressing the stop button at the right time
- Examples of Incorrect Responses
 - Blocking the doors
 - Sitting in a priority seat without need
 - Standing without holding the rail
 - Ignoring the stop announcement
- Scenario Completion

The avatar congratulates the student:

“Great job! You validated your card, boarded safely, and found a seat. You are learning to travel independently.”

Students unlock a new route.

7. Mechanics

The scenario incorporates a thoughtfully designed and supportive system of mechanics that gently guide students through their learning journey, ensuring clarity and encouragement at every step.

Correct/Incorrect Answer System:

- Green glow + pleasant sound for correct actions
- Red outline + simple explanation for incorrect actions

When students perform an action correctly, they are met with a reassuring green glow accompanied by a pleasant sound, reinforcing their success and boosting confidence. Conversely, if an action is incorrect, a red outline appears around the relevant element, paired with a simple, clear explanation to help students understand and learn from their mistakes.

VR Interaction:

- Point-and-click
- Teleportation
- Object manipulation

The virtual environment offers intuitive interaction methods tailored to ease of use and engagement. Students navigate through point-and-click mechanics, allowing precise selection and interaction. Teleportation enables smooth movement within the virtual space, reducing disorientation and enhancing comfort. Additionally, object manipulation lets students interact directly with elements in the environment, fostering hands-on learning and deeper immersion.

Reward System:

- Stars
- Badges (“Safe Traveler”, “Good Listener”)
- Unlockable levels

To motivate and celebrate progress, the scenario includes a rewarding system featuring stars that mark achievements and badges such as “Safe Traveler” and “Good Listener” that recognize specific skills and behaviors. As students advance, they unlock new levels, providing a sense of accomplishment and encouraging continued exploration and mastery.

This comprehensive system not only supports skill acquisition but also nurtures confidence and independence, making the learning experience both effective and enjoyable.

8. Teacher’s Role and Learning Evaluation

Teacher’s Role

- Prepare students before VR use: The teacher introduces the VR experience by explaining its objectives, setting expectations, and providing necessary instructions to ensure students feel comfortable and ready. This preparation helps reduce anxiety and builds anticipation for the learning activity.
- Offer emotional support: Throughout the VR session, the teacher remains attentive to students’ emotional states, offering reassurance and encouragement to help manage any anxiety or discomfort. Emotional support is crucial for maintaining a positive learning environment and helping students overcome challenges.
- Monitor attention and behavior: The teacher observes students’ engagement and reactions during the VR experience, ensuring they stay focused and behave appropriately. This monitoring allows the teacher to intervene promptly if distractions or difficulties arise.
- Provide reinforcement: Positive feedback and reinforcement are given to motivate students, acknowledge their efforts, and encourage continued participation. Reinforcement can be verbal praise, rewards, or other forms of recognition that promote confidence and persistence.
- Facilitate reflection after the session: After the VR activity, the teacher leads a discussion or reflection session to help students process their experiences, share insights, and consolidate learning. Reflection encourages deeper understanding and helps connect the VR experience to real-world applications.

Learning Evaluation

Evaluation Indicators:

- Ability to follow the sequence: Assessing whether students can correctly follow the steps or stages presented in the VR scenario, demonstrating comprehension and procedural memory.
- Number of correct validations: Measuring how many tasks or checkpoints students complete accurately, indicating their understanding and attention to detail.
- Safe boarding behavior: Observing students’ adherence to safety protocols during simulated boarding, reflecting their grasp of practical safety measures.
- Appropriate seat choice: Evaluating whether students select suitable seating options, which shows awareness of comfort, safety, and social norms.
- Attention and impulse control: Monitoring students’ ability to maintain focus and regulate impulses, essential for safe and effective participation.

- Emotional regulation: Assessing how well students manage their emotions during the VR experience, contributing to resilience and positive engagement.

Follow-Up Instruments:

- Observation sheets: Structured tools for teachers to systematically record student behaviors and performance during and after VR sessions.
- Student self-reflection: Encouraging students to evaluate their own experiences and learning, fostering metacognition and personal growth.
- Real-life bus practice: Opportunities for students to apply learned skills in actual bus environments, reinforcing transference of knowledge.
- Parent/teacher feedback: Collecting insights from caregivers and educators to provide a holistic view of student progress and areas needing support.

9. Inclusion, Transference, and Educative Impact

Real-Life Transference:

This VR scenario is carefully crafted to extend learning beyond the virtual environment, enabling students to transfer their skills to real-life situations. As students progress, they gain increasing independence in using public buses, requiring less support and building confidence in their ability to navigate community mobility. They learn to follow complex, multi-step travel routines, which equips them with the procedural competence necessary for everyday public transportation.

In addition to mastering routines, students develop essential skills in managing their attention and behavior in public spaces, ensuring they remain safe and socially appropriate.

Students will be able to:

- Use public buses with reduced support, gaining independence in community mobility.
- Follow multi-step travel routines, demonstrating procedural competence.
- Manage attention and behavior in public spaces, ensuring safety and social appropriateness.
- Apply safety rules effectively, reducing risk during travel.
- Build confidence in community mobility, promoting autonomy and participation in daily life.

Conclusion

This advanced VR scenario is specifically designed for students with Mild Intellectual Disabilities, Learning Disabilities, and ADHD. Through immersive and interactive practice of the sequence validate card → board bus → sit → bus ride, students gain vital independent living skills in a controlled, supportive, and inclusive environment. The VR setting allows learners to build confidence and competence by safely navigating real-life scenarios, fostering autonomy and reducing anxiety associated with public transportation. By engaging in this experiential learning process, students not only enhance their procedural understanding but also develop emotional regulation and social skills necessary for successful community integration. Ultimately, this scenario empowers students to transfer these skills to everyday life, promoting greater independence and participation in their communities.

Learning Scenario 2.4- Time Management and Planning

1. Introduction

Time Management and Planning

Learning Area 2 - Social Skills

Difficulty Level : Advanced

The “Time Management and Planning” scenario is one of the core scenarios included under *Learning Area 2: Daily Living Skills* in the unBLOCKed curriculum. It is designed to support students aged 8 to 15 with mild intellectual disabilities in developing essential time awareness and daily planning abilities, which are fundamental for independent living. Through a structured sequence of activities, learners practise understanding schedules, reading digital time, making decisions about when to act, and experiencing the consequences of their choices within a safe and predictable virtual environment. According to the project framework, Learning Area 2 focuses on building functional self-care and independence skills that can be applied in everyday life.

This scenario was selected because managing time and organising daily activities are particularly challenging for the target group. Students often struggle with concepts such as “when to leave,” “how much time is available,” or “what should be done first.” The project highlights the need for concrete, visually supported, and repetitive learning experiences that help learners understand sequences and cause–effect relationships. By embedding time-related decisions into familiar, meaningful contexts—such as going to the supermarket, visiting the park, and returning home—the scenario provides an intuitive and practical way to build these skills.

The VR environment guides the learner through a realistic daily routine that begins at home, continues through a short journey to a bus stop and a supermarket, and ends with planning the remaining activities of the day. The learning process includes examining a visual schedule, ordering tasks chronologically, checking the current time, making decisions about when to leave, and monitoring time while moving through different locations. The structure emphasises learning through interaction and experience, rather than abstract explanation, using clear visual cues, simple choices, and repeated exposure to reinforce understanding.

A key strength of this scenario lies in its use of VR technology to simulate the passage of time and its impact on daily activities. Learners can safely experience time pressure, make mistakes, and try again without negative consequences. The system provides immediate and supportive feedback, helping students understand how their decisions influence outcomes. This approach encourages active engagement, supports individual pacing, and reduces anxiety, which is particularly important for learners who may feel overwhelmed by real-life time constraints.

In addition, the scenario is designed to integrate seamlessly into classroom practice. Teachers can observe the learner’s decision-making process in real time through screen mirroring, identify difficulties related to time perception or prioritisation, and provide targeted support. The insights gained from the activity can inform individualized education plans and further teaching strategies. Importantly, the skills developed in the virtual environment can be transferred to real-life routines

through simple follow-up activities, such as daily planning exercises, thereby strengthening the connection between digital learning and everyday independence.

2. Participant profile

This scenario has been designed primarily for students aged 8 to 15 with mild intellectual disabilities. Its main purpose is to support the student in developing basic time awareness and daily planning skills through a clear, structured, and repeatable sequence of activities. These skills are essential for managing everyday routines, such as leaving home on time, following a schedule, and completing activities within a given timeframe. For this target group, learning must be concrete, visually supported, broken down into small steps, and reinforced through repeated, guided practice.

This scenario is suitable for students who can recognize simple visual schedules, understand basic time concepts (such as “now” and “later”), read or identify digital time with support, make simple choices between two options, and follow short instructions within a structured environment. The student should also be able to move through a virtual space with guidance and maintain attention long enough to complete short sequences of actions. The goal is not precise time management from the beginning, but rather helping the student understand the relationship between time, actions, and consequences, and gradually improving their ability to plan and make appropriate decisions.

2.1 Special needs assessment depending on disability

Assessment for mild intellectual disability

In this scenario, three main areas should be examined for students with mild intellectual disabilities. First, whether the student can understand short and clear instructions related to time and daily tasks. Second, whether the student can recognize and interpret digital clocks and schedule boards, and make decisions based on the displayed information. Third, whether the student can follow a simple sequence of activities throughout the day. Students may have difficulty estimating time, forgetting tasks, or acting impulsively without considering future events. In such cases, repetition, visual cues, brief verbal support, and step-by-step guidance should be the primary adaptations.

Assessment in relation to autism spectrum conditions

This scenario may also benefit students on the autism spectrum. For these students, sensory sensitivities, preference for routine, difficulty with transitions, and the need for visual simplicity should be considered. Since the scenario involves transitions between the home, street/bus stop, and supermarket/park, the teacher should observe whether these environmental changes create stress or distraction. For such students, the environment should remain simple, visual and auditory distractions minimized, tasks presented in a predictable order, and transitions clearly marked.

Assessment in relation to attention deficit and hyperactivity disorder

This scenario can also be applied to students with characteristics of ADHD. The teacher should observe whether the student maintains attention throughout the scenario, whether they act impulsively, and whether they tend to disengage when moving between mini-scenes. For these learners, tasks should be short and focused, one goal emphasized per scene, and positive feedback

provided immediately. Reducing the number of choices and giving brief, frequent reminders can help maintain engagement.

Assessment in terms of motor and performance skills

Motor skills and control are also important in this scenario. The teacher should observe whether the student can use VR controls to look at clocks, approach task boards, and drag-and-drop task cards accurately. If fine motor control or controller use is challenging, larger interactive areas, fewer simultaneous objects, and slower-paced steps should be provided. The goal is to ensure functional participation rather than increasing task difficulty.

Key conclusion for implementation

The main principle is that the scenario should not be implemented identically for every student. More important than the diagnosis is identifying the specific areas in which the student needs support, including attention, comprehension, time estimation, sequence tracking, sensory sensitivity, and motor skills. The teacher should adjust the level of guidance, pacing, and feedback accordingly. By doing so, the scenario remains inclusive, accessible, and tailored to the actual needs of each learner, supporting gradual development of time management and daily planning skills.

3. Pedagogical & Methodological framework

The “Time Management and Daily Planning” scenario is grounded in a pedagogical approach that emphasizes functional learning, structured support, and the gradual development of independence. The use of VR technology is justified by its ability to simulate real-life situations in a controlled, safe, and repeatable environment, where learners can actively engage with time-related concepts that are otherwise abstract and difficult to grasp. For students with mild intellectual disabilities, understanding time is not effectively achieved through verbal explanation alone; it requires concrete experiences, visual representation, and the opportunity to observe the consequences of actions. VR provides exactly this type of experiential learning context.

From an inclusive education perspective, the scenario is designed following key principles such as accessibility, predictability, and individualization. The environment is simplified, with clear visual cues, limited distractions, and consistent structures that reduce cognitive load. Instructions are short, supported visually, and presented step by step, ensuring that learners with different levels of ability can access and participate in the activity. The inclusion of two difficulty levels (Level A and Level B) allows teachers to adapt the experience to the learner’s needs, providing either more guidance and flexibility or increased challenge and autonomy. In this way, the scenario supports differentiated instruction and promotes meaningful participation for all learners within the target group.

Methodologically, the scenario follows a learning-by-doing approach, where the student is actively involved in making decisions, exploring the environment, and experiencing outcomes. Rather than passively receiving information, the learner interacts with clocks, schedules, and everyday situations that require planning and time awareness. The structure is sequential and scaffolded: the student

first understands the daily plan, then applies this understanding in context (leaving home, catching the bus, completing tasks), and finally reflects on outcomes. Immediate feedback—both visual and verbal—reinforces correct choices and gently guides the learner when mistakes occur, supporting a trial-and-error learning process without anxiety or failure.

The scenario is closely connected to functional learning, as it focuses on real-life skills that are directly applicable outside the virtual environment. Managing time, following a schedule, and prioritizing activities are essential competencies for independent living, influencing areas such as school participation, daily routines, and community access. By embedding these skills into familiar contexts (home, transport, supermarket, leisure), the scenario increases relevance and supports transfer to real-life situations. Teachers play a key role in facilitating this transfer by linking the VR experience with simple follow-up activities, such as daily planning exercises or discussions about personal routines.

Furthermore, the methodological framework highlights the importance of guided support and observation. The teacher monitors the learner's performance in real time, identifies difficulties related to time perception or decision-making, and provides targeted prompts when necessary. This allows for immediate intervention and ongoing adjustment of the learning process. The data gathered through observation can also inform individualized education plans and support collaboration with families.

Overall, the scenario integrates VR technology within a structured, inclusive, and functional educational approach. It moves beyond teaching isolated knowledge and instead focuses on developing practical life skills, fostering autonomy, and building confidence in managing everyday situations.

4. Learning objectives

The “Time Management and Planning” scenario aims to develop essential skills related to understanding time, organizing daily activities, and making simple decisions based on time constraints. These competencies are fundamental for increasing independence and supporting participation in everyday routines at home, school, and in the community.

General Objectives

- To develop basic time awareness and understanding of daily routines
- To support the ability to plan and organize simple activities in a logical sequence
- To improve decision-making skills related to time and priorities
- To strengthen functional independence in managing everyday tasks
- To encourage understanding of the relationship between actions and consequences over time

Specific Objectives

- To recognize and interpret simple digital time formats (hour and minute)
- To identify and follow a visual daily schedule with clearly defined tasks and times
- To arrange activities in correct chronological order
- To make simple choices related to time management (e.g., *leave now* vs. *leave later*)
- To monitor the passage of time during an activity using visual cues

- To complete tasks within a given time frame with support
- To adjust behaviour based on time constraints (e.g., reducing delays, prioritising tasks)
- To understand basic concepts such as before, after, now, later, on time, late

Expected Learning Outcomes

By the end of the scenario, the learner is expected to:

- Demonstrate the ability to follow a simple daily plan with visual support
- Show improved understanding of when to start an activity to meet a goal
- Make appropriate choices in time-related situations with reduced guidance
- Recognize when they are on time or late, based on visual feedback
- Complete a sequence of activities while maintaining awareness of time progression
- Show increased ability to prioritize tasks in a structured context
- Transfer basic time management skills to real-life situations, such as preparing for school or planning simple daily routines

The overall objective is not mastery of time management, but the development of foundational skills that enable the learner to better understand, anticipate, and organize daily activities with increasing independence over time.

5. Environment description

The VR environment for the “Time Management and Daily Planning” scenario is designed as a sequence of familiar, everyday locations that support the understanding of time, routines, and transitions between activities. The setting progresses logically through three main spaces: the home entrance, the street and bus stop, and the supermarket area. Each environment is simple, structured, and directly connected to the learning objectives, avoiding unnecessary complexity or distracting elements.

The home scene represents the starting point of the scenario and introduces the concept of daily planning. The environment includes a clearly visible entrance area, where a digital wall clock and a daily schedule board are placed next to the door. The schedule board displays a small number of tasks (e.g., going to the supermarket, visiting the park, returning home) together with their corresponding times, using both text and simple visual symbols. This space is intentionally minimalistic, allowing the learner to focus on understanding the sequence of activities and their timing without cognitive overload.

The street and bus stop scene extends the environment into a short, clearly defined outdoor path. The learner moves along a pavement from the home towards a bus stop, which is marked by a recognizable sign and a digital time display panel. The panel shows the bus arrival time (e.g., “Bus 09:00”), reinforcing the connection between current time and scheduled events. A digital clock is also visible during movement, supporting continuous awareness of time progression. The environment remains predictable and uncluttered, ensuring that attention is directed towards the task of reaching the stop within an appropriate timeframe.

The supermarket scene provides a simple public setting where time constraints continue to play a role. At the entrance, a clearly displayed sign indicates opening hours (e.g., “Open 08:00 – 12:00”),

helping the learner understand that activities are limited by time conditions. Inside, the environment briefly reflects previously learned elements (such as shelves and basic items), but remains simplified, as the focus is not on shopping skills but on completing a task within a limited time. The layout is intuitive, with a short and direct path that supports task completion without confusion.

In terms of interactive elements, the environment uses visual and sensory cues to guide attention and support engagement. When the learner looks at a clock or important object, it gently highlights or glows, signalling its relevance. The daily schedule board allows drag-and-drop interaction for ordering tasks, while key elements such as clocks and information panels provide both visual and auditory feedback when approached or selected. Choices are presented through simple dialogue boxes, ensuring that interaction remains accessible and easy to understand.

The visual design prioritizes clarity, readability, and consistency. All clocks are displayed in a digital format, showing hours and minutes in a simple and legible way. Text is large, high-contrast, and supported by pictorial representations where possible. Colours are used functionally (e.g., green for success, warm tones for delays) to reinforce understanding without overwhelming the learner. The overall aesthetic is calm and structured, reducing anxiety and supporting focus.

From an accessibility perspective, the environment is adapted to the needs of learners with mild intellectual disabilities. It minimizes distractions, limits the number of simultaneous stimuli, and ensures that each step is clearly defined before moving to the next. Navigation is straightforward, with guided movement and restricted paths that prevent disorientation. Interactions are simple and consistent across scenes, and the pace of the scenario can be adjusted through difficulty levels. Additional support is provided through repeated cues, predictable structure, and immediate feedback.

Overall, the environment is designed not as a realistic simulation in full detail, but as a functional learning space, where each element serves a clear educational purpose. It supports the learner in understanding time, planning activities, and experiencing the consequences of their decisions in a structured and supportive context.

6. Game flow

The game flow of the “Time Management and Planning” scenario follows a clear, step-by-step structure that guides the learner through a sequence of everyday situations where time awareness and decision-making are required. The progression is linear and scaffolded, ensuring that each step builds on the previous one and that the learner remains focused on a single objective at a time.

The scenario begins with the introduction of the guide avatar, who appears on the screen in a friendly and supportive manner. The avatar explains the overall task in simple language: the learner will leave home, go to the supermarket, visit the park, and return home in time for lunch. The avatar emphasizes the importance of using time carefully and provides reassurance that support will be available throughout the activity. This introduction sets clear expectations and reduces uncertainty.

The first stage involves examining the daily schedule board in the home environment. The learner approaches the board and observes the listed tasks with their corresponding times. In Level A, the tasks are already arranged in the correct order, and the learner is encouraged to follow or repeat the

sequence. In Level B, the tasks appear in a mixed order, and the learner must use a drag-and-drop interaction to arrange them chronologically. A correct response results in visual feedback (the board lights up) and positive reinforcement from the avatar. An incorrect arrangement triggers gentle guidance, encouraging the learner to try again without negative consequences.

The next stage focuses on checking the current time and deciding when to leave home. The learner looks at the digital wall clock (e.g., 08:50) and is asked to determine when they need to be ready for the supermarket (09:00). A simple choice interaction is presented: “Leave now” or “Leave later.” Choosing “Leave now” is reinforced as an effective decision, supporting successful progression. Choosing “Leave later” leads to a time jump (e.g., 08:58) and a mild warning from the avatar, illustrating reduced available time while still allowing continuation. This step introduces cause–effect relationships in a controlled way.

The next stage focuses on checking the current time and deciding when to leave home. The learner looks at the digital wall clock (e.g., 08:50) and is asked to determine when they need to be ready for the supermarket (09:00). A simple choice interaction is presented: “Leave now” or “Leave later.” Choosing “Leave now” is reinforced as an effective decision, supporting successful progression. Choosing “Leave later” leads to a time jump (e.g., 08:58) and a mild warning from the avatar, illustrating reduced available time while still allowing continuation. This step introduces cause–effect relationships in a controlled way.

The third stage involves walking to the bus stop while monitoring time. The learner navigates a short path, with a digital clock visible on the screen showing time progression. The main interaction here is movement combined with attention to time. If the learner proceeds efficiently, they arrive on time. If they hesitate or become distracted, time advances more quickly, and they may arrive late. In Level A, a wider time tolerance allows success even with minor delays. In Level B, arriving late may result in missing the bus. The avatar responds calmly in both cases, either reinforcing success or explaining the outcome and offering a retry option.

The fourth stage is catching the bus and reaching the supermarket. If the learner arrives on time, they board the bus in a simplified interaction and observe time progression during the journey. Upon arrival, the avatar confirms that there is still enough time to complete the task. If the learner missed the bus, the scenario provides a reset option, reinforcing learning through repetition rather than failure.

The fifth stage focuses on completing a short task in the supermarket within a time limit. The learner is instructed to enter, find a simple item (e.g., bread), and exit within a given timeframe (e.g., 10 minutes). The clock continues to advance, and the learner must balance task completion with time awareness. Completing the task on time leads to positive feedback, while exceeding the time limit results in a gentle warning and reduced time for the next activity. This reinforces the idea that time spent on one activity affects subsequent plans.

The sixth stage involves reviewing the remaining plan and making a new decision. The avatar reintroduces the schedule (park at 10:00, return home at 12:30) and asks the learner what to do next. The learner chooses between going to the park immediately or delaying. A correct choice supports

efficient time use, while an incorrect choice leads to a time jump and reduced opportunity, again illustrating consequences in a non-threatening way.

The scenario concludes with the completion stage, where the learner returns home. If the learner arrives by the planned time (12:30), the system provides positive reinforcement: the wall clock highlights in green, tasks are marked as completed, and the avatar offers encouraging feedback. If the learner is late, the feedback remains supportive and constructive, emphasizing that the activity is a learning experience and can be repeated for improvement.

Throughout the scenario, the main interactions include observing visual cues (clocks, schedules), making simple choices, arranging tasks, and navigating short distances. Correct responses are consistently reinforced through visual, auditory, and verbal feedback, while incorrect responses lead to guided reflection, time adjustments, or opportunities to retry. The structure ensures that the learner remains engaged, understands the impact of their decisions, and gradually builds confidence in managing time within everyday contexts.

7. Mechanics

The mechanics of the “Time Management and Planning” scenario are designed to support learning through clear feedback, simple interactions, and a structured reward system. All elements are aligned with the needs of students with mild intellectual disabilities, ensuring accessibility, predictability, and meaningful engagement.

Correct and Incorrect Responses

The scenario does not rely on traditional right/wrong evaluation, but rather on guided feedback and visible consequences.

- Correct responses (e.g., ordering tasks correctly, choosing to leave on time, reaching the bus stop within the expected timeframe) are reinforced through immediate positive feedback. This includes visual cues (e.g., glowing elements, green highlights), short confirmation sounds, and encouraging messages from the avatar such as “Good choice” or “You are using your time well.”
- Incorrect responses (e.g., delaying departure, arriving late, exceeding the time limit in the supermarket, choosing inefficient actions) do not result in penalties. Instead, they trigger natural consequences within the scenario, such as reduced available time, missing the bus, or having less time for the next activity. The avatar provides calm, supportive explanations (e.g., “You have less time now, but we can still try”), encouraging reflection rather than discouragement.

In more complex situations (e.g., missing the bus), the learner is offered the option to retry the scenario, reinforcing learning through repetition and experience.

VR Interaction Interactions in the scenario are intentionally simple, consistent, and focused on essential actions:

- Gaze-based interaction: Important elements such as clocks, the schedule board, or information panels gently highlight when the learner looks at them, directing attention without overwhelming the user.
- Controller-based interaction: The learner uses basic controls to select options, interact with objects, and perform drag-and-drop actions (e.g., arranging task cards on the schedule board).
- Movement and navigation: The learner moves through short, guided paths (home → bus stop → supermarket → return), ensuring orientation and reducing cognitive load. Free exploration is limited to maintain focus on the task.
- Choice-based interaction: Key decisions are presented through simple dialogue boxes with two clear options (e.g., “Leave now” / “Leave later”), supporting decision-making without complexity.
- Time interaction: Time progression is a core mechanic. The digital clock is always visible, and at key moments it is emphasized through animation or enlargement. In certain situations, time advances faster or “jumps forward” to illustrate consequences of choices.

Reward System

The reward system is designed to motivate and reinforce learning without creating pressure or competition.

- Immediate rewards: Small successes are acknowledged instantly through visual effects (e.g., glowing schedule board, highlighted clock), sounds, and positive verbal feedback from the avatar.
- Task completion rewards: Successfully completing steps (e.g., organizing the daily plan, arriving on time, finishing the supermarket task within the limit) builds a sense of progress and achievement.
- Final reward: If the learner completes the full daily plan within the expected timeframe, they receive a symbolic reward such as the “Time Master Badge”, which is added to their collection area.
- Emotional reinforcement: Even when the learner does not complete the scenario perfectly, the feedback remains supportive and encouraging. The emphasis is on effort, learning, and improvement rather than performance.

Overall, the mechanics promote learning through experience, where the learner actively engages with time, observes outcomes, and gradually develops planning and decision-making skills. The combination of simple interaction, consistent feedback, and a positive reward system ensures that the experience remains accessible, motivating, and educational.

8. Teacher’s role and learning evaluation

The teacher plays a central role in facilitating, observing, and extending the learning experience within the “Time Management and Daily Planning” scenario. While the VR environment provides structured guidance and immediate feedback, the teacher ensures that learning is meaningful, individualized, and transferable to real-life contexts.

Teacher's Role

- Facilitator of the learning experience: The teacher introduces the activity, explains its purpose in simple terms, and ensures that the learner understands how to interact with the VR environment before starting.
- Observer and monitor: Using screen mirroring, the teacher follows the learner's actions in real time, paying close attention to how the learner reads time, interprets the schedule, makes decisions, and responds to time pressure.
- Provider of support: When necessary, the teacher offers short, clear prompts (e.g., "Look at the clock," "What time do you need to be there?") without interrupting the flow of the scenario. Support is gradually reduced as the learner gains confidence.
- Mediator of reflection: After the activity, the teacher guides a short discussion to help the learner reflect on their choices (e.g., "What happened when you left later?" "What would you do differently next time?").
- Individualization: The teacher selects the appropriate difficulty level (Level A or B), adjusts expectations, and adapts follow-up activities based on the learner's needs and pace.

Evaluation Indicators

The evaluation focuses on functional skills and observable behaviours rather than abstract knowledge. Key indicators include:

- Ability to recognize and interpret digital time with or without support
- Ability to understand and follow a simple daily schedule
- Ability to order activities chronologically
- Capacity to make appropriate time-related decisions (e.g., leaving on time)
- Awareness of time progression during tasks
- Ability to complete activities within a given timeframe
- Ability to prioritize tasks and adjust behaviour based on time constraints
- Level of attention and task persistence throughout the scenario
- Degree of independence vs. need for prompts

These indicators can be observed directly during gameplay and used to identify strengths, difficulties, and progress over time.

Follow-up Instruments

To support consolidation and transfer of learning, the teacher can use simple, practical follow-up activities:

- Daily planning worksheets: Activities where the learner arranges 2–3 tasks in order and decides what to do first (e.g., "You have homework, dinner, and playtime—what comes first?").
- Time recognition exercises: Matching activities between clocks and daily routines (e.g., "08:00 – going to school").

- Role-play scenarios: Recreating simple situations (e.g., preparing to leave the house) where the learner decides when to act.
- Visual schedules: Using real-life schedule boards in the classroom to reinforce routines and time awareness.
- Reflection prompts: Short guided questions after activities to strengthen understanding of cause-effect (e.g., “What happens if we are late?”).

Additionally, teachers may use observation grids or checklists to record performance during the VR activity, supporting ongoing assessment and contributing to individualized education plans (IEPs). Collaboration with parents is also encouraged, by suggesting simple routines at home where the learner can practise planning and time awareness.

Overall, the teacher ensures that the VR scenario is not an isolated activity, but part of a broader educational process that connects virtual experience with real-life skill development, supporting the learner’s progression towards greater independence.

9. Inclusion, transference and educative impact

The “Time Management and Daily Planning” scenario is designed in line with inclusive education principles, ensuring that all learners within the target group can actively participate, engage, and benefit from the experience. The structure, visual supports, and simplified interactions make the activity accessible to students with mild intellectual disabilities, while the adjustable difficulty levels allow for differentiation based on individual needs. By reducing complexity, offering predictable routines, and providing continuous guidance, the scenario creates a learning environment where students can succeed at their own pace and build confidence.

A key strength of the scenario is its strong focus on real-life transfer. The skills practised in the VR environment—such as understanding time, following a schedule, making decisions about when to act, and recognizing the consequences of delays—are directly applicable to everyday situations. Learners can transfer these abilities to routines such as preparing for school, managing after-school activities, arriving on time for appointments, or organizing simple daily tasks at home. Because the scenario uses familiar contexts (home, transport, supermarket, leisure), the connection between virtual experience and real life is clear and meaningful.

The scenario also supports the development of functional independence. By repeatedly engaging in planning and time-based decision-making, learners begin to anticipate what comes next, understand the importance of timing, and gradually take more responsibility for their actions. Even small improvements—such as recognizing when it is time to leave or choosing to act without delay—represent important steps toward autonomy and social participation.

From an educational perspective, the impact extends beyond the individual activity. The scenario provides teachers with valuable insights into each learner’s abilities, such as how they perceive time, how they prioritize tasks, and how they respond to structured choices. These observations can inform individualized education plans and support targeted interventions. Furthermore, the experience encourages reflective learning, helping students understand not only what to do, but why timing and planning matter.

Inclusion is further supported through the emphasis on positive reinforcement and emotional safety. The scenario avoids punitive responses and instead frames mistakes as opportunities for learning. This approach reduces anxiety, increases motivation, and encourages active participation, especially for learners who may feel overwhelmed by real-life time pressure.

The scenario represents a meaningful integration of digital technology and functional learning. It goes beyond teaching isolated skills by creating a structured experience where learners actively practise planning, decision-making, and time awareness in realistic contexts. Through repetition, guided support, and reflection, the scenario contributes to the development of essential life skills, fostering independence, confidence, and improved participation in daily life.

Learning Scenario 3.1- Turn–Taking Rules

1. Introduction

Turn–Taking Rules

Learning Area 3 – Social Adaptation Skills

Level of Difficulty: Basic

Scenario 3.1 – Turn–Taking Rules is a foundational component of Learning Area 3: Social Adaptation Skills. This scenario is specifically engineered to develop a learner's basic social navigation and behavioral regulation skills within a structured school environment. By focusing on the universal social requirement of queuing, students practice initiating and maintaining their position in a line, recognizing physical boundaries, and engaging in polite social recovery when those boundaries are tested. The objective of this scenario is to bridge the gap between abstract social rules and concrete physical actions. Through immediate sensory feedback, high-contrast visual guidance, and teacher-supported reflection, the learning experience strengthens the student's confidence in high-traffic areas like canteens, corridors, and playgrounds. By providing a controlled, low-stress digital environment, the scenario allows learners to master the "stress of the crowd" before facing the unpredictable nature of real-life school transitions.

Justification

Queuing and waiting for one's turn are daily requirements that significantly impact a student's ability to integrate into school life. For many learners in the target group, these situations are sources of high anxiety due to sensory overload, impulsivity, or difficulty interpreting non-verbal social cues.

- Safety: VR provides a repeatable environment where mistakes (like cutting a line) result in gentle guidance rather than social conflict or teacher reprimand.
- Sensory Regulation: The VR setting can be adjusted to be quieter and less visually cluttered than a real corridor, allowing the student to focus solely on the mechanics of the social rule.
- Functional Independence: Mastering these rules is a prerequisite for independent living and successful community participation.

2. Participant Profile

This scenario is designed for children and early adolescents (ages 8 to 15) with Mild Intellectual Disabilities (MID), though it is highly applicable to other neurodiverse profiles. Targeted at learners requiring social adaptation support, specifically those with impulsivity or difficulties noticing social cues.

2.1 Target Challenges

- Impulsivity: Learners who struggle with the physical act of waiting and have a tendency to move out of their designated space.

- Social Cues: Students who have difficulty identifying where a line begins or ends, or who do not notice when a gap has opened up in front of them.
- Boundary Setting: Learners who may not know how to respond politely when someone else violates social norms, such as cutting the line. Difficulty with waiting, tendency to move out of place, or trouble setting polite boundaries when someone cuts the line.

2.2 Special Needs Assessment

Designed for students who struggle with abstract social rules and require concrete, step-by-step visual guidance.

- Intellectual Disabilities (MID): The scenario uses simple language and high-contrast symbols to reinforce the ability to follow short, concrete instructions.
- Autism Spectrum Conditions (ASC): Focuses on understanding personal space and adapting to the physical movements of others in a group.
- ADHD: Works on sustained attention during the "waiting" phase and helps control the impulse to bypass others.

3. Pedagogical & Methodological Framework

The framework is rooted in Inclusive Education Principles, ensuring that every learner has equal access to social learning opportunities.

- Errorless Learning Approach: The game uses a "No Punishment" philosophy. Incorrect choices trigger reflective questions like "You could say this in another way" rather than negative points, ensuring the student remains motivated.
- Individualized Pacing: The VR experience allows the student to move at their own pace, with the teacher able to pause or repeat sections to ensure mastery before moving to more complex steps.
- Multimodal Feedback: Information is delivered through visual (glowing footprints), auditory (confirmation sounds), and haptic (controller vibration) channels to support different learning styles.
- Justification for VR Use: Provides a safe, repeatable environment to practice skills without the sensory overload of a real, noisy school setting.
- Inclusive Education Principles: Uses simple, friendly avatars and high-contrast visual cues (footprints) to ensure accessibility for various cognitive profiles.
- Functional Learning: Directly relates to independent living by teaching the universal social norm of waiting for one's turn.

4. Learning Objectives

General Objectives

- To improve social adaptation through the mastery of turn-taking and queuing rules.
- To foster emotional regulation and self-confidence in a shared school environment.
- Maintain appropriate physical distance from others while waiting.
- Respond politely to social conflicts (line-cutting).

Specific Objectives

- Spatial Awareness: Identify the back of a line and maintain a respectful physical distance from the person in front.
- Behavioral Regulation: Practice the step-by-step advancement of a line without losing focus or leaving the queue.
- Social Communication: Select and use polite phrases to address line-cutting or to ask for clarification on whose turn it is.
- Skill Transference: Apply these virtual behaviors to real-life situations like the school canteen or recess.

5. Environment Description

The scenario is set in two distinct school-based environments, both designed to be colorful yet simple to minimize cognitive load.

The School Corridor

This scene simulates the transition between classes. The child stands in a school corridor in front of a classroom door. On the wall there is a classroom sign and notice boards. On the floor there are guiding lines and in front of the door several student avatars are waiting. In front of the classroom door there are footprint marks on the floor showing where to stand in line. These footprints extend from the front of the line to the back. Some student avatars are standing on the footprints and there are one or two empty spots.

- Visual Cues: Features a classroom door, signboards, and high-contrast footprint marks on the floor to guide the student's positioning.
- Interactive Feedback: When the child approaches the correct footprint, a soft light ring appears, and the controller provides haptic feedback.

The Playground

In the second scene the child moves to the school playground. There is a queue for a swing or a slide. On the ground there are footprint marks again, a small sign showing the start of the line and painted lines that mark the play area. This scene focuses on leisure-based turn-taking. The environment is simple and colourful enough to feel like a school, but not too busy. The places where the child should stand in line are clearly highlighted with high contrast. The other students are designed as simple,

friendly looking avatars. When the child looks around in VR, the line area and the footprints gently glow to attract attention. When the child moves onto a footprint with the controller or by stepping forward, a short sound or vibration gives feedback that this is a standing spot.

- Equipment: Includes a slide and a swing set, each with a designated "start-of-line" sign.
- Social Layout: Avatars are positioned waiting for their turn, providing a clear visual model of the social rule in action.

6. Game Flow

Step 1: Introduction and Orientation

A guide avatar explains the task of practicing line-standing at school. The guide avatar appears on the screen, greets the student and explains the mission: "Today we are practicing how to wait in line so everyone gets a fair turn. You will practise standing in line at school and following the rules while you wait. First you will join the line in front of the classroom door, then you will join the line in the playground to use the equipment."

Step 2: Identifying the Back of the Line (Corridor)

The student is placed in the corridor where a small group of avatars is already waiting.

- The Task: Child must find the last footprint at the back of the classroom line. The student must find the last person in line and stand on the glowing footprint behind them.
- Flow: The child walks along the corridor towards the classroom door. In front of the door there is a line of three or four student avatars. The avatar asks "Where should you join the line?" Three spots are highlighted on the floor: the front of the line, a place in the middle, and the last empty footprint at the back. The child is asked to go to the last footprint at the back of the line and stand there.
- Correction: If the child goes to the middle of the line, the other avatars show a mild reaction of discomfort, and the guide avatar gently says "You should always join the line at the back." Then the child is directed to the back footprint. If the student tries to join the middle or front, the guide asks: "Is this the back of the line? Let's find the last person."

Step 3: Maintaining Position (The Advancement)

As the line moves forward, the student must advance one footprint at a time.

- The Challenge: The student must wait for the person in front to move before the next footprint lights up, reinforcing patience.
- Flow: While the child is waiting, the line moves forward slowly. The students in front step forward one by one. The child is asked to follow the footprints and move forward step by step, without getting too close to the person in front. If the child moves too close and stands almost on top of the student in front, the avatar warns "You should leave a little space for the

friend in front of you.” The footprint that shows the correct distance lights up. If the child does not move when it is their turn, the avatar behind gives a soft call, and the guide avatar says “It is your turn now, you can take one step forward.” If the child starts shouting or talking loudly, the guide avatar reminds them. While we are waiting in line, we should stay calm and respectful.

Step 4: Conflict Resolution (The Line-Cutter)

Responding when someone tries to cut the line. A new avatar appears and attempts to cut in front of the student.

- Choices: A UI panel appears with options:
 1. Say nothing (Passive).
 2. "Excuse me, I was waiting in line" (Correct).
- Outcome: If the child chooses “Say nothing”, the guide avatar says “Sometimes it is hard to say something, but it is important to speak politely so that everyone respects the line”. Then the child is given a second chance to try the situation again. If the child chooses “Excuse me, I was waiting in line” their character says something like “I was already waiting in the line, please go to the back.”
In this case the other avatars react positively, the student who tried to cut the line moves to the back and the guide avatar says. You reminded them about the line in a respectful way. Selecting the polite response causes the cutter to move to the back, and the guide praises the student’s “respectful communication”.

Step 5: Playground Practice (The Slide)

The scene shifts to joining the line for playground equipment. The child sees a line of students waiting to use the slide. The student must wait for an avatar to go down the slide and completely exit the area before they take their turn. There are footprint marks on the ground and a sign that shows the start of the line. The child is again asked to go to the back of the line, wait, and follow their turn as the students in front use the equipment one by one. When it is the child’s turn, they walk to the slide, use it safely for a short time and then leave the play area without immediately joining the line again. The avatar says: "Now it is your friends’ turn", emphasising the idea of sharing the turn.

Step 6: Conclusion and Reward

When all tasks are completed, the child is back in the corridor with the guide avatar. The avatar summarises what has been done:

- You joined the line from the back.
- You kept your distance while waiting.
- You set a polite boundary when someone tried to cut in.
- You used the playground equipment by taking turns.

The student returns to the guide for a summary of the session. A "Line Hero Badge" appears on the screen to provide a concrete sense of achievement.

7. Mechanics

The mechanics and interaction design of this VR scenario are intentionally structured to support clarity, predictability, and emotional safety for learners who require explicit guidance in social situations. Every interactive element is designed not only to maintain engagement but also to reinforce the targeted social adaptation skill of turn-taking in a concrete and accessible way. The interaction system avoids unnecessary complexity and instead emphasizes repetition, clear cause-and-effect relationships, and supportive feedback.

Movement and Spatial Navigation

Movement within the scenario is managed through either teleportation-based locomotion or short guided walking actions onto highlighted footprint zones. This design choice reduces the risk of cybersickness and helps learners remain focused on the task rather than on navigating the virtual environment. The footprint system functions as both a spatial guide and a behavioral cue. When the learner is expected to join the line, wait, or move forward, the relevant standing position becomes visually active through glowing markers, light rings, or color contrast. The learner is therefore not required to infer complex spatial expectations independently. Instead, the environment gradually teaches the logic of queuing by showing where the next socially appropriate position is located. If the learner stands in an incorrect position, the incorrect location does not trigger punishment; rather, the correct footprint is highlighted again and the guide avatar offers a short verbal clue such as, "Let us find the place at the back of the line." This ensures that the learner experiences correction as support rather than failure.

Structured Progression of Interaction

The scenario follows a sequenced interaction model. Each step must be completed before the next one becomes active. This sequential design is pedagogically important because it prevents cognitive overload and ensures that the learner understands the purpose of each task before moving forward. For example, the learner cannot proceed to the waiting and advancement phase until they have successfully identified the correct place at the back of the line. Likewise, the playground turn-taking activity does not activate until the corridor-based queueing tasks have been completed. This progression communicates an important social principle: successful participation in shared environments depends on following rules in an ordered way.

Dialogue Selection and Social Response Practice

The scenario includes simple dialogue-choice panels that appear at an accessible height and within the learner's natural field of vision. These panels are designed with minimal text, large icons, and limited response options so that learners can focus on the meaning of the social choice rather than on reading or interface management.

In most cases, the learner is offered two or three possible responses. One option represents the most socially appropriate verbal strategy, while the others reflect either passive or less effective reactions. This dialogue mechanic is particularly important during the line-cutting event. The learner is invited to practice not only recognizing unfair behavior but also responding to it in a polite, assertive, and socially acceptable way. The aim is not simply to memorize a sentence, but to understand that respectful communication can protect personal rights while maintaining social harmony. If an unhelpful answer is chosen, the scenario slows down and the guide avatar reframes the situation supportively, giving the learner another opportunity to try.

Feedback and Reinforcement

The feedback system is multisensory, immediate, and non-threatening. Positive actions are reinforced through subtle but meaningful changes in the environment. These may include:

- glowing footprints or pathway highlights;
- short confirmation sounds;
- gentle controller vibration;
- positive facial reactions from peer avatars;
- brief verbal praise from the guide avatar;
- slight brightening of the environment.

This type of reinforcement helps learners connect their action with the social rule being practiced. For instance, when the learner joins the line at the correct point, the environment communicates success instantly. When the learner keeps an appropriate distance while waiting, the system reinforces the behavior without interrupting the natural flow of the scene. Incorrect responses do not lead to penalties, score loss, or negative character reactions that could create shame or anxiety. Instead, the system uses reflective correction. The scene may pause momentarily, the guide avatar may restate the social expectation, and the learner is invited to try again. In this way, the interaction design aligns with the principles of errorless learning and preserves the learner's motivation.

Reward System and Sense of Achievement

The reward system has been designed to enhance intrinsic motivation while also providing visible signs of accomplishment. Since the target group may benefit from concrete recognition of success, each completed action contributes to a sense of progression. The learner receives reinforcement not only at the end of the scenario but also throughout the activity in small, manageable moments.

Examples include:

- recognition for standing in the correct place;
- praise for waiting calmly;
- approval for moving forward only when appropriate;
- positive feedback for using respectful language;
- final achievement recognition through the "Line Hero Badge."

The reward is not competitive in nature. It does not compare the learner with others, nor does it encourage speed over accuracy. Instead, it celebrates successful participation, patience, and social awareness. This approach is especially important for learners who may have a history of frustration in real social environments.

Accessibility and Emotional Safety in Interaction Design

A central principle of this scenario is that interaction must remain emotionally safe. Visual clutter is minimized, instructions are short and concrete, and interactions are predictable. Friendly avatars, calm voice prompts, and structured pacing all contribute to a learning environment where students can take risks, make mistakes, and practice again without social embarrassment. Inclusion is further strengthened by ensuring that the interface can be adapted if needed. Audio instructions may be repeated, visual prompts can remain visible longer, and teacher support can be integrated throughout the activity. As a result, the mechanics do not merely serve gameplay purposes; they serve as educational scaffolds that translate a complex social rule into a sequence of understandable and achievable actions.

8. Teacher's Role and Evaluation

The teacher plays a central and indispensable role in the effectiveness of this VR learning scenario. Although the digital environment provides structured prompts and immediate reinforcement, educational value is significantly strengthened when the experience is guided, observed, and interpreted by a teacher. The teacher's role extends beyond supervision and includes preparation, observation, scaffolding, assessment, and post-experience transfer into real-life settings.

Teacher as Facilitator of Learning

Before the VR session begins, the teacher introduces the purpose of the activity in simple, reassuring language. The learner should understand that the aim is to practice a daily school skill in a safe environment, not to be tested in a stressful or evaluative way. The teacher may explain that many people need to learn how to wait, take turns, and speak politely in busy places, and that the VR activity is an opportunity to practice these skills step by step.

During the session, the teacher serves as a facilitator who provides emotional reassurance, clarifies instructions if needed, and ensures that the learner remains regulated and engaged. For some learners, especially those with impulsivity or anxiety, the teacher's calm presence can reduce hesitation and improve attention. The teacher can pause the experience if the learner becomes overwhelmed, repeat key instructions, or briefly discuss what is happening before continuing.

Technical Supervision and Screen Mirroring

For this scenario to function as an effective teaching tool, screen mirroring is essential. The teacher must be able to view the learner's VR perspective in real time on a screen, monitor, projector, or tablet. Without this visual access, it becomes difficult to understand what the learner is seeing, which option has been selected, or at what moment confusion is occurring. Real-time observation allows the teacher to identify whether the learner:

- recognizes the back of the line independently;
- follows spatial guidance appropriately;
- waits without leaving their designated place;
- maintains suitable personal distance;
- responds calmly to a conflict situation;
- transfers understanding from one setting to another.

This technical visibility transforms the VR task from a private digital experience into a shared pedagogical event.

Observation of Behavioral Indicators

The teacher's observational role is especially valuable because the scenario targets behaviors that are often difficult to assess through worksheets or verbal questioning alone. The teacher can monitor not only whether the learner reaches the correct answer, but also how the learner behaves during the process.

- Does the learner immediately try to enter the middle or front of the line?
- Does the learner hesitate and require repeated prompting?
- Can the learner remain in position while waiting?
- Does the learner move too close to the avatar in front?
- Does the learner notice when the line advances?
- How does the learner react emotionally when another avatar cuts in?
- Is the learner able to choose or say a polite boundary-setting phrase?

These observations help the teacher understand whether the main difficulty lies in impulse control, spatial awareness, social interpretation, communication, or emotional regulation.

Evaluation Indicators

Evaluation in this scenario should be formative, supportive, and skill-based. It should focus on observable progress rather than perfection. A simple teacher observation checklist or rubric may be used to document learner performance across repeated sessions. Suggested evaluation indicators include:

Joining the line appropriately

- identifies the back of the line correctly;
- follows visual cues with minimal support;
- avoids entering the middle or front of the queue.

Waiting behavior

- remains in position while waiting;
- advances only when the space in front becomes available;
- maintains appropriate personal distance.

Social communication

- selects or uses a polite statement when another person cuts in;
- demonstrates awareness of fairness and turn-taking;
- responds without aggression or withdrawal.

General regulation

- remains calm throughout the activity;
- tolerates short waiting periods;
- accepts corrections and tries again.

Evaluation can be recorded using categories such as:

- independent;
- with verbal prompt;
- with visual prompt;
- with physical/close adult support;
- not yet demonstrated.

This kind of structured observation supports individualized educational planning and helps teachers track development over time.

Reflective Discussion After the VR Session

The learning process should continue after the headset is removed. A short reflective discussion allows the learner to verbalize what happened and connect virtual actions to real-life situations. The teacher may ask concrete, guided questions such as:

- Where should you stand when you join a line?
- What should you do when the line moves?
- Why is it important to leave some space?
- What can you say if someone cuts in front of you?
- Where at school do you need to wait for your turn?

This reflective stage is important because it transforms action into understanding. It also helps the teacher identify whether the learner has internalized the rule or is relying only on the virtual prompts.

Extension into Classroom and School Practice

The teacher's role does not end with evaluation. One of the most important responsibilities is to help the learner apply the practiced skill in authentic environments. Immediately after the VR activity, the teacher can organize short real-life practice opportunities, such as:

- lining up after break time;
- forming a queue for the canteen;
- waiting to enter the classroom;
- taking turns during a game or group activity.

The teacher may use the same language and cues from the VR environment, such as “Find the back of the line” or “Take one step forward now.” This consistency strengthens transfer and gives the learner a familiar structure in real school situations.

Communication with Families and Support Teams

The teacher can also extend the educational value of the scenario by sharing observations with families and other professionals. Informing parents about the social rule practiced in VR makes it possible to reinforce the same behavior at home or in community settings. Families may be encouraged to practice waiting turns during meals, shopping, games, or playground visits. In multidisciplinary contexts, the teacher’s observations may also be useful for special education staff, psychologists, or therapists working on related goals such as self-regulation, social communication, and adaptive functioning.

Why the Teacher’s Role Is Essential

This scenario is not simply a digital activity; it is a guided educational intervention. The teacher gives meaning to the learner’s actions, identifies barriers, provides emotional safety, and connects practice to daily life. The VR system offers the structure, but the teacher ensures that the experience becomes genuine learning. For that reason, teacher engagement is not an optional addition but a core condition for the successful implementation of the scenario.

9. Inclusion and Transference

Inclusion and transference are essential dimensions of this learning scenario because the ultimate purpose of the VR experience is not only successful participation in a virtual activity, but improved functioning in real educational and social environments. The scenario has therefore been designed to support broad accessibility and meaningful generalization of learning across settings, people, and routines

Inclusion as a Design Principle

The scenario is grounded in the principle that all learners should have access to structured opportunities for social participation, regardless of their cognitive, communicative, or behavioral profile. Many social rules in school, such as waiting in line, are often learned informally through observation. However, not all learners can easily interpret these unspoken expectations. For students with mild intellectual disabilities, autism spectrum conditions, ADHD, or related support needs, implicit social norms may need to be made explicit, concrete, and repeatedly practiced. This VR scenario promotes inclusion by transforming a hidden social expectation into a visible and teachable sequence. High-contrast footprints, simplified language, clear spatial structure, and supportive avatars make the task accessible to learners who benefit from predictability and visual reinforcement. In this way, the scenario does not ask the learner to “fit into” an inaccessible environment; rather, it adapts the environment so that the learner can understand and participate successfully.

Emotional Inclusion and Reduction of Social Anxiety

For many learners in the target group, difficulty with turn-taking is not only a matter of skill but also a matter of emotional security. Crowded school environments may create anxiety, uncertainty, or impulsive reactions. Real-life mistakes in social situations can quickly lead to embarrassment, peer rejection, or adult correction, which in turn may reduce the learner's willingness to participate. The VR environment supports emotional inclusion by allowing the learner to rehearse social behavior without these real-world risks. Mistakes are treated as part of learning, not as failure. Repetition is available without stigma. The learner is given time to process events, try again, and experience success. As a result, the student may develop not only better performance but also greater confidence in shared spaces.

Real-Life Transfer Within the School Setting

A major objective of the scenario is the transfer of learning from virtual practice to everyday school situations. For this reason, the environments selected for the scenario—the corridor and the playground—closely reflect locations where turn-taking is naturally required. The similarity between the virtual setting and the real school context increases the likelihood that the learner will recognize the same rule when it appears outside the headset. Transfer is strengthened when the teacher deliberately creates follow-up opportunities soon after the VR experience. These may include:

- joining the classroom line after recess;
- waiting in sequence for lunch;
- taking turns at a sink, activity table, or school game;
- practicing polite phrases in role-play before a real transition.

The closer the practice occurs to the VR session, the stronger the connection between virtual learning and daily behavior is likely to be.

Transfer to Home and Community Contexts

The skill of turn-taking is not limited to school. It is a fundamental component of community participation and later independent living. Waiting one's turn is necessary in shops, health centers, public transport, playgrounds, sports activities, and family routines. For this reason, the scenario has value beyond the school setting.

Families can be involved in transference by practicing similar rules during:

- board games and card games;
- meal routines;
- grocery shopping;
- waiting for playground equipment;
- taking turns in conversation or shared household tasks.

Parents and caregivers may be encouraged to use the same wording introduced in the VR scenario, such as "Wait for your turn," "Stand behind the last person," or "You can say it politely." This continuity in language helps the learner recognize the same social rule across multiple environments.

Building Functional Independence

The long-term significance of this scenario lies in its contribution to functional independence. A learner who can wait appropriately, respect physical boundaries, and protect their own turn politely is better prepared to participate in group life with less adult intervention. These abilities support inclusion not only in school but also in future vocational, social, and public settings.

When students gain confidence in small everyday routines, they are more likely to approach social situations positively rather than avoid them. In this sense, the scenario contributes to broader educational aims such as self-confidence, adaptive behavior, and social belonging.

Social Participation and Quality of Life

Turn-taking may appear to be a simple rule, but it is deeply linked to fairness, cooperation, and mutual respect. Learners who understand this rule are better able to navigate relationships, avoid conflict, and participate in shared experiences. By practicing how to join a line, wait calmly, and respond assertively yet respectfully, the learner develops skills that protect both personal rights and social harmony. This has a direct educative impact. When anxiety is reduced and social understanding is strengthened, the learner is more likely to experience success in everyday school life. Over time, these repeated successful experiences can improve participation, peer relationships, and overall quality of life.

Sustainability of Learning

For transference to be sustainable, the scenario should not remain a one-time digital activity. It is most effective when embedded within a broader educational routine that includes repetition, real-life rehearsal, family involvement, and teacher reflection. Schools may revisit the scenario periodically, use related classroom activities, or connect it with other social adaptation skills such as waiting, asking politely, respecting personal space, and managing frustration. In this way, the VR scenario becomes part of a larger inclusive teaching strategy. It serves as an entry point for repeated and supported participation in the social rules of daily life.

Learning Scenario 3.2: Expressing Emotions and Empathy

1. Introduction

Expressing Emotions and Empathy

Learning Area 3 – Social Adaptation Skills

Level of Difficulty: Basic

This learning scenario presents a structured, two-part immersive Virtual Reality (VR) experience designed to support learners in developing emotional awareness and empathy skills. The scenario takes place in two familiar and meaningful contexts: a classroom and a playground. Within these environments, learners are guided through progressive stages that focus on recognizing emotions in others, identifying and expressing their own feelings, and responding appropriately to peers in emotionally charged situations. The design emphasizes clarity, repetition, and visual support. Emotional expressions are deliberately exaggerated, and social situations are simplified to reduce ambiguity. This allows learners to focus on core emotional cues without being overwhelmed by complex environmental stimuli. The ability to recognize, label, and respond to emotions is fundamental to social adaptation and interpersonal communication. Many learners in the target group experience difficulty interpreting facial expressions, understanding emotional states, and selecting appropriate responses in social contexts. These challenges can lead to misunderstandings, social withdrawal, or conflict. VR offers a unique opportunity to simulate controlled, repeatable social situations where learners can safely practice emotional skills without real-life consequences. By making abstract emotional concepts concrete and visually accessible, this scenario contributes to improved peer interaction, emotional regulation, and social participation.

2. Participant Profile

Target Group:

Learners within the identified support group who experience difficulties in emotional recognition, emotional expression, and empathic response.

Age Range:

Learners in the target group who find identifying emotions and finding suitable responses abstract and difficult.

Key Challenges:

- Limited emotional vocabulary;
- Difficulty interpreting facial expressions and body language;
- Reduced ability to infer others' feelings;
- Challenges in selecting appropriate social responses;
- Impulsivity or inappropriate emotional reactions;
- Limited perspective-taking skills.

Special Needs Assessments:

The scenario is specifically designed to:

- transform abstract emotional concepts into concrete visual experiences;
- reduce cognitive load through simplified environments;
- support understanding through repetition and visual cues;
- provide safe opportunities for trial-and-error learning.

Exaggerated facial expressions, clear emotional indicators, and guided prompts ensure accessibility for learners with diverse learning needs, including those with mild intellectual disabilities, autism spectrum conditions, and attention-related difficulties.

3. Pedagogical & Methodological Framework

Justification for VR Integration:

Emotional understanding is often learned implicitly through real-life interactions. However, learners with social adaptation difficulties benefit from explicit instruction and structured practice. VR provides a bridge between theory and practice by allowing learners to engage with realistic yet controlled social scenarios. VR allows these skills to be practiced through concrete faces and controlled environments that are otherwise difficult to simulate. Unlike traditional teaching methods, VR enables:

- immersive observation of emotional cues;
- active participation in social situations;
- immediate feedback on decisions;
- repetition without social pressure.

Inclusive Education Principles:

The scenario aligns with inclusive education by ensuring:

- accessibility through visual and auditory supports;
- reduced language complexity;
- structured progression;
- multiple means of engagement and representation.

Emotion icons, color-coded cues, and exaggerated expressions provide alternative pathways for understanding, supporting diverse learning profiles.

Educative Approach:

The scenario is grounded in a dual-awareness model:

- Internal awareness: understanding one's own emotions ("What am I feeling?");
- External awareness: recognizing others' emotions ("What is my friend feeling?").

The methodology integrates:

- experiential learning;
- guided discovery;
- reflective practice;
- errorless learning principles.

4. Learning Objectives

General Objective:

To enhance emotional intelligence by improving learners' ability to recognize, express, and respond to emotions in socially appropriate ways.

Specific Objectives:

Recognition Skills:

- Identify basic emotions (happy, sad, angry, worried) from facial expressions;
- Associate visual cues (eyes, mouth, eyebrows) with emotional states.

Self-Expression Skills:

- Select and communicate personal feelings;
- Understand and express reasons behind emotions;
- Develop basic emotional vocabulary.

Empathy Skills:

- Recognize emotional states in others;
- Select appropriate empathic responses;
- Demonstrate supportive and non-harmful reactions in social situations.

Social Regulation Skills:

- Respond calmly to emotional conflict;
- Avoid negative or aggressive reactions;
- Practice perspective-taking.

5. Environment Description

Classroom Scene:

The child first experiences a short scene in the classroom and then a second scene in the school playground. The classroom environment is structured in a semi-circle arrangement to promote visibility and focus. Chairs arranged in a semi-circle with emotion posters on the walls and student avatars displaying various expressions. Student avatars are positioned clearly, each displaying distinct emotional expressions. Each student has a different facial expression. For example, one looks happy, one sad, one angry, one worried. On the walls there are simple emotion face posters. Posters representing different emotions are placed on the walls, reinforcing visual learning. The environment is intentionally calm and uncluttered to minimize distractions and support attention to facial cues.

Playground Scene:

In the school playground there is a small play area, benches and two or three student avatars. One of these is sitting on the ground looking sad, another is angry because they lost their ball, and a third is trying to comfort a friend. The playground introduces more dynamic and socially complex situations. Avatars engage in everyday interactions, such as playing, sitting, or reacting to minor conflicts (e.g., losing a ball). This setting allows learners to apply emotional recognition in more realistic and less structured contexts.

Visual Design Principles:

Facial expressions are exaggerated and easy to distinguish. Eyebrows, mouth shape and eyes change very clearly according to the emotion. The environment is colourful but kept simple. When the child looks at a student avatar, that avatar's face becomes slightly larger and is surrounded by a coloured ring matching the emotion. When the child selects the avatar with the controller, a short sound is heard and an emotion card for that student appears, but naming the emotion is left to the child.

- exaggerated facial features (clear eyebrows, mouth shapes, eye expressions);
- color-coded emotion indicators;
- minimal background distractions;
- consistent visual cues across scenes.

The design ensures that emotional signals are prominent and easily interpretable.

6. Game Flow

The scenario follows a structured progression from basic recognition to applied empathy. The guide avatar appears on the screen and explains the task. Today you will practise expressing your own feelings and noticing how your friends feel, and you will try to respond to them with empathy.

Step 1: Emotion Recognition

Learners observe avatars in the classroom and identify their emotions. Correct answers trigger visual reinforcement (e.g., glowing posters), strengthening the association between facial cues and emotions. The child sees the student avatars sitting in a semi circle in the classroom. The guide avatar points to one student and asks "How do you think this friend is feeling?" Three simple emotion options appear on the screen, for example happy, sad, angry. If the child chooses the correct emotion, a soft light appears around that avatar and the student avatar says a short sentence "Yes, I am feeling a bit sad today." If the child chooses the wrong emotion, the guide avatar gently gives a hint "Look carefully at the face. Look at the eyes and the mouth. Do you think this looks more like happy or more like sad?" This emotion recognition step is repeated for all the students. Each time the child answers correctly, one of the emotion posters on the classroom wall lights up.

Step 2: Self-Expression

The guide avatar prompts the learner to identify their own emotional state. The learner selects an emotion, and their avatar visually reflects this choice. This step builds self-awareness and emotional labeling skills. The guide avatar turns to the child and asks "How are you feeling today?" Several

emotion faces appear on the screen, for example happy, a bit tired, excited, tense. When the child selects an emotion face, the face of their own avatar changes to match that expression. The guide avatar then asks the child to choose a short sentence “Why do you feel this way?” Two or three simple sentences appear, for example: I am happy because I played a game. I am tired because it was hard to wake up this morning. I am excited because I will try something new. When the child chooses one, the guide avatar confirms and gives feedback “Great, you were able to say how you feel and why.”

Step 3: Empathy – Sadness Scenario

The scene moves to the playground. A sad looking student avatar is sitting on a bench with their head down. The guide avatar explains the situation “This friend is not feeling well today. First, let us try to understand how they feel.” The child looks at this avatar’s face and answers the question How do you think this friend is feeling by choosing one of the emotion options on the screen, such as sad, lonely, angry. A new question appears “What do you think this friend needs right now?”

Two or three options are shown, for example. Sit quietly next to them and listen. Get angry at them. Walk away immediately. If the child chooses an empathic option, their character says a sentence such as. If you want, I can sit with you for a bit, and you can talk if you like. The friend avatar looks pleased and smiles slightly. If the child chooses a non empathic option, the scene pauses softly and the guide avatar gives feedback “If you do this, your friend might not feel better. Shall we try another way together.” Then the task is repeated with more hints. In the playground, the learner encounters a sad peer (e.g., a child who lost their ball). The learner must recognize the emotion and select an appropriate empathic response, such as offering comfort or sitting nearby.

Step 4: Empathy – Anger Scenario

In the playground, another student avatar is angry because they lost their ball. Their face looks angry and their body language is tense. The guide avatar asks “What emotion do you think this friend is feeling, and how could you approach them in a good way?” First, the child chooses the emotion from options such as angry, excited, scared. Then three response options are shown. You shout as well. You ignore them. You speak in a calm voice and say, I can try to help you if you like. If the child chooses the calm and supportive response, the scene becomes slightly brighter, the angry avatar’s face softens and says something like. “I am angry, but it feels good that you are trying to help”. If the child chooses an unhelpful response, the guide avatar asks a reflective question about how this might affect the friend’s feelings. If someone spoke to you like that, how would you feel? This triggers perspective taking, and then the child is given another chance. The learner interacts with an angry peer. This step focuses on emotional regulation and appropriate response strategies, encouraging calm communication instead of reactive behavior.

Step 5: Summary and Closure

When all the emotion recognition and empathy tasks are completed, the scene returns to the classroom. The guide avatar summarises what has been learned “In the classroom, you tried to understand your friends’ feelings from their facial expressions. You chose your own feeling and said why you feel that way. In the playground, you showed empathy to a sad friend. You tried to approach an angry friend with a calm voice.” On the screen the Emotion and Empathy Hero Badge appears and

the scenario ends. The guide avatar provides a structured summary of the learner's actions, reinforcing key learning points and celebrating achievements.

7. Mechanics

The interaction design is structured to ensure clarity, accessibility, and emotional safety. Learners interact using gaze and simple controller inputs, reducing cognitive and motor demands.

Interaction Design:

- Learners focus on avatars and activate interaction through a trigger;
- Emotion choices appear as simple, visually supported options;
- Limited choices prevent cognitive overload.

Feedback System:

- Correct responses: visual highlights, positive sounds, avatar reactions;
- Incorrect responses: reflective prompts encouraging reconsideration;
- No punitive feedback to maintain motivation.

Dialogue & Reflection:

Learners are encouraged to reflect on their choices through guided questions, promoting deeper understanding rather than rote learning.

Reward System:

Completion of tasks results in the “Emotion and Empathy Hero Badge.”

The reward system emphasizes effort, understanding, and participation rather than competition.

8. Teacher's Role and Learning Evaluation

The role of the teacher in this VR-based learning scenario is fundamental to ensuring that the experience becomes meaningful, transferable, and pedagogically effective. While the virtual environment provides structured guidance and immediate feedback, it is the teacher who contextualizes learning, interprets student behavior, and facilitates the transfer of skills into real-life situations.

Teacher as Facilitator of Learning

Before the activity begins, the teacher introduces the purpose of the session in clear, accessible language. Learners should understand that the activity is designed to help them recognize emotions, express their own feelings, and respond to others in a kind and appropriate way. Establishing a safe and supportive atmosphere is essential, particularly for learners who may feel anxious about emotional or social tasks. During the VR experience, the teacher acts as a facilitator rather than a direct instructor. Their role is to:

- provide reassurance;
- clarify instructions when necessary;
- support emotional regulation;
- ensure that the learner remains engaged and comfortable.

This supportive presence is particularly important for learners who may become overwhelmed, distracted, or uncertain in immersive environments.

Technical Supervision and Learning Visibility

Effective implementation requires that the teacher has real-time access to the learner's VR perspective through screen mirroring or projection. This enables the teacher to observe:

- which options the learner selects;
- where hesitation or confusion occurs;
- how the learner responds to different emotional scenarios.

Without this visibility, the VR experience remains isolated and cannot be fully integrated into the teaching process. Observability transforms the activity into a shared learning experience, allowing for timely intervention and support.

Observation of Emotional and Social Behaviours

The VR scenario provides a unique opportunity to observe authentic responses in simulated social situations. The teacher should focus not only on correct or incorrect answers, but also on the learner's behavioral patterns. Key observation areas include:

- accuracy in identifying emotions from facial expressions;
- ability to distinguish between similar emotions (e.g., sadness vs. tiredness);
- willingness to engage in self-expression;
- appropriateness of selected empathic responses;
- emotional regulation during challenging scenarios (e.g., anger situations);
- persistence and willingness to try again after incorrect choices.

These observations allow the teacher to identify specific areas of need, such as emotional vocabulary development, impulse control, or perspective-taking.

Formative Evaluation and Assessment Criteria

Assessment within this scenario should be formative, ongoing, and supportive. The aim is not to measure performance in a summative sense, but to track progress and inform further instruction. A structured observation rubric may include the following indicators:

Emotion Recognition

- correctly identifies basic emotions independently;

- requires visual or verbal prompts;
- confuses specific emotional expressions.

Self-Expression

- selects appropriate emotional labels;
- provides simple reasons for feelings;
- demonstrates awareness of internal emotional states.

Empathy and Social Response

- selects supportive and appropriate responses;
- demonstrates understanding of others' needs;
- avoids aggressive or dismissive reactions.

Emotional Regulation

- remains calm during emotionally challenging situations;
- reflects on feedback;
- adapts responses after guidance.

Performance can be categorized as:

- independent;
- with minimal prompting;
- with significant support;
- not yet demonstrated.

This structured evaluation supports individualized learning planning and helps track developmental progress over time.

Reflective Dialogue and Consolidation

Following the VR session, a structured reflection phase is essential. This stage allows learners to process their experience and connect virtual actions with real-world meaning. Teachers may use guiding questions such as:

- How did you know your friend was sad or angry?
- What did you do to help your friend?
- How did you feel when you helped someone?
- What can you do if someone is upset in real life?

Reflection supports metacognitive development and strengthens the internalization of emotional concepts.

Extension into Classroom Practice

To reinforce learning, teachers should integrate follow-up activities into daily routines. These may include:

- emotion check-in circles (“How do you feel today?”);
- role-play scenarios;
- use of emotion cards or visual supports;
- storytelling and discussion of characters’ feelings.

Consistency between VR experience and classroom practice is critical for effective learning transfer.

Collaboration with Families and Support Networks

The teacher plays a key role in extending learning beyond the classroom by communicating with families and support professionals. Sharing simple strategies with parents—such as discussing daily emotions or modeling empathic responses—enhances consistency across environments, multidisciplinary settings, teacher observations can inform the work of psychologists, special educators, and therapists focusing on emotional and social development.

Educational Significance of the Teacher’s Role

Ultimately, the VR tool provides the environment, but the teacher provides the meaning. The teacher ensures that:

- learning is interpreted correctly;
- emotional safety is maintained;
- skills are generalized beyond the virtual context.

For this reason, teacher involvement is not supplementary but essential to the success of the learning scenario.

9. Inclusion, Transference, and Educative Impact

This scenario is designed not only as an isolated learning activity but as part of a broader inclusive educational approach that supports meaningful participation and long-term development.

Inclusion as a Foundational Principle

In inclusive education, it is essential that all learners have access to social learning opportunities in a way that matches their needs. Many social-emotional skills are typically acquired implicitly; however, for learners with additional needs, these skills must be explicitly taught. This scenario promotes inclusion by:

- simplifying complex emotional cues;
- providing structured and predictable interactions;
- using multimodal supports (visual, auditory, interactive);
- reducing ambiguity in social situations.

By making emotional processes visible and understandable, the scenario removes barriers that often prevent full participation.

Supporting Emotional Inclusion and Wellbeing

Emotional inclusion goes beyond access—it involves ensuring that learners feel safe, valued, and capable of participating. In real-life settings, mistakes in emotional responses may lead to negative peer reactions, reducing confidence and willingness to engage. The VR environment addresses this by:

- allowing safe practice without social consequences;
- providing immediate, supportive feedback;
- encouraging repetition without judgment;
- building confidence through gradual success.

This contributes to improved emotional wellbeing and increased willingness to engage socially.

Transference Within the School Environment

A central aim of the scenario is the transfer of learned skills into everyday school life. The classroom and playground settings are intentionally chosen because they reflect real environments where emotional interaction occurs frequently. Teachers can support transfer by:

- creating structured opportunities for emotional expression;
- reinforcing empathy during peer interactions;
- modeling appropriate responses;
- using consistent language from the VR scenario.

Immediate post-VR practice significantly increases the likelihood of successful transfer.

Transference to Home and Community Contexts

Emotional skills are essential beyond the school environment. The ability to recognize feelings, express oneself, and respond empathetically is critical for participation in family and community life. Families can support transference by:

- discussing emotions during daily routines;
- encouraging children to express feelings verbally;
- modeling empathy in family interactions;
- using simple reflective questions (e.g., “How did that make you feel?”).

Consistency between school and home environments strengthens learning outcomes.

Development of Functional Life Skills

The skills developed in this scenario contribute directly to functional independence. Emotional awareness and empathy support:

- effective communication;
- conflict resolution;
- cooperation;
- social participation.

These competencies are essential not only for school success but also for future employment, relationships, and community integration.

Impact on Social Participation and Relationships

Understanding emotions enhances the learner's ability to:

- build and maintain friendships;
- interpret social situations accurately;
- respond appropriately to others' needs;
- reduce misunderstandings and conflicts.

As a result, learners are more likely to experience positive peer interactions and a sense of belonging.

Long-Term Educational and Social Impact

The long-term impact of this scenario extends beyond immediate skill acquisition. By strengthening emotional intelligence, the scenario supports:

- increased self-confidence;
- improved behavioral regulation;
- greater engagement in learning environments;
- enhanced overall quality of life.

Sustainability and Integration into Educational Practice

For lasting impact, the scenario should be embedded within a continuous teaching framework. This includes:

- repeated use of VR sessions;
- integration with social-emotional learning curricula;
- ongoing teacher reflection and adaptation;
- collaboration with families and professionals.

Sustainability is achieved when the VR experience becomes part of a consistent and holistic approach to social and emotional development.

Learning Scenario 3.3: Conflict Resolution

1. Introduction

Conflict Resolution

Learning Area 3 -Social Adaptation Skills

Level of Difficulty: Advanced

This VR scenario places students directly inside two everyday school conflicts - one happening in the classroom during a shared-materials activity, and one occurring in the playground during a team game. The learner becomes an active participant in both situations, observing how disagreements begin, how emotions escalate, and how different reactions can change the outcome.

Throughout the scenario, students practice calm communication, emotional awareness, fairness, and responsible decision-making. They are guided to use the structured steps Stop – Think – Make a Choice while selecting from multiple conflict-resolution options that appear during slowed-down moments. Each choice leads to visible consequences: facial expressions change, voices soften or intensify, and peace-symbol animations appear when a positive solution is chosen.

The VR environment is designed to be clear, colourful, and accessible, with high-contrast icons, emotion rings, and simplified dialogue. Students learn how to express their feelings, listen to others, suggest fair solutions, and understand how their actions influence the people around them. By practicing these skills in VR, learners build confidence and become better prepared to handle real-life conflicts calmly and respectfully.

Justification

Students with mild intellectual disabilities, ASD, or ADHD often find conflict situations challenging because emotions rise quickly, social cues are hard to interpret, and impulsive reactions can take over. In real life, conflicts happen fast, and students may not have enough time to think before responding.

The VR scenario solves this problem by creating a safe, controlled, and slowed-down environment where students can pause, observe, and understand what is happening. When a disagreement begins, time slows, emotions become clearer, and the learner can focus on the important details - tone of voice, facial expressions, fairness, and possible solutions.

VR helps students:

- see emotions more clearly, through intensified expressions and coloured emotion rings;
- practice staying calm, using visual reminders like “Stop and breathe”;
- think before reacting, with guided decision points;
- try different solutions, without fear of making mistakes;
- understand consequences, through immediate visual and auditory feedback.

For students with learning disabilities, the visual cues and structured steps reduce cognitive load and make social situations easier to understand. Also, repetition, clarity, and predictable routines help them internalize peaceful strategies. For students with ADHD, the interactive and dynamic nature of VR keeps attention focused and supports impulse control

By practicing conflict resolution in VR, students strengthen emotional regulation, improve social adaptation, and become more confident in handling disagreements in everyday school life.

2. Participant Profile

The VR scenario is designed for students in two developmental ranges:

Primary school level (ages 8–12)

Students in this age group require concrete examples, simplified instructions, and strong visual cues to understand social situations and emotional expressions.

Lower secondary level (ages 13–15)

Students in this group can process more complex social reasoning, reflect on fairness, and evaluate consequences with greater depth, while still benefiting from structured guidance.

Level of Autonomy

Students participating in this scenario demonstrate medium to high autonomy, meaning they can:

- follow short sequences of instructions;
- interact independently with VR elements;
- understand simple dialogues;
- make choices when options are visually supported;
- complete tasks with minimal adult intervention.

However, they may still require:

- repetition,
- predictable routines,
- visual scaffolding,
- and emotional cues to support comprehension and self-regulation.

Special needs assessment depending on disability

The scenario addresses the needs of students with:

Mild Intellectual Disability (MID, IQ 50–69)

These students can acquire reading, writing, manual skills, vocational competencies, and independent-living abilities when instruction is simplified and structured. They benefit from:

- step-by-step guidance,
- visual supports,
- slowed-down social situations,
- explicit emotional cues,
- and opportunities to practice real-life interactions safely.

The VR scenario supports them through slowed-down conflict moments, clear emotional indicators, and structured decision-making steps.

Learning Disabilities (Subgroup A)

Students with LD may have difficulties with reading comprehension, working memory, auditory processing, or understanding abstract social concepts. In conflict situations, they may misinterpret intentions or become overwhelmed by verbal information.

Students with LD may struggle with:

- processing speed,
- working memory,
- reading comprehension,
- auditory processing,
- or understanding abstract social concepts.

They require:

- reduced cognitive load,
- clear visual icons,
- simplified language,
- and structured decision-making.

Key needs addressed in the scenario:

- high-contrast visual cues
- simplified language
- clear emotional indicators
- limited number of choices
- repetition of the Stop – Think – Make a Choice routine

The VR environment breaks down complex social interactions into manageable steps, making conflict resolution more accessible.

Attention Deficit Hyperactivity Disorder – ADHD (Subgroup B)

Students with ADHD often experience impulsivity, distractibility, and difficulty regulating emotions during conflicts. They may react quickly, raise their voice, interrupt others, or walk away from disagreements.

They benefit from:

- dynamic, interactive VR elements,
- immediate feedback,
- slowed-down conflict moments,
- and guided impulse-control strategies.

The scenario supports ADHD learners by:

- slowing down the conflict moment to create thinking time
- using dynamic, interactive elements that maintain engagement
- providing immediate feedback on choices
- reinforcing calm communication through visual and auditory cues
- guiding impulse control through structured decision points

The immersive nature of VR helps these students stay focused and practice self-regulation in a realistic but safe environment.

Autism Spectrum Disorder (ASD)

Students with ASD often struggle with interpreting facial expressions, understanding social intentions, managing sensory input, and navigating unpredictable social situations. Conflicts can be particularly challenging because they involve emotional ambiguity, rapid changes, and perspective-taking.

Students with ASD may have difficulties with:

- interpreting facial expressions,
- understanding social intentions,
- managing sensory input,
- coping with unpredictability,
- and perspective-taking.

They require:

- predictable routines,
- explicit emotional cues,
- reduced sensory overload,
- visual supports for turn-taking and fairness,
- and structured social scripts.

The VR scenario is designed to meet ASD needs through:

- predictable routines and clear structure
- high-contrast emotional cues (facial expressions, emotion rings)
- reduced sensory overload (controlled environment, stable background noise)
- explicit teaching of social expectations
- visual supports for turn-taking, fairness, and calm communication
- slowed-down conflict sequences that allow time to process information

For ASD learners, VR provides a safe space to rehearse social interactions that would otherwise feel overwhelming.

Challenges

Across all groups, students may experience:

- difficulty recognizing emotions in themselves and others;
- impulsive reactions during conflicts;
- limited vocabulary for expressing feelings;
- challenges in understanding fairness;
- difficulty evaluating consequences;
- tendency to withdraw or escalate during disagreements;
- need for repetition and guided reflection.

The VR scenario is designed to address these challenges through:

- slowed-down conflict sequences,
- high-contrast emotional cues,
- simplified dialogue,
- structured decision-making steps,
- and immediate visual feedback.

3. Pedagogical & Methodological Framework

The pedagogical and methodological foundation of this VR scenario is built on the idea that conflict situations, although common in school life, are often too fast, too emotional, or too complex for many students to process in real time.

- VR slows down conflict moments, making invisible social processes visible. Students can safely test reactions, see consequences, and retry.

Virtual Reality offers a unique opportunity to slow these moments down, making invisible social processes visible and understandable. By pausing the action at key moments, VR allows learners to observe emotional cues, analyse the situation, and safely test different reactions without fear of negative consequences. This controlled environment supports emotional regulation, encourages reflection, and gives students the chance to retry until they internalize peaceful strategies.

- Inclusive Education Principles: UDL, accessibility, multimodal cues, fairness, empathy, and guided reflection.

The scenario is grounded in the principles of Inclusive Education and Universal Design for Learning (UDL). Every element - from the high-contrast visual cues to the simplified dialogue and structured decision points - is designed to be accessible to students with diverse cognitive profiles. Multimodal supports such as emotion rings, facial-expression changes, audio narration, and symbolic icons help students understand what is happening even when language or abstract reasoning might be challenging. Fairness, empathy, and guided reflection are woven throughout the experience, helping students understand not only what to do, but why their choices matter.

- Educative Approach: Modelling, guided practice, decision making, emotional labelling, and cooperative problem solving.

The educative approach emphasizes modelling, guided practice, and emotional labelling. Students see examples of calm communication, then practice these behaviours themselves through interactive choices. They learn to identify emotions -both their own and those of others - and to connect these emotions with appropriate responses. Decision-making is scaffolded through the repeated use of the steps Stop – Think – Choose, which help students slow down impulsive reactions and consider the consequences of their actions. Cooperative problem-solving is encouraged through scenarios where fairness, turn-taking, and listening to others are essential for reaching a positive outcome.

- Functional Learning & Independent Living: Conflict resolution supports peer relationships, classroom participation, and future workplace adaptability.

Beyond the immediate learning goals, the scenario also supports functional learning and independent living skills. Conflict resolution is a key component of social adaptation: it influences peer relationships, classroom participation, and the ability to function effectively in group settings. By practicing these skills in VR, students develop habits that will help them not only in school, but also in future vocational environments and everyday community interactions. The scenario strengthens their ability to communicate calmly, negotiate solutions, and understand the perspectives of others—competencies that contribute to long-term independence and social well-being.

4. Learning Objectives

The learning objectives of this VR scenario focus on helping students become more confident, thoughtful, and peaceful in their interactions with others. At a general level, the scenario aims to strengthen conflict-resolution skills, improve emotional recognition and communication, and encourage fair, respectful decision-making. Students learn that conflicts can be solved without shouting, walking away, or reacting impulsively, and that calm communication often leads to better outcomes for everyone involved.

General Objectives

- Strengthen conflict-resolution skills.
- Improve emotional recognition and communication.
- Encourage fair, peaceful decision-making.

Specific Objectives

- Identify conflict triggers.
- Apply the steps *Stop – Think – Choose*.
- Suggest fair solutions (taking turns, listening, replaying a game moment).
- Reflect on consequences of choices.

Expected Learning Outcomes

Students will:

- recognize emotions in themselves and others.
- choose peaceful strategies instead of impulsive reactions.
- demonstrate fairness and empathy.
- transfer VR strategies to real-life school situations.

By the end of the scenario, students are expected to demonstrate a clearer understanding of emotions - both their own and those of others. They learn to recognize when someone is upset, confused, or frustrated, and to adjust their behaviour accordingly. Instead of reacting impulsively, students begin to choose peaceful strategies such as speaking calmly, listening, or suggesting fair solutions.

The scenario also aims to strengthen empathy and fairness. Students see how their choices influence the atmosphere of the classroom or playground, and they learn that cooperative solutions make everyone feel safer and more respected. Most importantly, the skills practiced in VR are designed to transfer to real-life school situations. Students become more capable of handling disagreements during group work, sharing materials, or playing games, using the same calm and thoughtful strategies they practiced in the virtual environment.

5. Environment Description

The VR scenario unfolds in two familiar school environments - a classroom and a playground - both designed to be visually clear, structured, and supportive for students with diverse cognitive needs. Each scene is intentionally simplified to reduce sensory overload while still providing enough detail to make the experience realistic and engaging.

Classroom Scene

The first part of the scenario takes place inside a bright, welcoming classroom arranged with group tables instead of traditional rows. The learner sits at one of these tables alongside two student avatars, creating a natural setting for shared activities and social interaction. On the table, there is a limited set of shared materials - coloured pencils, scissors, glue sticks - mirroring everyday situations where students must negotiate, take turns, and communicate their needs.

The walls display simple, high-contrast posters with short, encouraging messages such as “Take turns speaking” and “Listen to your friend”. These visual cues subtly reinforce the social skills practiced in the scenario. The overall design is colourful but intentionally uncluttered, helping students focus on the interaction rather than being distracted by background details.

Playground Scene

The second part of the scenario moves outdoors to the school playground, where a clearly marked area is set up for a ball game. Student avatars are divided into two small teams, and the learner becomes an active player on one of them. This setting introduces a dynamic, fast-paced social situation where misunderstandings and disagreements can easily arise.

Nearby, a teacher avatar stands at the edge of the play area, observing the game and occasionally acting as a referee. The presence of the teacher adds structure and familiarity, helping students feel safe while navigating the conflict.

Design & Accessibility

Across both scenes, the environment is designed to be colourful yet simple, avoiding unnecessary visual complexity. Important social cues are made highly visible:

- speech bubbles appear above avatars during dialogue,
- facial expressions become more pronounced when emotions rise,
- emotion rings glow around avatars when the learner looks at them, helping students identify feelings quickly and accurately.

During conflict moments, the VR system automatically slows down time, giving the learner space to process what is happening. At the bottom of the screen, option panels appear with clear, high-contrast buttons representing possible reactions. This structure supports students who need extra time to think, reduces impulsivity, and makes decision-making more accessible.

Interaction in the scenario is intuitive and supportive. When the learner looks directly at a student avatar, that avatar's facial expression becomes clearer and more intense, surrounded by a coloured ring that matches the emotion being displayed - red for anger, blue for sadness, yellow for confusion, and green for calmness. This feature helps students with MID, LD, ADHD, or ASD interpret emotions that might otherwise be difficult to read.

When a conflict arises, the scene slows down and reaction buttons appear at the bottom of the screen. Using the VR controller, the learner selects one of the available options to choose a conflict-resolution step. Each choice leads to immediate visual feedback - softened expressions, peace-symbol animations, or tense reactions -helping the learner understand the consequences of their decisions in a clear and meaningful way.

6. Game Flow

Start– Guide Avatar Introduction

The guide avatar appears on the screen and explains the task.

Today you will try out what you can do in small disagreements that may happen in the classroom and in the playground. Our goal is to solve problems by talking, without shouting and fighting.

Step one. Conflict over sharing materials in the classroom.

a. The scene starts while the child is doing an activity at the group table. There is only one red pencil on the table and two student avatars want to take that pencil at the same time.

b. The avatars start speaking at the same time. Sentences like “I am going to take the pencil.” “I wanted it first.” are heard. The pencil stays in the middle, voices become louder, faces look tense.

c. The guide avatar slows down time and turns to the child. “There is a small conflict right now. Before choosing what to do, let us stop and think.”

d. Three simple icons appear on the screen to remind the conflict resolution steps. “Stop and breathe”, “Say the feeling”, “Suggest a solution”. The guide avatar briefly reminds these three stages.

Step two. Choosing a reaction and starting the conversation.

a. Three reaction options appear in front of the child.

- Shout and grab the pencil immediately.
- Sulking without saying anything and walking away from the table.
- Start talking in a calm voice.

b. If the child selects the calm talking option, their character says a sentence like this. “We all want to use the pencil, we can try taking turns.”

c. If one of the other two options is selected, the scene pauses slightly and the guide avatar asks this question. “When you act like this, does the problem get solved or does it grow” The child is asked to guess, and then the same situation is tried again, this time guiding them towards the calm talking option.

Step three. Producing a shared solution.

a. After the child has started the calm conversation, three solution suggestions appear at the side of the screen:

- Taking turns using the pencil, setting a short time for each person.
- One person uses it now, the other never uses it.
- Throwing that pencil into the bin.

b. If the child chooses the turn taking option, their character says the following: “First I can use it, then you use it, and then our third friend uses it. It can be one minute each for all of us.”

c. The other students’ faces soften and one of them says. “Yes, we can take turns.” The guide avatar reinforces this solution positively by lighting up the cooperation poster on the classroom board.

d. If the child chooses an unfair or ineffective solution, the guide avatar encourages them to think about who would find this difficult. With questions such as “Who would be upset in this situation, how would you feel if it were you”, empathy and a sense of fairness are activated in the child, and then a chance to try again is given.

Step four. Conflict during a game in the playground.

- a. The scene moves to the playground. While the child is playing a ball game with friends, an argument breaks out over one play. One says the ball went out of bounds; the other claims it was a goal.
- b. Voices start to rise. Sentences like “You are being unfair.” “No, you saw it wrong.” are heard.
- c. Time slows again and the guide avatar speaks. “Now there is a disagreement in the game. Is there a way to solve this without fighting”
- d. Three options appear on the screen.
 - You also respond by shouting.
 - You leave the game and do not talk to anyone.
 - You suggest stopping and listening to everyone’s opinion.
- e. If the child chooses the third option, their character says a sentence like this. “We all saw it differently, if you like, we can each explain what happened in turn and then decide.”
- f. The other students speak in turn. The guide avatar also asks the child to briefly explain what they saw.

Step five. Agreeing on a solution.

- a. After everyone has shared their opinion, the following question appears on the screen. “What shall we do now”:
 - Play the same position again.
 - Draw it on the board and ask the teacher.
 - Stop playing and continue arguing.
- b. When the child chooses one of the first or second options, this is reinforced as a fair solution. One of the friend avatars gives feedback by saying. “Your suggestion was good, now I feel calmer.”
- c. If the child chooses “continue arguing”, the guide avatar encourages them to think about what kind of atmosphere the game will turn into. With a question such as “Would taking a break or finding a solution make you feel better”, the child is guided back to a solution focused option.

Step six. Ending.

- a. When all scenes are completed, the child appears again in the classroom together with the guide avatar.
- b. The avatar summaries the skills in the scenario:
 - You suggested staying calm and taking turns when sharing materials in the classroom.

- When there was a disagreement in the game, you tried talking and getting opinions instead of shouting.
- You chose a solution by thinking about people's feelings and about fairness.

c. On the screen the "Conflict Resolution Hero Badge" opens and the scenario ends.

7. Mechanics

- Pause and think moments. During conflict moments, in game time slows down or briefly stops. A simple strip appears at the bottom of the screen showing the steps "stop, think, make a choice".
- Choice based dialogues. During conflicts, the child selects one of two or three reaction sentences that appear on the screen. The selection is spoken aloud by the VR character.
- Emotion and fairness cues. After the child chooses a solution, the facial expressions of the other avatars change. In fair and empathic solutions faces soften, in negative solutions they tense up. This visually reinforces the outcome of the choice.

Step by step structure.

- First, the conflict over sharing materials in the classroom is practiced.
- Then the scene moves to the in-game conflict in the playground.
- In each scene the steps are: first notice the conflict, then choose a reaction, and finally agree on a solution.

Difficulty levels

Level A. Simpler conflict situations, fewer options and clearer guidance from the guide avatar are used. Strong hints are given after incorrect choices.

Level B. Conflicts become somewhat more complex, and the differences between options are more subtle. The child is expected to think more about the consequences of their choice.

Reward Mechanism – Sense of Enjoyment

- Appropriate approach. When the child chooses a calm and open response, the lighting in the environment gently brightens and a short confirmation sound is heard.
- Fair solution. When fair solutions such as taking turns or replaying the position are chosen, the other avatars express satisfaction and the guide avatar gives verbal reinforcement.
- Task completion. At the end of the scenario, the "Conflict Resolution Hero Badge" opens. In this way the child sees as a concrete success that they can solve problems by talking, not by shouting. Incorrect choices are presented as learning opportunities instead of punishment.

8. Teacher's Role & Learning Evaluation

- Monitoring.

The teacher watches the student's VR experience in real time on a projector or large screen.

- Observation

The teacher notes which reaction the student tends to choose first. Whether they prefer shouting and walking away, or talking.

The teacher follows how willing the student is to choose options that involve fairness and sharing, and also their level of empathy.

- Support

After the scenario, the teacher may discuss the situations with the class. For example, asking questions such as “Which solution do you think was the fairest, and why”.

The teacher can hold one to one meeting with students who are more prone to conflict, relating their reactions in the VR experience to real life examples.

- Transfer and generalization

The teacher can refer back to the steps learned in the VR scenario when real conflicts occur in the classroom and playground. With sentences like “Do you remember, in the game we first stopped and thought, let us do that here as well”, the transfer is supported.

By informing families about the child’s conflict resolution skills, the teacher can develop suggestions for using similar steps at home in sibling conflicts.

Technical requirement

It is stated that the teacher must be able to see the screen mirroring. Otherwise, they cannot notice in time which options the student chooses, at which stage they struggle and what their emotional reactions are.

Evaluation Indicators

- Ability to identify emotions
- Ability to choose calm reactions
- Fairness and empathy in solutions
- Engagement and autonomy

Follow-Up Instruments

- Observation checklist
- Reflection sheet
- Peer discussion
- Teacher–student debrief

9. Inclusion, transference and educative impact

Conflict is an inevitable situation in the school environment. Small disagreements about sharing, taking turns and game rules happen every day. For students in the target group, finding a solution in these disagreements without losing control and without hurting themselves or others is critically important both for social adaptation and emotional wellbeing.

Throughout the VR scenario, students gradually learn to pause, think, and choose peaceful solutions when faced with disagreements. Instead of reacting impulsively or withdrawing from the situation, they practice slowing down, observing what is happening, and selecting a calm and fair response. The repeated use of the steps *Stop – Think – Choose* helps them build a stable internal routine that can be applied beyond the virtual environment.

The VR setting offers a safe space for rehearsal, where conflicts unfold in a controlled, predictable way. Because time slows down during key moments, students have the opportunity to notice emotions, evaluate options, and try different strategies without fear of making mistakes. This safety allows them to experiment, reflect, and repeat until peaceful reactions become more natural and automatic.

As students interact with the scenario, their choices reveal their first, instinctive reactions to conflict - whether they tend to shout, walk away, or attempt to communicate. These reactions become visible through the VR system's immediate feedback, helping learners understand how their behaviour influences others. Over time, they begin to recognize patterns in their own responses and discover more effective ways to handle disagreements.

One of the most important outcomes of the scenario is the transfer of skills to real-life environments. The strategies practiced in VR - calm communication, turn-taking, listening, fairness, and emotional awareness - are directly applicable to everyday situations in the classroom, on the playground, and even at home. As students become more confident in using peaceful solutions, they are better equipped to navigate social interactions, maintain positive relationships, and contribute to a cooperative school atmosphere.

For the teacher, it provides an opportunity to see the student's first automatic reactions in conflict and to set goals for gradually turning these into more cooperative and calm responses over time.

Learning Scenario 3.4: Teamwork and Cooperation

1. Introduction

Teamwork and Cooperation

Learning Area 3 - Social Adaptation Skills

Level of Difficulty: Basic

In this VR scenario, students enter two collaborative school environments - a classroom and a workshop - where teamwork becomes the central focus of learning. In the classroom, they work together to create a group poster, sharing materials, dividing responsibilities, and coordinating their actions. In the workshop, they collaborate to build a simple model using construction pieces, each student taking on a specific role within the team.

Throughout the experience, learners practice essential cooperative skills: sharing responsibilities, communicating clearly, asking for help when needed, offering help to peers, and making group decisions. The VR system slows down key moments, allowing students to observe emotions, understand intentions, and reflect before acting. Visual cues such as role icons, speech bubbles, and teamwork indicators guide them gently through each step. Structured choices appear during decision points, helping students explore how different reactions influence the group.

By moving through these guided interactions, students experience firsthand how cooperation leads to successful outcomes, smoother teamwork, and more positive peer relationships. The scenario highlights the idea that shared tasks become easier—and more enjoyable - when everyone contributes.

Justification: Students in the target group, those with MID, LD, ADHD and ASD, often require explicit, structured opportunities to understand how teamwork functions. Real-life group activities can move too quickly, involve too many simultaneous cues, or become emotionally overwhelming. VR provides a safe, predictable environment where these challenges are reduced, and the learning process becomes clearer and more accessible.

Within the VR setting, social interactions are slowed down, allowing students to notice details they might otherwise miss: facial expressions, tone of voice, role expectations, and the emotional impact of their choices. They can observe cooperative behaviours modelled by avatars, test different responses, and immediately see the consequences of their decisions—without fear of judgment or failure.

The scenario highlights emotional and teamwork cues through high-contrast visuals, role indicators, and guided dialogue options. This helps students internalize cooperative strategies that support classroom participation, peer relationships, and long-term social adaptation.

By practicing these skills in a controlled environment, students build confidence and develop habits that transfer naturally into real-life situations-whether working on a project in class, playing a game on the playground, or participating in group tasks at home. VR becomes not just a learning tool, but a bridge between guided practice and everyday social success.

2. Participant Profile

Age Groups:

- Primary school level: 8–12 years
- Lower secondary level: 13–15 years

The Teamwork & Cooperation VR scenario is designed for students aged 8 to 15, a developmental period in which social understanding, emotional regulation, and group participation evolve rapidly. Younger students, between 8 and 12 years old, benefit most from concrete examples, simplified instructions, and strong visual cues that help them understand what is expected in a group task. Older students, aged 13 to 15, can engage with more complex reasoning, evaluate different perspectives, and participate in group decision-making with increasing independence.

Level of Autonomy

Across this age range, students demonstrate a medium to high level of autonomy. They are able to follow instructions, interact with VR elements, and make choices when supported by visual scaffolding such as role icons, speech bubbles, and simplified language.

The VR environment is intentionally structured to reduce cognitive load and provide clear, predictable steps that guide students through each phase of teamwork.

Cognitive Profile

The scenario is tailored to the needs of learners with Mild Intellectual Disability (MID), Learning Disabilities (LD), Attention Deficit Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD).

Students with MID (IQ 50–69) benefit from step-by-step guidance, repetition, and visual supports that make abstract teamwork concepts concrete. They learn best through predictable routines and clear examples of cooperative behaviour.

Students with Learning Disabilities require simplified language, reduced cognitive load, and visual supports such as icons, role cards, and explicit teamwork cues. They may struggle with processing speed or multi-step instructions, making the structured VR flow especially beneficial.

Learners with ADHD need dynamic, engaging tasks and immediate feedback to maintain focus. Slowed-down moments in VR help them regulate impulsivity, while clear visual cues support turn-taking and shared responsibility.

Students with ASD rely on predictable routines, explicit social expectations, and reduced sensory overload. They benefit from clear emotional cues, structured turn-taking, and visual role indicators that make group dynamics easier to understand.

Challenges

Across all these groups, students may face similar challenges:

- sharing responsibilities
- waiting for their turn
- listening to peers
- understanding group roles
- managing frustration
- communicating calmly

The VR scenario addresses these challenges through guided practice, high-contrast visual cues, and structured decision-making moments that help students navigate teamwork in a safe and supportive environment.

Special Needs Assessment Depending on Disability

Students with Mild Intellectual Disability (MID) may find it difficult to understand group dynamics or anticipate how their actions affect the team. They require explicit modelling of cooperative behaviour and benefit greatly from slowed-down teamwork moments where visual role cues make responsibilities clear. The VR environment provides the structure and repetition they need to internalize these skills.

Learners with Learning Disabilities (LD) often struggle with processing verbal instructions or managing multi-step tasks. They need visual supports - role cards, icons, task boards - that break down

teamwork into manageable components. Simplified cooperative steps and clear task cards help them stay engaged and understand what to do next.

Students with ADHD may act impulsively during group tasks, have difficulty waiting or sharing materials, or lose focus when tasks become repetitive. They benefit from interactive, engaging teamwork activities that provide immediate feedback. The VR scenario's slowed-down conflict moments and structured choices help them pause, reflect, and choose cooperative behaviours.

For students with ASD, interpreting social intentions or managing unexpected changes can be challenging. They need predictable routines, clear expectations, and visual cues that support turn-taking and shared goals. The VR environment reduces sensory overload and highlights emotional clarity, helping them understand how teamwork functions and how their contributions fit into the group.

3. Pedagogical & Methodological Framework

The Teamwork & Cooperation scenario is grounded in the understanding that teamwork is not an instinctive skill for many students with cognitive, learning, or attention-related challenges. For these learners, group work can feel unpredictable, overwhelming, or confusing, especially when social cues move too quickly or when expectations are not explicitly stated. The VR environment responds to these needs by creating a structured, slowed-down space where students can safely explore what it means to collaborate with others.

Within this controlled setting, learners can observe cooperative behaviours as they unfold, understand the purpose of different group roles, and practice communication without the pressure or emotional intensity that often accompanies real-life interactions. Multimodal cues - such as facial expressions that become clearer when looked at, emotion rings that highlight how peers feel, speech bubbles that simplify dialogue, role icons that clarify responsibilities, and task boards that break down each step - make the invisible aspects of teamwork visible and accessible. These supports help students learn how to share responsibilities, support their peers, and contribute meaningfully to a shared goal.

The educative approach behind the scenario emphasizes modelling, guided practice, emotional labelling, and cooperative problem-solving. Students repeatedly apply the structured sequence Stop – Think – Cooperate, a simple but powerful routine that helps them pause before reacting, consider the needs of the group, and choose behaviours that strengthen collaboration. This repetition builds internal habits that students can transfer beyond the VR environment.

4. Learning Objectives

The *Teamwork & Cooperation* VR scenario is designed to strengthen students' ability to work collaboratively, communicate effectively, and contribute meaningfully to shared tasks. The learning objectives reflect both the social-emotional skills required for successful teamwork and the functional abilities that support participation in classroom and real-life group activities.

General Objectives

At a general level, the scenario aims: develop awareness of how individual actions influence the success of the group;

- build the ability to share responsibilities during a shared task;
- to encourage respect for the roles and contributions of others;
- strengthen cooperative communication skills;
- promote the understanding that teamwork involves contributing to a common goal rather than completing all tasks alone.

The scenario also seeks to improve students' emotional awareness and self-regulation during group tasks. By practicing the routine *Stop – Think – Cooperate*, students learn to pause before reacting, consider the needs of the group, and choose behaviours that help the team move forward.

Specific Objectives

More specifically, the scenario guides students to:

- identify and understand group roles, recognizing that each team member has a responsibility that contributes to the final product;
- share tasks fairly, choosing a role and respecting the roles of others;
- communicate clearly and respectfully, using simple, cooperative language to express needs, offer help, or ask for assistance;
- respond appropriately to peers, especially when someone asks for help or when a group decision must be made;
- practice turn-taking and patience, waiting for their moment to act and acknowledging the contributions of others;
- Make group decisions, listening to different ideas and suggesting solutions that work for everyone;
- Reflect on the impact of their choices, understanding how cooperative or uncooperative behaviours affect the team.

These objectives are reinforced through repeated practice, visual cues, and structured decision points that help students internalize cooperative strategies.

Expected Learning Outcomes

By the end of the scenario, students are expected to demonstrate noticeable improvements in their ability to participate in group tasks. They will:

- Recognize the importance of teamwork, understanding that shared tasks become easier and more enjoyable when everyone contributes.
 - Choose cooperative behaviours instead of acting impulsively or withdrawing from the group.
 - Communicate more effectively, using simple, respectful phrases to coordinate actions, ask for help, or offer support.
 - Show greater empathy and awareness, noticing how their peers feel and adjusting their behaviour accordingly.
 - Complete shared tasks successfully, fulfilling their own role while supporting the roles of others.
-
- Transfer teamwork skills to real-life situations, applying what they practiced in VR to classroom projects, playground activities, and home routines.

Ultimately, the scenario helps students build the foundational social skills needed for positive peer relationships, successful classroom participation, and long-term social adaptation.

5. Environment Description

Classroom scene

The child is in a classroom with group tables. They sit at their own table together with three student avatars. On the table there is a large piece of cardboard, coloured pencils, glue, scissors and some cut out pictures. On the board the task written by the teacher avatar is visible. Today you will prepare a poster as a group.

Workshop scene

In the second scene the child is in the school workshop. In the middle there is a workbench, on the shelves there are blocks, simple construction pieces and labelled boxes. The task is to build a simple bridge or tower model as a team. Each piece is slightly glowing and separated according to its category. For example, basic pieces, decorative pieces.

Design

The environment is colourful but kept simple. Important cues for the child, such as the task board, role cards, speech bubbles and in team warning icons, are designed clearly and with high contrast. The role that each team member has taken is shown with small icons next to their heads.

Interaction

When the child looks at a student avatar, that avatar's role icon and facial expression become more distinct. When they approach an object on the table or the task board with the controller, they

receive feedback with a slight sound and vibration. During team decisions, simple choice panels appear at the bottom of the screen.

6. Game Flow

Start

The guide avatar appears on the screen and explains the task. Today you will not work alone, you will work together with your friends. Our aim is to be a team where everyone contributes and to complete the task together.

Step one. Preparing a group poster in the classroom.

a. The scene starts while the child is sitting at their own group's table in the classroom. The task is clearly visible on the board. Prepare a poster that explains the rules we follow together at school.

b. On the table there are four simple task cards. Writing the title, drawing pictures, colouring, gluing. On each card there is a small symbol and text.

c. The guide avatar explains the first step of teamwork. First let us share the tasks. Everyone should have a job to do.

d. Three response options appear on the screen:

- I want to do everything.
- I do not want to do anything.
- Let us share the tasks and everyone take a role.

e. If the child chooses the third option, their character says a sentence like this. There is a job that each of us can do, if you like we can share the tasks between us. Then role cards appear on the table. Title writer, illustrator, colourer, materials manager.

f. The child chooses their own role. For example, illustrator. The other avatars automatically take the remaining roles. The role icon above each avatar's head becomes visible.

g. If the child chooses the other options, the scene briefly freezes and the guide avatar asks. When you behave like this, how does the team feel, does the work become easier or harder. Then the same situation is played again and the child is guided towards the task sharing option.

Step two. Fulfilling their role and asking for help.

a. The child's primary duty is to complete their own role. For example, if they have the illustrator role, they need to draw the main picture on the poster.

b. A short reminder appears on the task board. Do your own job. Ask for help if necessary. Respond to your friend's request for help.

c. When the child has difficulty with their own work, a small option window appears on the screen:

- Continue silently and struggle.
- Ask a friend for help.

d. If the child chooses the ask for help option, their character uses one of these sentences, *It is hard for me to draw this part, can you help me?* The friend avatar reacts positively and comes over for a short time and they complete the drawing together.

e. When another avatar asks the child for help, two options appear at the bottom of the screen:

- It is my turn now, I will help later.
- We can do it together, come on.

When the child chooses the second option, teamwork inside the group is emphasized.

Step three. Completing the poster together and making a decision.

a. In the final part of the poster, the whole team is asked to make a joint decision. For example, which sentence will be written in the middle of the poster.

b. Three sentence suggestions appear on the screen. They are all positive but have slightly different emphases. For example:

Respectful school, together we are strong, With rules we are safe and happy.

c. Each avatar says in turn which sentence they prefer. Some of them may say different things.

d. Task. The child is asked to suggest agreeing on one sentence. Two options appear on the screen:

- To insist only on the sentence they want.
- To suggest hearing everyone's idea and meeting on a common sentence.

e. If the child chooses the second option, their character says this sentence, *We have different ideas, if you like we can meet on one that is suitable for everyone.* Then the sentence that the majority are also satisfied with is chosen and the poster is completed.

f. When the poster is finished the classroom scene brightens, the teacher avatar comes closer and thanks the team.

Step four. Building a model as a team in the workshop.

a. The scene moves to the workshop. The guide avatar explains the new task. Now we will build a bridge model. It is hard to do this alone, so we will work as a team.

b. On the workbench the pieces are divided into three groups. Base blocks, connector pieces, decorative pieces. On the side there is a simple target visual. A simple drawing of the desired bridge model.

c. Three types of roles are shown on the screen. Piece collector, placer, checker. The child chooses one of these roles, the other avatars take the remaining roles.

d. The task flow works as follows.

The piece collector collects the necessary pieces from the shelves according to the target model.

The placer puts the brought pieces in the correct place.

The checker checks whether the model is balanced and similar to the target and offers suggestions when necessary.

e. From time to time small warning windows appear. Is everyone giving information to each other by talking? When one person finishes their work, do they help the other? When the child does not communicate, the guide avatar asks. Why is it important to give information when working in a team? Then the child gives information to their friend by choosing a simple sentence. For example, I am putting this piece here now.

Step five. Ending.

a. When the bridge model is completed, the model glows softly and the light in the workshop increases slightly. The guide avatar turns to the team and gives a summary:

- Today you shared the tasks.
- You fulfilled your own role.
- You asked for help and tried to help.
- You made a decision together and completed a product together.

b. On the screen the Teamwork Hero Badge opens and the scenario ends.

7. Mechanics

Role selection

At the beginning of tasks, role cards appear in front of the child. When the child selects a card with the controller, the card moves onto their own avatar and a small role icon appears next to their head.

Task board

In the classroom scene there is a small task board next to the table, and in the workshop scene on the workbench. On this board the current step is written in a short sentence. For example, *We are sharing the tasks now, We are making a decision together now.*

Choice based dialogues.

In the steps of starting a conversation within the team, asking for help and giving help, two or three short sentences appear on the screen. The child chooses one of them, and the chosen sentence is heard as the avatar's voice.

Progress structure

First the workshop scene does not open until task sharing and poster making in the classroom are completed.

The badge is not given until the model is completed in the workshop.

In both scenes the steps are share the tasks first, then do your role, and finally make a joint decision.

Difficulty levels

Level A

A smaller number of roles and clearer task cards are used. The guide avatar gives frequent hints. For example, *You can ask your friend for help now*. More basic cooperation is practised without conflict.

Level B

The number of roles and small points of disagreement increase. For example, two people may want the same role. The child is expected to show both harmonious role sharing and suggesting compromise. The tasks contain more steps and the emphasis on communication within the team is stronger.

Reward Mechanism

- Immediate feedback

When the child chooses their role correctly and the task sharing is done, the role icons light up and a short confirmation sound is heard. When they ask for help and give help, the faces of the relevant avatars smile.

- Product completion

When the poster is finished, the title and pictures on the poster glow to show that it is completed. When the bridge model is finished, the model is fixed and a small test animation plays. A small ball goes over the bridge and reaches the target without the bridge collapsing.

- Badge system

At the end of the scenario, the Teamwork Hero Badge opens. The child experiences the feeling of success of achieving something not alone but as a team.

8. Teacher's Role and Learning Evaluation

In this scenario, the teacher plays a central role in guiding, observing, and evaluating the student's teamwork skills. Although the VR environment provides structure and immediate feedback, the teacher's interpretation of the student's choices is essential for understanding how these behaviours translate into real-life group situations.

- Monitoring the Experience

Throughout the VR session, the teacher follows the student's actions in real time through screen mirroring on a projector or large display. This live view allows the teacher to see exactly how the student interacts with peers, which role they select, how they communicate, and how they respond to challenges within the team. Without this visual access, the teacher would miss critical information about the student's decision-making and cooperative behaviour.

- Observation of Teamwork Behaviours

During the scenario, the teacher pays close attention to several key aspects of the student's participation:

- Role preferences: whether the student consistently chooses the same type of role or shows flexibility in trying different responsibilities;
- Help-seeking and help-giving: which options the student selects when they need assistance or when a peer asks for support;
- Decision-making style: whether the student insists on their own ideas or shows willingness to compromise and consider the group's perspective.

These observations provide valuable insight into the student's natural tendencies during teamwork and highlight areas that may require further support or reinforcement.

- Providing Support and Reflection

After the VR session, the teacher facilitates a reflective discussion with the class or with individual students. This conversation helps learners connect their VR experience with real-life teamwork. The teacher may ask questions such as:

- *"Who took which role?"*
- *"How did it feel to work together?"*
- *"What made the task easier when you cooperated?"*

For students who tend to stay in the background or, conversely, try to take over all tasks, the teacher can provide personalized feedback. By linking the student's VR behaviour to their participation in real group activities, the teacher helps them understand how their choices affect the team.

- Transfer and Generalisation

One of the teacher's most important responsibilities is to help students transfer the skills practiced in VR to everyday classroom situations. The teacher can recreate the VR structure during real activities by using similar role cards, shared tasks, and cooperative routines. Whether preparing a poster, conducting a simple experiment, or working on a project, the teacher can reinforce the same teamwork principles: sharing roles, communicating clearly, and supporting peers.

The teacher may also involve families by sharing observations about the child's strengths and challenges in teamwork. Parents can be encouraged to use simple task-sharing games at home - such as dividing responsibilities during chores or collaborative play between siblings - to reinforce cooperative habits.

Technical Requirements

For the teacher to evaluate the student's learning accurately, it is essential that screen mirroring functions properly. Without it, the teacher cannot see which role the student chooses, how they ask for or offer help, or how they behave during group decisions. Real-time visibility ensures that the teacher can provide meaningful feedback and support based on the student's authentic interactions within the VR environment.

Evaluation Indicators

A. Role Selection & Responsibility

- The student selects a role independently and appropriately.
- The student shows flexibility in choosing different roles across sessions.
- The student completes the tasks associated with their role.
- The student respects the roles and responsibilities of peers.

B. Cooperation & Task Sharing

- The student accepts task sharing within the group.
- The student contributes actively to the shared task.
- The student completes their part of the activity on time.
- The student demonstrates understanding that group success depends on everyone's contribution.

C. Communication & Social Interaction

- The student uses simple, appropriate phrases to ask for help.
- The student responds positively when peers request help.
- The student communicates clearly during the task (e.g., “I am placing this piece here”).
- The student listens to peers during group discussions and decisions.

D. Emotional Regulation & Turn-Taking

- The student waits for their turn without impulsive behaviour.
- The student manages frustration during disagreements or challenges.
- The student recognizes peers’ emotions through visual cues.
- The student adjusts their behaviour based on group reactions.

E. Decision-Making & Compromise

- The student participates in group decision-making moments.
- The student can compromise when needed.
- The student suggests solutions that work for the whole group.
- The student understands the value of reaching a common agreement.

F. Completion of Shared Task

- The student contributes to completing the poster/model.
- The student recognizes the importance of teamwork in achieving the final product.
- The student shows satisfaction during the group success animation.
- The student reflects on how cooperation influenced the outcome.

Follow-Up Instruments

A. Teacher Observation Sheet

A structured form used to record:

- role selection

- cooperative behaviours
- help-seeking and help-giving moments
- decision-making patterns
- engagement level
- difficulties observed

Useful during VR sessions and real classroom activities.

B. Student Reflection Card

A simple reflection tool with accessible prompts:

- What role did you have today?
- How did you help your team?
- Who helped you?
- What was easy? What was difficult?
- What would you like to improve next time?

For students with MID/ASD, icons or visual supports can be added.

C. Peer Feedback

Peers provide short, accessible feedback using:

- emoticons (happy / neutral / sad)
- simple statements: “Helped the team”, “Listened”, “Worked together”

Supports social awareness and empathy.

D. Family Communication Note

A brief summary sent home including:

- the student’s role in VR
- positive teamwork behaviours observed
- areas needing support

- suggested home activities (e.g., shared chores, cooperative games)

Helps reinforce skills in the family environment.

E. Classroom Transfer Activities

Teacher-led activities that mirror the VR structure:

- group poster creation
- simple construction tasks
- role-based science experiments
- cooperative games

Used to evaluate whether VR skills transfer to real-world contexts.

F. Progress Tracking Grid

A long-term monitoring tool (4–6 weeks) tracking:

- flexibility in role selection
- frequency of cooperative behaviours
- autonomy level
- communication skills
- ability to compromise
- emotional regulation

Can use numerical scales (1–3) or visual symbols.

9. Inclusion, transference and educative impact

Teamwork and cooperation are basic social skills that are constantly encountered at school when doing projects, playing games or doing experiments. For students in the target group, being able to take their own responsibility and also respect the responsibility of others, asking for help and giving help, when necessary, are critically important for social adaptation.

The *Teamwork & Cooperation* scenario is designed to be fully inclusive, ensuring that students with diverse cognitive, learning, attention, and social-communication needs can participate meaningfully in a shared activity. The VR environment reduces barriers that often appear in real-life group

work-such as fast-paced interactions, unclear expectations, or overwhelming sensory input - by offering a structured, predictable, and visually supported space where every learner can succeed. Through role assignment, simplified communication options, and guided decision-making, the scenario ensures that each student has a clear place within the team and can contribute according to their abilities.

Inclusion is strengthened through the use of multimodal cues that make social information explicit. Facial expressions, role icons, emotion indicators, and task boards help students understand what is happening in the group and what is expected of them. These supports are particularly beneficial for learners from the target group, who may struggle with interpreting social cues or managing group dynamics. By making teamwork visible, concrete, and accessible, the scenario promotes equal participation and reduces the risk of students withdrawing, dominating, or becoming overwhelmed.

A key strength of the scenario is its focus on transference - the ability to apply skills learned in VR to real-life situations. The structure of the activities mirrors common classroom practices such as preparing posters, completing projects, or building simple models. Because the VR tasks resemble familiar school routines, students can more easily transfer cooperative behaviours - sharing roles, asking for help, offering support, and making group decisions - to everyday learning contexts. Teachers can reinforce this transfer by recreating the VR structure in real activities, using role cards, shared tasks, and guided reflection.

The educative impact of the scenario extends beyond the VR session. Students develop essential social-emotional skills that support long-term adaptation: understanding group roles, regulating emotions during teamwork, communicating clearly, and recognizing the value of shared effort. These abilities contribute to improved classroom participation, stronger peer relationships, and greater confidence in collaborative settings. Over time, students learn that cooperation is not only a school requirement but a life skill that supports independence, problem-solving, and future workplace readiness.

For the teacher, it offers a rich learning area where they can observe how the student behaves in a group, how much initiative they take, how sharing they are and how open they are to cooperation. These observations provide valuable data both for individual education plans and for arrangements of group work in the classroom.

Learning Scenario 4.1 - Making Friends

1. Introduction

Making Friends

Learning Area 4- Social Life

Level of Difficulty: Basic

Scenario 4.1 – Making Friends focuses on developing the child's basic social interaction and relationship-building skills in a structured and controlled environment. In this area, students practice initiating conversations, choosing appropriate dialogue responses, and engaging positively with others, typically within a simple VR park setting. The objective of this scenario is to help learners understand how to greet others, show interest, respond politely, and build friendly connections. Through immediate positive feedback, and teacher support, the learning experience strengthens confidence, communication ability, and social participation, helping learners feel more comfortable forming and maintaining friendships in real-life situations.

The justification of this scenario is based on the importance of making friends for social inclusion, emotional well-being, and successful participation in school and community life. Many children in the target group experience difficulties initiating conversations, understanding social cues, and responding appropriately in peer interactions. By providing a structured, safe, and repeatable VR environment, the scenario allows them to practice these skills step-by-step without the pressure of real-world social situations. It helps building confidence, and supports the development of essential communication and relationship-building skills that are necessary for long-term social adaptation and quality of life.

2. Participant profile

This scenario is directed to children and early adolescents with MID (Mild Intellectual Disabilities) from ages 8 to 15. It is suitable for learners who are in developmental stages where interaction with people from the same age and friendship formation become increasingly important.

The level of autonomy necessary to carry out this scenario which will also be reinforced and improved throughout the activity is children with emerging to moderate independence in daily functions. Children should be able to understand and follow simple instructions, make choices and participate in social interactions. However, they will always be under supervision and supported by the teacher or person in charge.

It is important to consider some of the difficulties children and adolescents with MID might face when using this specific scenario regarding social life interactions and making friends from the unBLOCKed game. In this sense, they might require help when initiating conversations, understanding social interactions and appropriate responses, maintaining a two-part dialogue and reciprocal interaction. In this type of situation children might experience additional challenges based on fear from rejection and social anxiety, low confidence in social environments and difficulty interpreting other's emotions.

2.1 Special needs assessment depending on disability

Even though the game is targeted at children with MID, it could be useful for other types of disabilities. In these cases, special needs must be evaluated and considered depending on the disability.

For intellectual disabilities (MID), it will improve communication skills by reinforcing their ability to understand simple language, follow short conversations, and use basic social phrases. Moreover, it will strengthen their autonomy and decision-making and social understanding. It is important to envision the possibility of need for repetition, clear instructions, and step-by-step support.

For Autism Spectrum Conditions (ASC), it will support social communication skills and improve their ability to initiate interactions and maintain conversations. At the same time, it will be useful for understanding facial expressions and body language and adapting to different social situations.

For ADHD (Attention Deficit Hyperactivity Disorder), it will work on concentration during social interactions and to control impulsivity to refrain them from making interruptions and to help them to wait turns.

3. Pedagogical & Methodological framework

In this case, the use of VR is justified as a safe and controlled environment in which children with MID and difficulties in developing social relations can practice social interaction. This represents an opportunity where they can repeatedly practice and learn from their challenges and mistakes without social pressure, with the option of immediate feedback whether it is from the teachers or from the game itself. Virtual reality allows simulating realistic social contexts considered common for social interaction, such as the park, with avatars similar in age to the user. In conclusion, the use of VR-game is intended to help with anxiety reduction related to real-life social situations.

The activity is based on the principles of inclusive education, particularly equal access to learning opportunities related to social interaction in everyday life. It is designed to adapt to each child's abilities and challenges, enabling individualized learning in which play can be adjusted to each child's pace. Sensory learning will be promoted through visual, auditory, and interactive support. Therefore, the main educational objective of this scenario is to foster participation and social inclusion.

Through the game, we aim to promote experiential and interactive learning based on simulation. Thanks to step-by-step guided instruction and positive reinforcement, where mistakes are not penalized but used as opportunities to encourage learning, social skills are developed through repeated practice. Our goal is to foster an educational approach focused on strengthening communication skills, empathy, and self-confidence.

The intention of scenario 4.1 is to support social participation skills translated into real life in order to build competencies needed for forming friendships and interacting in everyday situations. By strengthening emotional regulation and social decision making, it will contribute to their autonomy, community integration and their quality of life.

4. Learning objectives

General objectives:

- Developing social communication skills: Building confidence in initiating contact, greeting others, introducing oneself, starting simple conversations, and asking permission to join activities while understanding basic social rules and boundaries.
- Strengthening social-emotional competence: Foster empathy, recognise others' feelings, respond calmly and respectfully to rejection, and encourage inclusive behaviours such as inviting others to participate.
- Promoting real-life social participation and independence: Support emotional well-being, reduce social anxiety, and help learners transfer practical friendship-building skills to everyday school, community, and recreational settings.

Specific objectives:

- Practising social initiation skills: Use simple greetings, introduce oneself appropriately, and choose suitable sentences to start a conversation with a peer.
- Developing appropriate interaction behaviours: Ask for permission before joining a game, follow turn-taking rules, and select polite and respectful language during social exchanges.
- Encouraging inclusive and prosocial actions: Invite others to participate in activities, show willingness to cooperate, and maintain positive peer relationships.
- Supporting transfer to real-life situations: Apply learned phrases and behaviours in everyday contexts such as school breaks, group work, and community play settings.

Learning outcomes:

- Initiating social interaction independently: Use appropriate greetings, introduce themselves, and select suitable phrases to start a simple conversation with a peer.
- Applying appropriate social participation behaviours: Ask politely to join ongoing activities, follow basic turn-taking rules, and use respectful language during interactions.
- Recognising and responding to social and emotional cues: Identify basic emotions from facial expressions and context, and adjust their behaviour accordingly.
- Demonstrate adaptive responses to rejection: Accept a “no” answer calmly, maintain respectful behaviour, and suggest alternative ways to participate.

5. Environment description

The scenario takes place in two different settings: (1) the social area or park and (2) the club activity area. In the park scene, the child stands in a playground surrounded by familiar elements such as swings, a slide, a sandpit, and benches, while two or three child avatars are playing together in different activities: one builds a tower in the sandpit, another plays with a ball, and a third sits on a bench observing the surroundings. In the club activity scene, the setting shifts to a simple indoor activity room within a school or community building, where there are board games, a drawing and colouring table, and a cosy seating corner with cushions; here, two children play a game together while another quietly looks at a book. On the walls there are posters with short messages such as “Let us play together” and “Wait your turn, listen and speak”.

The visual design of both environments is colourful but simple to create a friendly and warm atmosphere, and the avatars' facial expressions and body language clearly communicate emotions such as shyness, curiosity, and happiness. Important social cues, such as open spaces within play groups, opportunities to join activities, and speech bubbles indicating possible interaction, are highlighted using high contrast to support recognition.

Interaction is intuitive: when the child approaches an avatar, a soft light ring appears and the avatar's facial expression becomes more visible, while moving the controller toward a speech bubble triggers brief sound and vibration feedback. During moments of conversation, simple option panels with two or three possible responses appear at the bottom of the screen, helping the child practise choosing appropriate social communication in a supportive and structured way.

Accessibility is integrated throughout the scenario with minimal visual clutter, high-contrast symbols, and large, easy-to-read text to support learners with cognitive needs. Feedback ensures that learners with different sensory profiles can understand cues effectively, while simple navigation, slow interaction pacing, and predictable scene organisation help reduce anxiety and support sustained engagement for children with attention, social, or developmental challenges.

6. Game flow

At the start of the scenario, a guide avatar appears on the screen and explains the task, telling the child that they will practise meeting new friends, starting conversations, and joining games, with the goal of learning how to introduce themselves and build friendships while respecting other people's boundaries.

In the first step - *Approaching a child in the park and introducing yourself* - the child sees a park scene where an avatar sits alone on a bench looking shy and curious. The guide asks whether they would like to get to know this child; two options appear: (1) to pass by quietly without saying anything or (2) to go over and politely start a conversation. If the child chooses the second one, the character moves closer and three simple introduction sentences appear:

(1) *Hello, I just came here.*

(2) *Hello, my name is ..., what is your name?*

(3) *Hello, what are you doing here?*

Once a sentence is chosen, the other avatar smiles, shares their name, and a short conversation begins, followed by a guide message explaining that "introducing yourself is the first step of friendship". If the child chooses to pass by, the scene slows and the guide avatar slows the scene slightly and asks: *When you want to get to know someone, does passing quietly or speaking help you more?* Then the same situation is presented again and this time the child is encouraged to try the conversation starter sentences.

In the second step - *Asking for permission to join an ongoing game* - the child notices two avatars playing a ball game in another corner of the park. The guide avatar asks what they could say to join the game. Three options appear:

(1) *Try to take the ball without saying anything.*

(2) Watch from a distance and never come closer.

(3) Go over and speak, asking for permission.

When choosing the third option the character approaches the game and three sentence options appear on the screen:

(1) Can I play with you too?

(2) Give me the ball, I am going to play.

(3) I will play when you are finished.

If the child chooses the third sentence, the avatars who are playing look at each other, smile and say “Yes, we can play together.” A simple passing game or turn taking shots are added to the game. However, If the child chooses the second or third options, the other avatars look uncomfortable. The guide avatar asks. *Do you think they liked this sentence, did you offer to play together or to take over the game?* Then the child is given the chance to try the same situation again, this time by asking for permission.

In the third step - *Hearing a “no” and responding respectfully* - the setting moves to a club room where two children are playing a board game where there are two playing pieces. The child approaches the table and three sentences appear on the screen.

(1) I want to join the game right now.

(2) Can I join in the next game?

(3) Stand at the table without saying anything.

If the child chooses the first option, one of the players says “This game is for two people, it is full at the moment.” The guide avatar steps in and asks: “In such a situation, what can you do?” Two reaction options appear on the screen:

(1) Get angry and walk away from the table.

(2) Suggest joining the next game.

The child can react negatively or respectfully suggest joining the next game; choosing the respectful option leads to a positive response and a reminder that handling rejection calmly is important for friendship. If the child chooses the second option, the character says: “I see, it is for two. Can I join the next game.” The avatars respond positively saying “We will let you know when we finish.” Then, the guide avatar explains “Hearing a no can sometimes be difficult, but staying respectful is important for friendship.”

In the fourth step - *Inviting someone else into the game* - the child notices another avatar sitting alone on a cushion in another corner of the club room and is asked to identify how that friend might feel by selecting an emotion depending on their facial expression, between lonely, bored or happy. The guide then suggests inviting them to join the game. Two options appear on the screen.

(1) Keep playing your own game and never invite them.

(2) Go over and invite them into the game.

If the child chooses the second option, the character goes over and chooses one of these sentences.

(1) *If you like, you can join our game.*

(2) *There is an empty place, would you like to come?*

The lonely avatar is at first a little surprised, then smiles and says “Yes, I would like to come.” Then, the group game continues with three people. The guide avatar gives the message “*Making friends is not only joining a game but also inviting someone else into the game.*”

In the final step, the child returns to the park scene where the guide summarises what was learned: introducing oneself to start a conversation, asking permission to join activities, responding respectfully to a refusal, and inviting someone who is alone to participate. The scenario concludes with the appearance of a Friendship Hero Badge on the screen.

7. Mechanics

When the child approaches an avatar within a certain distance, a speech-bubble icon becomes active, and by pressing the controller trigger, conversation options open on the screen. The dialogues are choice-based: at key social moments two or three short sentences appear, and the child selects one, which is then spoken aloud in the avatar’s voice. To support understanding, emotion cues are provided through clear facial expressions and small emotion icons that become more visible as the child approaches avatars. For learners who need additional help, the guide avatar offers prompts, for example asking whether a character looks happy or lonely.

The scenario consists of a step-by-step structure: first, the child practises meeting others and joining a game in the park, and later moves to the club scene to practise coping with a “no” response and inviting someone else to participate. In each activity, the sequence remains structured: approach the avatar, choose what to say, and then observe and experience the social outcome.

The reward mechanism in the scenario is designed to create a strong sense of enjoyment while reinforcing positive social behaviours through motivating feedback. Immediate feedback is provided whenever the child selects an appropriate introduction or invitation sentence: the other avatar responds with a friendly smile, the surrounding environment becomes slightly brighter, and a short positive sound is heard, helping the learner connect their choice with a successful social outcome.

In addition, the social environment itself changes progressively, becoming warmer and more lively as the child makes friendly and respectful decisions, while small visual rewards such as star points or speech-bubble icons are earned at each successful step. This gradual reinforcement culminates in a badge system at the end of the experience, where the “Friendship Hero” badge appears, giving the child a concrete sense of achievement and highlighting that making social efforts, asking permission, and inviting others are key parts of building friendships.

8. Teacher’s role and learning evaluation

The teacher’s role throughout the VR learning process is to monitor, observe, support, and facilitate the transfer of skills to real life. During the activity, the teacher monitors the student’s VR experience in real time through screen mirroring on a projector or large display, allowing close observation of the student’s choices and behaviours. They pay attention to which sentences the student selects when

introducing themselves, how comfortably they initiate conversations, whether they ask for permission when joining an ongoing game, and how they react when receiving a “no” response. The teacher also evaluates the student’s willingness to invite others into activities and the politeness of the language used.

After the scenario, the teacher might organize a short classroom discussion circle, asking reflective questions such as whether making new friends feels easy or difficult, or how students feel when inviting someone to join a game. Individual follow-up conversations may be held with students who are socially shy or overly dominant, helping them connect their VR behaviour to real-life situations.

To promote transfer and generalisation, the teacher reinforces the use of key sentences from the scenario during school breaks, group work, and club activities, encouraging students to apply them in authentic interactions. Collaboration with families is also recommended, suggesting that parents practise similar introduction and invitation phrases through role-play at home before social outings. From a technical perspective, it is essential that the teacher has access to screen mirroring, as without it they cannot observe in real time the student’s social choices, reactions to refusal, or willingness to include others, which are crucial for effective guidance and assessment.

9. Inclusion, transference and educative impact

Scenario 4.1 – Making Friends promotes inclusion, real-life transfer, and meaningful educational impact by focusing on essential social participation skills that support learners with diverse needs. The scenario teaches functional communication behaviours such as greeting others, introducing oneself, asking permission to join activities, responding appropriately to rejection, and inviting peers to participate, all of which directly mirror common real-world social interactions.

From an inclusion perspective, the scenario provides an accessible, safe, and adaptable environment where students with different cognitive, social, or communication profiles can practise interaction at their own pace without fear of negative judgment, helping to reduce social anxiety and strengthen their sense of belonging.

Because the VR activities use realistic settings like parks, playgrounds, and club rooms, learners can more easily recognise similar situations in their daily lives and recall the simple sentences and behavioural steps they practised. Teachers and families can support this transfer by encouraging students to use the same phrases during recess, group work, extracurricular activities, and social outings, reinforcing the connection between virtual practice and real experiences. Over time, this repeated linking of VR learning with real contexts helps build confidence, reduces social anxiety, and promotes independent social participation, ultimately supporting inclusion, relationship-building, and everyday functional living skills.

The educative impact is significant because the scenario not only teaches specific communication skills but also supports broader developmental outcomes, including emotional regulation, empathy, respectful behaviour, confidence in social participation, and the ability to build and maintain relationships. Together, these elements contribute to greater independence, improved social integration, and enhanced quality of life for learners.

In conclusion, Scenario 4.1 – Making Friends provides a structured, inclusive, and engaging learning experience designed to support the development of essential social interaction skills in children with Mild Intellectual Disabilities and related needs. Through the use of virtual reality, learners are able to practise real-life social situations; such as introducing themselves, joining activities, coping with rejection, and inviting others; in a safe, controlled, and supportive environment. The step-by-step design, immediate feedback, and guided reflection help build confidence, reduce social anxiety, and encourage positive communication behaviours.

By combining experiential learning, inclusive educational principles, and strong teacher and family involvement, the scenario promotes the transfer of acquired skills to everyday contexts such as school, community spaces, and recreational settings. Its educational impact extends beyond specific social phrases, fostering broader competencies including empathy, emotional regulation, respectful interaction, and independent social participation. Ultimately, Scenario 4.1 contributes to strengthening learners' autonomy, social inclusion, and quality of life by equipping them with practical, functional skills for building and maintaining friendships in real-world environments.

Learning Scenario 4.2 - Appropriate social etiquette

1. Introduction

Appropriate social etiquette in public

Learning area 4: Social Life

Level of Difficulty: Basic

Scenario 4-2 - Appropriate Social Etiquette focuses on practicing appropriate social etiquette and demonstrating polite and respectful behaviour in a controlled environment for future interaction in everyday public settings, such as streets or cafés. The objective of the scenario is to help learners understand common social courtesies, such as greeting others, saying “please” and “thank you,” responding positively, and showing appropriate manners in public spaces. The focus is on developing basic social communication skills and reinforcing culturally appropriate behaviour in everyday social interactions. Through immediate positive feedback, and teacher support, the learning experience fosters engagement with virtual characters in simulated social situations to strengthen social communication skills and reinforcing culturally appropriate behaviour in everyday social interactions.

The justification of this scenario is based on the importance of developing basic communication and etiquette skills, simulating everyday public situations to build confidence and prepare children with mid intellectual disabilities for real-life social situations. By providing a safe learning environment, VR allows learners to practice without real-world social pressure. As many of the users experience difficulties with understanding socially accepted behaviour, it encourages them to reinforce cultural norms and serves as a base for more complex social and community interactions necessary for long-term social adaptation and quality of life.

2. Participant profile

This scenario is directed to children and early adolescents with MID (Mild Intellectual Disabilities) from ages 8 to 15 who are still acquiring foundational social skills. At this stage, learners are developing basic verbal communication abilities, understanding of simple social rules and social expectations in public environments.

The level of autonomy necessary to carry out this scenario which will also be reinforced and improved throughout the activity is children with emerging autonomy in public settings. They should be able to understand and follow simple instructions, make choices and participate in social interactions. Nevertheless they might require partial supervision when interacting socially and prompts to initiate greetings or polite responses, under supervision and supported by the teacher or person in charge.

It is essential to take into account some of the difficulties children and adolescents with MID might face when using this specific scenario regarding appropriate etiquette in public spaces. In this sense, they might require help when understanding appropriate public behaviour and the use of polite expressions. In this type of situation children might experience additional challenges based on

problems interpreting social cues, social avoidance and difficulty generalizing learned behaviour to real-life public spaces.

2.1 Special needs assessment depending on disability

Even though the game is targeted at children with MID, it could be useful for other types of disabilities. In these cases, special needs must be evaluated and considered depending on the disability.

For intellectual disabilities (MID), it will reinforce the understanding of social norms by strengthening their ability to recognize appropriate and inappropriate public behaviour and their comprehension of verbal instructions. By working on memory retention of learned etiquette rules based on repetition and structured reinforcement, they will be able to generalize learned behaviours in real-life settings.

For Autism Spectrum Conditions (ASC), it will support the understanding of implicit social rules, non-verbal communication such as facial expressions and gestures. Besides, it will be practical for adapting to sensory sensitivities in public environments and for regulating anxiety levels during social interaction.

For ADHD, it focuses on their ability to maintain attention during social interactions, control impulsive behaviours such as interrupting or speaking out of turn, and regulate hyperactivity in public settings.

3. Pedagogical & Methodological framework

The justification for utilizing Virtual Reality (VR) is rooted in its ability to facilitate learning within simulated, real-world contexts by prioritizing active participation over passive instruction. This immersive approach allows users to grasp the immediate cause-and-effect nature of social behavior through a structured "stop-think-choose" methodology and a step-by-step progression of scenarios. Central to this process is the delivery of immediate feedback and reinforcement, where learners receive real-time visual and auditory cues alongside realistic social responses simulated through avatar reactions. By providing both positive reinforcement for successes and corrective guidance for social errors, VR supports highly individualized and differentiated learning that adapts to diverse cognitive needs and learning speeds. Ultimately, this technology serves as a vital tool for developing social-cognitive skills, enabling users to foster empathy, understand the social consequences of their actions, and strengthen overall social regulation and functioning.

The activity is based on the principles of inclusive education, in particular equal education based on equal access to learning opportunities, removal of barriers to participation and adaptation of tasks to individual needs. It is designed to adapt according to diverse cognitive and developmental levels due to flexible pacing and the opportunity for repetition. Accessibility will be guaranteed thanks to clear and simple visual design, high-contrast social cues and symbols and multisensory feedback (visual glow, sound and vibration).

With the game, we have the intention to promote experiential and competency-based learning, where learners develop practical social skills by actively participating in realistic VR simulations that mirror everyday public situations. In addition, the practice is reflective and transfer-oriented; learning

is reinforced through guided reflection and discussion, promoting the transfer and generalisation of appropriate social behaviour to real-life public contexts.

This scenario is thought for developing practical daily real-life behaviours such as crossing safely, queuing, using public transport, and interacting politely in shops. At the same time, it promotes social independence, by strengthening decision-making, responsibility, and appropriate behaviour in public spaces without constant adult guidance. Finally, it also enhances self-regulation and community participation, considering it supports impulse control, patience, emotional regulation, and respectful interaction as key skills for active and independent participation in society.

4. Learning objectives

General objectives:

- Understanding and applying social norms in public spaces: recognise basic rules as well as appropriate and inappropriate behaviour in public settings and understand the importance of respecting others in society.
- Developing social interaction and communication skills: practice polite communication that include greetings and respectful response and develop empathy and consideration for others.
- Promoting autonomy and responsible decision making: make appropriate choices in social situations and practice patience and impulse control by helping them reflect on the consequences of their actions. It also intends to build confidence in acting in everyday social environments and to encourage responsible and independent behaviour in society.

Specific objectives:

- Learning pedestrian behaviour in public spaces: Walk on the pavement and respect space with others and leave space for people to pass.
- Respecting social rules in public transport: Join the queue correctly and respect waiting lines and recognise priority seating including offering a seat to someone that needs it.
- Assuming appropriate behaviour in markets and commercial places: Demonstrate patience while waiting and use polite greetings and basic respectful communication with others.
- Self-regulations and decision-making: identify appropriate and inappropriate behaviours and assume the consequences of their actions by choosing the adequate responses when interacting with others.

Learning outcomes:

- Recognition of social rules: Identify appropriate behaviours and recognise common social signs and cues such as queues, crossing correctly or priority seats
- Social interaction and communication: Use basic polite expressions and show consideration for the needs of other people in shared settings.
- Application of appropriate behaviour: demonstrate respectful behaviour when sharing public spaces and follow basic social rules in everyday situations like walking in the street, using public transport and waiting in line.
- Transfer to real-life contexts: apply learned behaviours in real life and demonstrate increased confidence in this type of environment.

5. Environment description

The scenario takes place in the city environment, in four different settings: (1) the street, (2) the bus stop, (3) the bus and (4) the market. The experience begins in a street scene, where the child walks along a city pavement with shops on one side and trees and benches on the other. Adult and child avatars move along the pavement, and some people wait at a bus stop. At the end of the street, a pedestrian crossing and traffic light are clearly marked. A little further along the pavement there is a bus stop, moving to the bus stop and bus scene. The child observes people waiting in line at the stop and on the stop sign there is the bus number and simple direction information. When the bus arrives, the passengers waiting at the door position themselves to board one by one. Inside the bus, seats and priority seating pictograms for elderly, disabled, and pregnant passengers are clearly displayed. Finally, we find ourselves on the market scene presenting the inside of a small neighbourhood shop with baskets at the entrance, shelves, a checkout area, and two or three customers waiting in line at the till. On the floor there are lines showing where to wait in the queue and a simple sign in front of the till showing where to stand.

The virtual environment is designed as a sequence of familiar public settings that simulate everyday social situations in a clear and structured way. The visual design of all settings is simple, structured, and easy to interpret. The pavement, road, pedestrian crossing, stop, bus and market areas are clearly distinguished from each other with clear colours. Important social cues such as pedestrian crossings, queue lines, and priority seat symbols are highlighted with high contrast to enhance accessibility.

Interactive elements guide attention and support engagement: when the child looks at an object or area, it subtly glows; when approaching signs or symbols with the controller, the system provides audio and vibration feedback. At decision-making moments, clear and simple choice boxes appear at the bottom of the screen, helping the child actively practice appropriate behaviour in public contexts.

Accessibility is integrated throughout the scenario through clear visual structure, multimodal feedback, simplified design, and guided interaction, ensuring that learners with diverse needs can meaningfully engage with the environment.

6. Game flow

The scenario begins with a guide avatar appearing on the screen to introduce the task: the child will practice behaving appropriately in society while walking in the city, using the bus, and waiting in a market, with the goal of protecting their own rights while respecting others.

In the first step - *Following social rules while walking on the pavement* - the child starts to walk on the city street using the pavement. The guide avatar begins by saying “*The pavement is the safe area for pedestrians.*” When a crowd approaches and the pavement narrows and two options appear on the screen: (1) Continue walking spread out in the middle of the pavement, or (2) Walk on the right side and leave space for other people to pass. If the child chooses the second option, the character moves to the right side, the other avatars pass comfortably and the guide avatar says “*Great, you left space for others to pass.*” If the child chooses the first option, the crowd gets squeezed, one avatar says “*I cannot get through.*” The guide avatar asks “*Do you think others can walk comfortably here?*” After a

short thinking screen the child makes the choice again and this time is guided to walk on the right side.

Next, a piece of litter is seen on the ground and two options appear on the screen: (1) *Continue on your way without touching the litter*, or (2) *Throw it into the nearby rubbish bin*. The child also decides whether to pick up litter and throw it in a bin, reinforcing social responsibility, and learns to wait at a red traffic light before crossing at the pedestrian crossing. If the child throws the litter into the bin, the bin lights up and the message “Keeping the environment clean is important for society.” appears. At the end of the scene there is a pedestrian crossing and a red traffic light. The child is asked “*Do you think you should cross now?*” If they try to walk forward they are stopped by an invisible barrier and the guide avatar says “*We wait when the light is red.*” When the light turns green, the child crosses safely.

In the second step - *Appropriate behaviour at the bus stop and on the bus* - the child practices queuing by choosing whether to join the line at the back or move to the front. After crossing at the pedestrian crossing, the child comes to the bus stop. There are two or three more people waiting at the stop. On the ground, on the line showing the queue, there is a footprint mark. The guide avatar says “Now we will use rules of queuing and respect while waiting for and boarding the bus” and two options appear on the screen: (1) *Go in front of the queue and stand in the place closest to the door* or (2) *Go to the footprint at the back of the line and wait*. If the child chooses the second option, the footprint lights up and the text “*You joined the queue from the back.*” appears. When the bus arrives, the passengers board one by one. If the child chooses the first option, the avatars at the stop are disturbed and one says “*I was waiting before you.*” The guide avatar says “*In society we show respect for everyone’s rights, it is important to join the queue from the back.*” and directs the child back to the rear position.

When they board the bus, they see empty and occupied seats, and also seats at the front reserved for elderly and disabled people. Nearby, an elderly avatar with a walking stick is standing. While the child is sitting, two options appear at the bottom of the screen: (1) *Stay seated* or (2) *Stand up and offer your seat to the elderly person*. If the child chooses to give up their seat, the character says “*If you like, you can sit here.*” The elderly avatar thanks them, the priority seat symbol at the front lights up and the guide avatar says “*Offering a seat to someone in need is part of respect in society.*” If the child chooses to stay seated, the bus moves slightly, the elderly avatar seems to struggle. The guide avatar asks “*It looks like it is hard for them to stand. Do you think offering a seat might be a good idea?*” Then the child is given a second chance to choose.

In step three - *Appropriate behaviour and waiting in line in the market* - after the bus scene ends, the child enters the market. Inside there are shelves and two people waiting in the checkout line. As the child approaches the till, two options appear on the screen: (1) *Go in front of the people at the till* or (2) *Go to the back of the line and wait*. When the child goes to the back of the line, the waiting line on the floor lights up and the guide avatar says “While we wait in line, we do not get too close to the person in front of us, we leave a small space between us” and shows a distance marker.

A customer at the till has difficulty paying and takes a long time to count their money. To show the possibility of the child behaving impatiently, a small panel with two reactions appears at the bottom

of the screen: (1) *Grumble loudly and ask them to hurry up* or (2) *Stay calm and wait for the line to move.*

If the child chooses to stay calm, the character says the following sentence to themselves: *"Sometimes everyone's work can take a long time, I can wait for my turn."* The guide avatar gives feedback saying *"Being patient in society helps people feel safer."* If the child chooses the first option, the person in front appears uncomfortable. The guide avatar asks: *"If someone spoke to you like that, how would you feel?"* After a short thinking screen the same situation is tried a second time, this time encouraging the calm reaction.

When they reach the till, the cashier avatar says "Hello." Two answer options appear on the screen: (1) *Say nothing* or (2) *Say "Hello." and make eye contact.* When the child chooses the second option, the cashier smiles and says "Have a nice day." The guide avatar explains "Short and polite greetings in society build a positive bridge between us and other people."

Finally, in the fourth step - *Ending* - the child leaves the market and returns to the street scene. The guide avatar summarises what was done during the day.

- You left space for others and kept the environment clean while walking on the pavement.
- You followed the rules at the pedestrian crossing and lights.
- You joined the queue for the bus and thought about giving up your seat.
- You behaved patiently and politely while waiting for your turn in the market.

On the screen the Appropriate Behaviour in Society Hero Badge opens and the scenario ends.

7. Mechanics

The scenario integrates structured visual symbols to guide the child's behaviour throughout the experience. Key social areas, such as the pedestrian crossing, queue line, priority seating, and waiting lines, are highlighted with a brief glowing effect when the child approaches, drawing attention to important social cues.

In critical moments, small choice panels appear at the bottom of the screen offering two or three response options; the child selects one using the controller, and this selection determines the character's behaviour.

The learning process follows a clear "stop, think, choose" structure: if an inappropriate choice is made, the scene briefly slows down and a guide avatar prompts reflection with questions such as *"What happens when it is like this?"* before allowing the child to try again.

The scenario also follows a step-by-step progression, where the bus stop scene becomes available only after completing the pavement and pedestrian crossing scene, and the market scene is unlocked only after finishing the bus experience. Within each environment, the same structured sequence is repeated, observing the situation, identifying the available options, and choosing the most appropriate response, supporting consistent learning and reinforcement of appropriate public behaviour.

The reward mechanism in the scenario provides immediate and positive reinforcement when the correct choice is made. When the child makes a correct choice, the relevant area, such as a waiting line or priority seat symbol, briefly lights up and a short positive sound is played, providing clear and encouraging reinforcement. Appropriate behaviour also positively affects the social environment: avatars' facial expressions soften, and the surroundings appear brighter and calmer, visually reflecting the impact of respectful actions. If an inappropriate choice is made, a brief expression of tension appears in the environment, followed by an opportunity to correct the behaviour, supporting learning without punishment. Upon completing the scenario, the child earns the "Appropriate Behaviour in Society Hero" badge, offering a concrete symbol of success and reinforcing their ability to act respectfully and appropriately in public spaces.

8. Teacher's role and learning evaluation

The teacher's role throughout the VR learning process is monitoring by observing the student's VR experience in real time through screen mirroring on a projector or large display. This allows the teacher to carefully note how the student positions themselves in a crowd, whether they join a queue appropriately, and what choices they make in situations such as offering a seat on the bus. The teacher also observes the student's reactions in moments that require patience, such as waiting at the till, identifying preferred responses and potential difficulties.

After completing the scenario, structured discussion within the class provides additional support, with reflective questions like *"How did it feel to give a seat on the bus?"* or *"Why might it be difficult to wait patiently at the till?"* helping the student process the experience. To reinforce learning and make social rules more concrete, the teacher connects the VR experience to simple classroom role-play activities.

Transfer and generalisation are further encouraged in real-life contexts, such as using public transport, going on school trips, or queuing at the canteen, by explicitly referring back to the VR scenario (*"Do you remember how we waited in line in the game? Let's do the same here."*). Families are also informed about the child's progress, with recommendations to apply consistent social rules in everyday public settings like shops, parks, and public transport. It is emphasised that the teacher must have access to screen mirroring; without it, they cannot see in real time which social options the student selects or where difficulties arise, limiting their ability to provide timely and targeted support.

9. Inclusion, transference and educative impact

Scenario 4.2 – Appropriate behaviour in society promotes inclusion, real-life transfer, and meaningful educational impact by focusing on essential social adaptation skills needed in everyday public environments. The scenario teaches functional behaviours such as walking safely on pavements, respecting pedestrian crossings and traffic lights, joining queues, waiting patiently, offering priority seats on public transport, and using polite greetings in shops. By practicing these actions in a structured and guided VR environment, learners can better understand social rules, develop self-regulation, and gain confidence to apply appropriate behaviour in real-life public settings.

It promotes inclusion by providing an accessible learning environment with clear and simple visual design and multisensory feedback to support different learning needs. This learning methodology allows for the adaptation to diverse learners and the support for social participation through guided learning and support to strengthen the confidence and sense of belonging of users.

Regarding real-life transference, VR allows for the application of what is learned about social norms in public spaces (walking safely on pavements, respecting pedestrians, or keeping the environment clean) and using the public transport (respecting queues, boarding or offering priority seats). It also pretends to repeat until improvement behaviour and the skills for social interaction in everyday situations such as showing respect and consideration, managing impatience and frustration and responding appropriately to common social situations. Finally, the game permits a generalisation across settings by applying learned behaviours during school trips and community interactions while reinforcing at the same time rules at home, with the final objective of building confidence for independent participation in society.

The educative impact is based on the development of social behaviour skills that allows applying these in public spaces while improving self-regulation and decision-making by managing impulses, practicing patience and assuming consequences of their actions. The result is the strengthening of functional life skills based on following common rules and developing polite communication and interaction skills, but in a way that promotes the student's autonomy because it encourages independent behaviour and increases their confidence in how to handle these types of situations.

In conclusion, this scenario 4.2 - Appropriate Behaviour in Society - demonstrates how immersive virtual environments can effectively support the development of social and functional life skills for children and adolescents with mild intellectual disabilities. By simulating familiar public situations such as walking in the street, using public transport, and interacting in a market, the scenario provides a safe and structured environment where learners can practice socially appropriate behaviours without the pressure of real-world consequences.

Through a clear step-by-step structure, guided decision-making, and immediate feedback, learners are encouraged to observe situations, reflect on possible actions, and choose respectful responses. This process strengthens their understanding of social norms, promotes empathy and self-regulation, and supports the gradual development of autonomy in public environments. The integration of accessible design, multisensory cues, and teacher monitoring further ensures that the learning experience remains inclusive and adaptable to diverse learning needs. Ultimately, the scenario contributes to meaningful educational impact by connecting virtual practice with real-life application. By reinforcing behaviours such as respecting queues, offering help to others, communicating politely, and demonstrating patience, the experience prepares learners to participate more confidently and responsibly in community life. In this way, the scenario not only strengthens social competence but also supports long-term independence, social inclusion, and improved quality of life.

Learning Scenario 4.3 – Sharing Hobbies and Interests

1. Introduction

Sharing Hobbies and Interests

Learning area 4 - Social Life

Level of Difficulty: Advanced

This learning scenario aims to support students in identifying their personal hobbies, expressing their interests appropriately, showing curiosity about others' interests, and engaging in shared activities respectfully. The scenario takes place in two virtual environments: a park and a hobby club room. Through guided interaction with avatars, students practise initiating conversations, asking questions about hobbies, accepting differences in preferences, and negotiating shared activities.

Hobbies and personal interests are an important starting point for building friendships and social interaction. For students with mild intellectual disabilities, expressing their own preferences and responding appropriately to the preferences of others can be challenging. This VR scenario provides a safe and structured environment where students can repeatedly practise these social behaviours and receive immediate feedback. The scenario also aligns with the objectives of the unBLOCKed curriculum, which aims to develop social participation, communication skills, and functional independence through immersive and experiential learning.

2. Participant profile

This scenario is directed at children and early adolescents aged 8 to 15 with Mild Intellectual Disabilities (MID). It is particularly suitable for learners who are developing foundational social communication skills, especially in situations involving sharing personal interests, interacting with peers, and building early social connections through common activities.

The level of autonomy required to carry out this scenario, also reinforced and progressively developed throughout the activity, corresponds to children with emerging autonomy in social and everyday situations. Learners should be able to understand and follow simple instructions, make basic choices, and participate in short, guided interactions. However, they may still require prompts to initiate conversations, respond appropriately, and engage in polite exchanges, always under the supervision and support of the teacher or responsible adult.

It is important to consider some of the difficulties children and adolescents with MID may face in this type of scenario, particularly in relation to expressing preferences and interacting with others. These may include difficulty identifying and expressing personal interests, limited conversational skills, and difficulty asking questions during interaction. In addition, learners may show a tendency to respond in dismissive or overly rigid ways, have limited flexibility when asked to try activities they did not choose, and experience challenges in maintaining cooperative and reciprocal interaction with peers.

To support accessibility within this scenario, several elements are incorporated. Language is kept simple and concise, hobbies are represented through clear visual icons, and choices are limited to two or three options at a time to reduce cognitive load. Avatars display clear emotional responses, helping learners interpret social cues, while the guide avatar provides structured support to facilitate understanding and decision-making during interactions.

This approach follows Universal Design for Learning (UDL) principles by offering multiple means of representation, engagement, and expression, ensuring that learners with different cognitive and communicative profiles can access and benefit from the activity.

3. Pedagogical & Methodological framework

This scenario is grounded in the main pedagogical principles of the unBLOCKed project and combines experiential, game-based, and inclusive learning approaches. Through direct interaction in a realistic virtual social environment, students learn by doing, observing consequences, and repeating key behaviours in a safe and structured way. The use of clear goals, guided choices, immediate feedback, and reward elements supports motivation and engagement, while also helping learners understand the social impact of their actions.

The scenario is designed according to inclusive education principles, particularly Universal Design for Learning, by presenting information through visual, auditory, and interactive supports. This makes the experience accessible to students with different cognitive, communicative, and social needs, and allows them to participate at their own pace with reduced social pressure. Social learning is also central to the scenario, as students observe avatars' reactions and gradually understand how respectful, curious, or dismissive responses affect interaction.

Virtual reality is particularly appropriate for this skill because it allows students to practise social situations that may be challenging in real life, such as expressing personal interests, responding to others' preferences, and joining shared activities. The familiar settings and step-by-step structure help make abstract social expectations more concrete and easier to understand. In this way, the scenario supports functional learning by developing communication and participation skills that are directly relevant to everyday life, peer relationships, leisure activities, and independent social functioning.

4. Learning objectives

General objective: This scenario aims to develop students' ability to engage in simple social interactions through hobbies and interests. It focuses on helping learners express their preferences, show interest in others, and participate respectfully in shared activities.

Specific objectives:

- Recognise and select a personal hobby using visual supports
- Practise expressing their preferences using simple sentence structures
- Practise asking questions about another person's hobby
- Explore the difference between respectful and inappropriate responses

- Experience situations where interests are shared or different
- Practise strategies for joining an activity (e.g., asking, observing, or showing curiosity)
- Experience turn-taking in a structured and supported context
- Engage in short, guided social exchanges

Expected learning outcomes: after completing the scenario, students will be able to:

- Express at least one personal hobby using a simple and appropriate sentence
- Ask a relevant question about another person's interest
- Respond to others' hobbies using respectful language
- Avoid or correct dismissive responses when prompted
- Show curiosity towards unfamiliar activities (e.g., by asking or observing)
- Join a shared activity using appropriate social language
- Participate in turn-taking during a joint activity

5. Environment description

The scenario takes place in two virtual environments: a park scene and a club scene.

In the park scene, the child is in a park that has a play area and seating areas. In one corner there is a child avatar drawing on the ground with chalk. In another corner there is a child bouncing a ball and trying football moves, and a little further on there is a child sitting on a bench looking at a magazine about animals. Nearby there is a small "Hobby Corner" board. On it there are simple icons representing hobbies such as drawing, music, sports, books and technology.

In the club scene, in the second scene the child is in a club room inside the school or a municipal building. In the room there is a "Hobby Board". On this board various hobby icons, such as a book, a paint palette, a musical note, a ball, a computer and a nature symbol, are put up as magnetic cards. Three child avatars sit at a table. Each of them is waiting for their turn to speak in order to talk about their own hobby. In one corner of the room there are small "Try Out Areas". For example a small rhythm instrument, a few sheets of drawing paper and pencils, and a simple puzzle game.

The visual design of both environments is warm, inviting, and easy to follow. Colours are bright but not overwhelming, and the hobby icons are high contrast and easy to distinguish. The facial expressions of the avatars are clearly visible and help communicate emotions such as excitement, curiosity, or hesitation. The environments are also designed to remain visually simple and accessible, with limited distractions and clear organisation of space.

Interaction is supported through clear and consistent cues. When the child approaches an avatar, a faint ring of light appears around the character, and the object they are holding, such as a book, ball, or pencil, briefly glows to attract attention. When the child points the controller towards hobby icons, short sound and vibration feedback are provided. At key moments, such as starting a conversation or responding to another character, option panels with two or three short sentences appear at the bottom of the screen, supporting accessible and guided participation.

6. Game flow

Start

The guide avatar appears on the screen and explains the task:

Today you will try to recognise your own hobbies, notice what other people enjoy, and find shared interests. Our aim is to learn both to say “What do I like?” and to ask “What do you like?”

Step one (park scene): “Noticing and expressing your own hobby”

1. While the child is walking around the park, they see a child avatar drawing on the ground with chalk. The guide avatar asks:

“What do you like doing? What do you enjoy doing in your free time?”

2. A simple hobby selection panel opens on the screen. Icons such as drawing, playing ball, reading books and playing games on the computer appear.
3. The child chooses the hobby that feels closest to them. The icon they choose briefly glows and becomes a “Your hobby” marker. The guide avatar says:

“Great, now you know which hobby you have chosen. Now let us try telling this to someone else.”

4. The child approaches the avatar who is drawing. Depending on the hobby the child selected, two or three sentence options appear on the screen. The aim is to help the child express their own interest politely, even if it is different from the other child’s interest. Example of options:

- (1) *“I like drawing. What are you drawing?”*
- (2) *“I like reading, but I want to know what you are drawing.”*
- (3) *“I do not like drawing at all.”*

5. If the child chooses the respectful options (first or second sentence), the other avatar smiles and says:

- (1) *“I like drawing too. I am drawing a tree right now.”*
- (2) *“That is nice. I like drawing, and you like reading.”*

The guide avatar reinforces this behaviour by saying:

“You told your own hobby, and you also asked a question.”

6. If the child chooses the dismissive option (3), the avatar’s face falls slightly. The guide avatar slows the scene and asks:

“Sometimes we may not like something. But belittling something our friend likes can upset them. How else could you show your own hobby in a polite way?”

The same situation is then replayed, and the child tries again with a more respectful expression.

Step two (park scene): “Finding a shared interest and keeping the conversation going”.

1. On the other side of the park there are two child avatars playing with a ball. The guide avatar asks the child the following question:

“Do you like ball games, or do you have other hobbies”

2. Three options appear on the screen:

- (1) *“I like doing sports too.”*
- (2) *“I do not like sports, I only do my own hobby.”*
- (3) *“I do not know anything about sports.”*

3. If the child selects the first option (*“I like doing sports too.”*) the character approaches the children who are playing with the ball. The following sentences appear on the screen:

- (1) *“I like playing ball too. Can I play together with you?”*
- (2) *“Give me the ball, I want to play.”*

3.1 When the child chooses the first sentence “I like playing ball too” (1), the avatars who are playing with the ball say:

“Sure, we can play together.”

A short passing game begins.

The guide avatar then gives feedback:

“You took a nice step for friendship by using your shared interest.”

3.2. When the child chooses the second sentence “Give me the ball” (2), the guide avatar pauses the scene and says:

“When we want to join a game, it is better to ask politely. A demanding sentence may make other children feel uncomfortable.”

The child is then given another chance and the more appropriate option appears again:

“I like playing ball too. Can I play together with you?”

If the child chooses the polite option, the avatars respond positively and the short passing game begins.

4. If the child selects the second option (“I do not know anything about sports, I only do my own hobby.”) the guide avatar pauses the scene and says:

“You may like different things, and that is okay. But saying it this way may stop the conversation. How else could you show respect, even if sports is not your favourite hobby?”

Then new repair options then appear:

- (1) *“Sports is not my favourite, but what are you playing?”*
- (2) *“I like other hobbies, but I would like to watch.”*

If the child chooses one of these respectful alternatives, the avatars respond positively and the conversation continues.

5. If the child selects the third option (“I do not know anything about sports”), the guide avatar encourages them to ask a curious question. New sentence options appear:

- (1) *“What are you playing, can you tell me?”*
- (2) *“I am not playing, I am just watching.”*

- 5.1 If the child chooses the sentence “What are you playing, can you tell me” (1), the avatars explain the game in simple words. For example:

“When we make three passes, we take a shot.”

The child is given a small role. In this way the behaviour of approaching a hobby they do not know with curiosity is reinforced.

- 5.2 If the child chooses the sentence “I am not playing, I am just watching.” the avatars continue the game, but the interaction remains limited. The guide avatar gives gentle feedback:

“Watching is okay, especially when something is new. But asking a question can help you learn more and join the interaction.”

Step three (club scene) “Accepting different hobbies and talking without comparing”

The scene moves to the club room. There are three child avatars and the guide avatar in front of the Hobby Board. Each child is about to put their hobby card on the board.

1. The guide avatar says:

“Now everyone will put a hobby on the board and describe it in a short sentence. Our task is to be respectful while listening and speaking without making comparisons.”

2. The first avatar, for example, puts the book card on the board and says:

“I like reading books.”

Two options appear on the screen for the child’s reactions:

(1) *“Reading books is boring, playing games is better.”*

(2) *“What kind of books do you like?”*

3. If the child chooses the first option (“Reading books is boring, playing games is better.”), the guide avatar stops the scene and asks:

“Do you think this sentence would please your friend? Could it make their hobby seem small?”

The same moment is then tried again with the more respectful sentence option.

4. If the child chooses the second option (“What kind of books do you like?”), the avatar describes the type of books they like. The guide avatar explains:

“You managed to ask a question without belittling your friend’s hobby.”

5. Then it is the child’s turn. A small panel opens on the screen with the hobbies the child has previously chosen. The child selects a hobby card and puts it on the Hobby Board.

6. The guide avatar asks the child to choose a short sentence.

“I like doing ..., because ...”

The child chooses a sentence such as:

“I like drawing, because it makes me feel good.”

or

“I like reading because I enjoy stories.”

In this way they practise expressing both their hobby and their reason.

Step four (club scene): “Choosing a shared activity and taking turns to try it”.

1. The “Try Out Areas” scene in the club room opens. There is a small rhythm instrument corner, a drawing corner and a puzzle corner. At most two people can do an activity at the same time in each corner.

2. The guide avatar explains the task:

“Now we will try different hobbies in turn. Our task is both to do what we like and to be open to trying what our friend likes.”

3. Three preference sentences appear on the screen.

(1) *“I only want to go to the corner I like.”*

- (2) "Let us first go to the corner I like, then to the one you like."
 (3) "I do not want to try any of them."
4. If the child chooses that they only want to go to the corner they want (1), the other avatar's face shows disappointment. The guide avatar asks:

"In this situation do you think only you would be happy, how would your friend feel?"

Then the child is given the chance to make a new choice.

5. If the child selects (2) "Let us first go to the corner I like, then to the one you like." the guide avatar reinforces this sentence as an example of "trying in turn". Together with the avatar next to them they first go to the corner the child chose, then to the corner the friend chose.

In the rhythm corner they try a simple rhythm for a short time. On the screen a small-time bar showing the length of the activity flows. When the time is over the guide avatar reminds the turn by saying:

"Now let us try the corner your friend chose."

6. If the child chooses (3) "I do not want to try any of them", the guide avatar responds supportively:
"Sometimes trying something new can feel difficult. Would you like to start with the activity you know best, and then watch your friend's activity before trying it?"

New support options appear:

- (1) *"Let us start with mine, then I can watch yours."*
 (2) *"Can I watch first and then try?"*

If the child chooses one of these, the scenario continues in a supported and gradual way. This reinforces flexibility without forcing immediate participation.

7. At the end of the shared activity, the guide avatar says:
"You tried something you liked, and you also made space for your friend's choice. That is an important friendship skill."

Step five (park scene): "Ending"

1. When all activities are completed, the child returns to the park scene. A small version of the Hobby Board appears in the park.
2. The guide avatar summarises the skills gained throughout the scenario:

"You noticed the hobbies that are close to you and expressed them verbally. You showed interest in other people's hobbies by asking questions. Instead of belittling a hobby you do not like or do

not know, you tried to approach it with curiosity. You chose to try both the activity you like and the one your friend likes in turn.”

3. On the screen the “Hobby and Interest Sharing Hero Badge” opens and the scenario ends.

7. Mechanics

The scenario is based on simple and accessible interactions that allow the child to actively engage with the environment and the social situations presented. Hobbies are introduced through a small interactive panel with clear visual icons. When the child moves the controller over an icon, it highlights, and by pressing the trigger, the selected hobby is placed in the child’s “My Hobby” area, making their choice visible throughout the experience.

Interaction is mainly driven through guided dialogue choices. At key moments, such as introducing a hobby, asking a question, or responding to others, two or three short sentence options appear on the screen. Once selected, the sentence is voiced by the child’s avatar, allowing them to experience the social effect of their response.

The scenario provides immediate emotional and social feedback. Inappropriate or dismissive responses lead to visible signs of discomfort in the avatars, while respectful and curious responses are reinforced through positive reactions, such as smiling avatars, slight changes in the environment, and short encouraging sounds.

During the shared activity phase, a simple time bar supports understanding of duration and turn-taking. When the time is over, the system reminds the child that it is now the other person’s turn, reinforcing cooperative behaviour.

The experience follows a structured progression: first in the park, where the child identifies and expresses their own hobby and explores shared interests; then in the club room, where they practise respectful communication using the Hobby Board and finally in the Try-Out Areas, where they engage in shared activities and take turns.

A reward system reinforces motivation and learning throughout the scenario. Each successful social step is marked with a star on the Hobby Board, providing visible progress. At the end, the child receives the “Hobby and Interest Sharing Hero Badge,” reinforcing the importance of sharing interests and interacting respectfully with others.

8. Teacher’s role and learning evaluation

The teacher’s role throughout the VR learning process is to monitor, observe, support, and facilitate the transfer of skills to real life. During the activity, the teacher follows the student’s interaction in real time through screen mirroring on a projector or large display. This allows them to track which hobbies the student selects, how they express their preferences, and how they respond to others’ interests.

Particular attention is given to whether the student reacts with curiosity or uses dismissive language, as well as how they behave during shared activities, especially whether they prioritise only their own choices or are able to engage in turn-taking.

After this scenario, the teacher can reinforce learning through a short classroom activity, such as a “Hobby Circle,” where students briefly share one hobby and explain why they enjoy it. For students who are more socially withdrawn, the teacher can provide additional support through guided questions, for example: “What do you like doing at home when time passes quickly?”

To support transfer and generalisation, the teacher can refer back to the expressions and interaction patterns practised in the VR scenario during real-life situations, such as group work, club activities, or free time. In collaboration with families, they can also encourage simple routines at home, such as talking about hobbies, identifying shared interests, and planning activities together.

From a technical perspective, it is essential that the teacher has access to screen mirroring. Without it, they cannot observe the student’s choices, language use, or reactions in real time, which limits their ability to provide appropriate support and follow-up.

9. Inclusion, transference and educative impact

Scenario 4.3 – *Sharing Hobbies and Interests* promotes inclusion by providing a safe, structured, and accessible environment where students with diverse cognitive and communication needs can practise social interaction at their own pace. The use of guided choices, visual support, and immediate feedback reduces social pressure and allows learners to engage without fear of negative judgement, supporting confidence and participation.

The scenario is designed to facilitate transfer to real-life situations. By using familiar contexts such as parks and club settings, students can more easily recognise similar social situations in their daily lives and apply the same simple expressions and interaction strategies practised in VR. Teachers and families can reinforce this transfer by encouraging the use of these phrases and behaviours during classroom activities, group work, and everyday social interactions.

In terms of educational impact, the scenario supports the development of essential social communication skills, including expressing personal preferences, asking about others’ interests, responding respectfully, and engaging in shared activities. The structured and repeatable nature of the experience helps consolidate these skills over time, contributing to greater independence, improved social participation, and stronger peer relationships.

Learning Scenario 4.4 - Participation in public events

1. Introduction

Participation in public events

Learning area 4 - Social Life

Level of Difficulty: Advanced

This learning scenario aims to support students in understanding how to behave appropriately in public and group settings, such as festivals, school events, or community activities. Through guided interaction in a virtual park and event hall, students practise recognising an event, seeking information, following entry procedures, listening and asking questions appropriately, waiting in queues, following instructions, and closing interactions politely.

Participation in public events is an important aspect of social inclusion and community engagement. However, for students with mild intellectual disabilities, situations involving crowds, noise, waiting, and implicit social rules can be challenging. This scenario provides a safe, structured, and repeatable VR environment where these situations are broken down into clear and manageable steps. By practising these behaviours with immediate feedback, students can build confidence, improve self-regulation, and develop skills that are directly transferable to real-life contexts. The scenario aligns with the objectives of the unBLOCKed curriculum by supporting social participation, communication, and functional independence through immersive learning.

2. Participant profile

This scenario is directed at children and early adolescents aged 8 to 15 with Mild Intellectual Disabilities (MID). It is particularly suitable for learners who are developing foundational social communication and participation skills, especially in situations involving public events, group settings, and shared activities.

The level of autonomy required to carry out this scenario, also reinforced and progressively developed throughout the activity, corresponds to children with emerging autonomy in social and everyday environments. Learners should be able to understand and follow simple instructions, make basic choices, and participate in guided interactions. However, they may still require prompts and support to initiate appropriate behaviour, regulate their actions in group settings, and respond politely to others, under the supervision of a teacher or responsible adult.

It is important to consider some of the common challenges that children and adolescents with MID may face in this type of situation. These may include difficulty understanding implicit social rules, managing behaviour in crowded or noisy environments, waiting for their turn, and maintaining attention during group activities. Learners may also experience challenges in asking questions appropriately, following instructions, and adjusting their behaviour based on the reactions of others.

To address these needs, the scenario incorporates accessible design features such as simple and clear language, visual supports and symbols, limited response options, and structured guidance through the guide avatar. These elements help reduce cognitive load, support understanding of social expectations, and facilitate active participation. The design follows Universal Design for Learning (UDL) principles, ensuring that learners with different cognitive and communication profiles can engage with the activity effectively

3. Pedagogical & Methodological framework

This scenario is grounded in the pedagogical principles of the unBLOCKed project, combining experiential, game-based, and inclusive learning approaches. Through interaction in a realistic virtual environment, students learn by doing, observing consequences, and repeating key behaviours in a structured and guided way. Clear tasks, limited choices, and immediate feedback support both understanding and engagement.

The design follows inclusive education principles, particularly Universal Design for Learning (UDL), by providing visual cues, simple language, and interactive supports. This ensures accessibility for learners with different cognitive and communication needs and allows participation at an individual pace. Elements such as clear symbols, structured steps, and the option of a “quiet corner” support comprehension and self-regulation.

Virtual reality is especially appropriate for this scenario, as participation in public events can be complex and overwhelming. Situations involving crowds, noise, waiting, and implicit social rules are made more manageable through a safe, controlled, and step-by-step environment where students can practise behaviours without real-world pressure.

The scenario also supports social learning, as students observe avatar reactions and understand the impact of their behaviour. In terms of functional learning and independent living, it focuses on skills directly transferable to everyday contexts, such as school events or community activities, helping students build confidence, improve self-regulation, and participate more independently.

4. Learning objectives

General objective: This scenario aims to develop students’ ability to participate appropriately and safely in public events by understanding social rules, regulating their behaviour, and interacting with others in a respectful and structured way.

Specific objectives

- Recognise when a public event is taking place and show awareness of the situation
- Practise seeking information before joining an activity
- Understand and practise appropriate entry behaviours, such as registering or asking permission
- Practise appropriate behaviour during an event
- Explore how and when to ask questions using socially appropriate strategies
- Practise waiting in a queue and respecting turn-taking
- Follow simple instructions during a structured activity
- Explore strategies for self-regulation in stimulating environments
- Practise appropriate closure behaviours, such as saying thank you and goodbye

Expected learning outcomes

After completing the scenario, students will be able to:

- Identify a public event and seek relevant information before participating

- Approach entry points using appropriate language or behaviour
- Demonstrate appropriate behaviour during an event
- Ask a question in a socially appropriate way
- Wait their turn in a queue without interrupting others
- Follow simple instructions during a workshop or activity
- Show awareness of their behaviour in a shared environment
- Use appropriate social expressions to close an interaction

5. Environment description

The scenario takes place in two virtual environments: a park during an outdoor event and an indoor event hall. In the park scene, the child is in a park where an outdoor event is taking place. In one part of the park there is a small stage and rows of benches in front of it. Next to the stage there is a simple poster that says, “Children’s Festival” and on the ground there are lines showing the audience area. In one corner there is a face painting stand, in another a drawing workshop, and in another a small music try out area. There are several children and adult avatars walking around the area.

In the indoor club / event hall scene, the child is in a small event hall inside the school or a municipal building. At the front there is a presentation area, at the back there are rows of chairs and at the entrance there is a small table marked “Registration Desk”. On the walls there are short messages, for example “We listen during the event”, “We raise our hand for questions”, “We say thank you and say goodbye at the end”.

The visual design of both environments balances realism with clarity. Although the spaces are populated and active, they are organised in a way that remains easy to understand. Key areas such as the stage, audience space, workshop stands, and registration desk are differentiated using colour cues. Important social signals, including hand-raising symbols, quiet signs, queue lines, and directional arrows, are presented in high contrast to ensure they are easily recognisable. The overall layout avoids unnecessary visual overload while maintaining a realistic atmosphere.

Interaction is supported through clear visual and sensory cues. When the child focuses on a sign or symbol, it subtly glows to draw attention. Approaching key interaction points, such as the registration desk, stage, or workshop areas, triggers light sound and vibration feedback through the controller. At decision-making moments, simple option panels with two or three short sentences appear at the bottom of the screen, guiding the child’s responses and supporting accessible participation.

6. Game flow

Start

The guide avatar appears on the screen and explains the task:

“Today you will practise how to behave at a park festival and at an event in a hall. Our aim is to feel safe in crowded places and to take part in the event respectfully”

Step one “Noticing the event in the park and getting information”.

1. While the child is walking around the park, they see a small crowd gathered in front of the stage. In front of the stage there is a sign that says: "A children's concert will start soon".
2. The guide avatar asks:

"There is an event in the park right now. What would you like to do"

3. Two options appear on the screen:

(A) Ignore it and walk in another direction.

(B) Go to the information board or staff avatar to get information.

4. If the child chooses the second option (B), they approach the information board or staff member. The staff avatar gives a brief explanation:

"There will be a short concert here soon. If you like, you can watch or you can also join the workshop tables."

The guide avatar reinforces this step by saying:

"At public events it is important to get information first to understand what is happening."

5. If the child chooses the first option (A), the stage is briefly dimmed and the guide avatar says:

"When you are curious or have doubts, getting information can help you"

Then the same situation is presented again, and the child is guided to get information.

Step two(transition to the club scene): "Registration and entry behaviour for the event"

1. The scene moves to the club / event hall. At the door there is a small "Registration Desk", with a simple list for writing names and small badges on the table.
2. The guide avatar explains the task:

"At some events we register before entering. This is to know who is attending and to stay safe."

3. The child approaches the registration desk. Two options appear on the screen:

(A) Ignore the desk and go straight inside.

(B) Go to the registration desk and politely get information

4. If the child chooses the first option (A), an invisible barrier appears at the entrance of the scene. The guide avatar says:

*"We need to stop by the registration desk first, this is important both for safety and for order."
and directs the child to the registration desk.*

5. If the child chooses the second option (B), the character chooses one of these sentences:

- (1) *"Hello, I would like to join the event."*
(2) *"Hello, may I come in."*

Then, the staff avatar makes a simple animation indicating that they are asking for the child's name on the list and gives the child a small participation badge. They say:

"Welcome, the event will start soon. If you like, you can find a place in the front rows."

Step three "Appropriate behaviour while watching the event".

1. The child sits on a chair in the hall. At the front there is a small stage and on the stage a presenter avatar is getting ready to speak.
2. The guide avatar briefly shows three basic rules to follow during the event. Symbols appear on the screen:
 - *Listen quietly.*
 - *Raise your hand for questions.*
 - *Do not make loud noises with your phone or toys.*
3. The presenter starts speaking. During this time, two reaction options appear at the bottom of the screen:
 - (3) Talk continuously with the avatar next to you and move all the time
 - (4) Lower your voice and listen, raise your hand if you have a question.
4. If the child chooses to talk or move constantly during the event (option A), the surrounding avatars look uncomfortable. The guide avatar slows the scene and asks:

"Do you think the person on stage feels comfortable right now, people who want to listen may find it difficult when they hear you"

Then the child tries the same scene once more by following the rules.

5. If the child chooses the second option (B), the character adjusts their sitting posture. When the presenter says, "Does anyone have a question", two options again appear on the screen:
 - (1) *"Raise your hand."*
 - (2) *"Cut in and speak loudly."*

6. If the child chooses the hand raising option (1), the presenter points to them and when it is their turn to speak, they choose a simple sentence:

1. *"How long will the event last"*
2. *"Will there be a workshop afterwards?"*

The presenter briefly answers the question and says: *"Thank you for your question."* Depending on the answer, the presenter will say:

3. *"The event will last 1 hour"*
4. *"Yes, there will be one workshop right afterwards"*

7. If the child chooses the Cut in and speak loudly (2) the presenter pauses and looks slightly uncomfortable. Other avatars turn their heads. The guide avatar intervenes:

"When we speak without waiting, it may interrupt others. What could you do instead?"

Then retry with: *"Raise your hand"*

8. In the hall there is a small "Quiet Corner" for children who are sensitive to noise. The guide avatar gives a short explanation:

"If the sounds make you very tired, you can ask your teacher for permission and take a short break in the quiet corner."

In this way, a balance between participation and respect for sensory needs is created.

Step 4(return to the park scene) "Joining a workshop stand, queuing and listening to instructions"

The scene returns to the park event area. The child chooses one of the small stands such as face painting or drawing workshop. In front of the stand there are queue lines and two child avatars waiting.

1. The guide avatar explains the task:

"Now we will join a small workshop. Our task is to queue, listen to instructions and learn to share the short time."

2. When the child approaches the stand, two options appear:

- (A) *Go in front of the people in the queue.*
- (B) *Go to the back of the queue and wait.*

3. If the child chooses to cut in front of the queue or not to listen to the instructions (option A), the avatars around them look surprised and confused. The guide avatar says:

“At activities like this, we wait for our turn. How could you join the queue correctly?”

The child is then guided to choose again and move to the back of the queue.

4. If the child chooses to go to the back of the queue (option B), the line on the floor lights up. The workshop leader avatar says:

“Each person will do the activity for five minutes in turn.”

A simple time bar appears, showing the waiting time.

5. When it is the child’s turn, the leader gives brief instructions. For example, at the drawing stand they might say:

“Now you can draw your favourite thing in the park.” Two reaction options appear on the screen:

- (1) *“Listen and ask if you have a question.”*
- (2) *“Do it randomly without hearing the instructions.”*

If the child chooses to listen (1), they do a short activity according to the instructions. When the time is up, the leader avatar says:

“Thank you for giving your place to the next friend.”

If the child chooses to do it randomly without hearing the instructions (2), the result is unclear or incorrect. The workshop leader gently says:

“Let me explain again so you can try.”

Guide avatar:

“Listening to instructions helps you understand what to do.”

Then retry.

Step 5 “Saying goodbye and giving feedback after the event”

1. At the end of the scenario, the child watched the stage event in the park and tried at least one workshop stand.
2. The guide avatar takes the child to the information board or staff avatar. Two sentence options appear on the screen:
 - (A) *“Thank you for the event, I had a lot of fun.”*
 - (B) *“Walk away without saying anything.”*

3. If the child chooses the thank you sentence (A), the staff avatar smiles and says:

“Thank you for coming, we hope to see you at other events too.”

4. Then the guide avatar summarises the day:

“You understood the event by getting information. You went to the registration desk, waited your turn and introduced yourself. During the event you listened and raised your hand to ask questions when needed. At the workshop you joined the queue and shared the short time of the activity. At the end of the event you chose to say thank you and say goodbye.”

5. On the screen the “Public Event Participation Hero Badge” opens and the scenario ends

7. Mechanics

The scenario is based on simple and accessible VR interactions that guide the child through different stages of participation in a public event. Interaction is primarily driven through exploration and guided choices within the environment. When the child approaches key elements such as information boards or the registration desk, short and clear messages appear, and simple animations—such as receiving a participation badge—help reinforce understanding of the situation.

Communication is supported through choice-based dialogues. At key moments, including greeting, asking questions, joining activities, or saying goodbye, two or three short sentence options appear on the screen. Once selected, the sentence is voiced by the child’s avatar, allowing the learner to experience how their choice translates into social behaviour.

The scenario provides continuous visual and sensory support through clear cues. Symbols such as “be quiet,” hand-raising icons, queue lines, and directional signs are presented in a highly visible way. When needed, the guide avatar directs attention to these elements and provides prompts to support understanding. Interaction is further supported through light sound and vibration feedback when approaching key areas.

Time management and turn-taking are reinforced through the use of simple time bars, which indicate waiting time in queues and the duration of activities. This helps the child understand that time is limited and shared with others.

The experience follows a structured, step-by-step progression. It begins in the park, where the child notices the event and learns to seek information. It then moves to the event hall, where registration and appropriate behaviour during the event are practised. Afterwards, the child returns to the park to join a workshop and practise queuing and following instructions. Finally, the scenario concludes with appropriate closure behaviours, such as saying thank you and goodbye.

Throughout the scenario, a reward system reinforces positive behaviour and engagement. Appropriate social choices are immediately acknowledged through visual and auditory feedback, such as lighting effects in key areas and short positive sounds. The environment also reflects the child’s behaviour: respectful participation leads to relaxed and positive reactions from other avatars, while

inappropriate behaviour results in brief tension followed by guided correction. At the end of the scenario, the child receives the “Public Event Participation Hero Badge,” providing a clear and motivating representation of their achievement.

8. Teacher’s role and learning evaluation

The teacher plays a key role in monitoring, observing, and supporting the student throughout the VR experience, as well as facilitating the transfer of learning to real-life situations. During the activity, the teacher follows the student’s actions in real time through screen mirroring on a projector or large display. This allows them to observe how the student navigates a crowded environment, whether they seek information appropriately, and how they approach key interaction points such as the registration desk.

Particular attention is given to the student’s behaviour during the event, including their ability to maintain attention, follow rules, and regulate their behaviour when they feel bored or overwhelmed. The teacher also observes the choices the student makes at key moments, such as queuing, listening to instructions, asking questions, and saying thank you at the end of the activity.

After the scenario, the teacher can reinforce learning through guided classroom discussion, for example by introducing a short activity such as “How do we behave at events.” This can include reflective questions that promote empathy and understanding, such as “How would you feel if someone spoke during the concert?” For students who find public environments more challenging, the teacher may provide additional support by reviewing the steps of the scenario before real-life events or school activities.

To support transfer and generalisation, the teacher can explicitly connect the VR experience with real contexts. Before attending events such as school trips, theatre visits, or community activities, the teacher can refer back to the scenario and encourage students to apply the same behaviours (e.g., asking questions politely or waiting their turn). In collaboration with families, simple strategies can also be suggested for use at home, such as reviewing basic rules before attending public events or practising appropriate social responses.

From an evaluation perspective, learning is assessed through observation of the student’s behaviour and choices during the scenario. Indicators include the ability to seek information, follow entry procedures, maintain appropriate behaviour during the event, respect turn-taking in shared activities, and use polite language when interacting with others. These observations can be supported through simple tools such as checklists, teacher notes, or short follow-up discussions.

From a technical perspective, access to screen mirroring is essential. Without it, the teacher cannot observe the student’s behaviour, language use, or decision-making in real time, which limits their ability to provide immediate support and effective follow-up.

9. Inclusion, transference and educative impact

Participation in public events is an important way for students to connect with others, access community experiences, and develop a sense of belonging. For learners in the target group, situations

involving crowds, noise, waiting, and social rules can be challenging. This scenario supports inclusion by providing a safe, structured, and accessible environment in which these situations can be experienced step by step, with clear guidance and opportunities to try again.

The scenario also promotes transfer to real-life contexts by breaking down public event participation into concrete and manageable stages, such as noticing an event, getting information, registering, listening, asking questions appropriately, waiting in a queue, following instructions, and saying thank you and goodbye. Practising these steps in a familiar and guided VR setting helps students recognise and apply the same behaviours in school events, community activities, and other public situations.

In educational terms, the scenario supports the development of functional social behaviour, self-regulation, and participation skills that are directly relevant to everyday life. It also provides valuable opportunities for observation, allowing teachers to identify at which stage the student needs support and to better prepare them for real-life events and group activities.