oMERO Project

a curriculuM eu for the visually impaired Rehabilitation

Lesson Plan
"*Development of compensatory senses*"

This document is part of oMERO Project's Intellectual Output 4

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<table>
<tr><th colspan="2">GENERAL INFORMATION - INTRODUCTION</th></tr>
<tr><td>TITLE</td><td>Development of compensatory senses</td></tr>
<tr><td>LO ADDRESSED</td><td>LO4-E-2
Stimulate VIPs through sensory exercises in terms of kinaesthetic, proprioceptive, mass (auditory and thermal), auditory, and tactile information</td></tr>
<tr><td>IMPLEMENTED INNOVATIVE STRATEGY</td><td>Simulation focusing on prerequisites of mobility with a theoretical-practical approach

In the absence of vision or with limited vision, the process of movement is based on the collection and interpretation of all available and appropriate information by means of the other so-called compensatory senses (auditory, tactile, kinesthetic, olfactory, thermal, proprioceptive...) in order to constitute the landmarks necessary for mobility.

Thus, the teacher establishes a training program that instructs the VDR in both a theoretical and practical way. The objective of the training is to provide information on sensory compensation and the functioning of a disabled person (knowledge, strategies) in order to set up elements of good practice: feelings, know-how and interpersonal skills.

For this purpose, the VDRs will be placed in a field situation (indoor or outdoor environment) to play simulations in which they will work in pairs for most of the exercises. One will play the role of the visually impaired person (VIP) using a blindfold, and the other that of his/her partner responsible for guiding him/her to move around safely. Wearing a VIP blindfold is a discovery exercise, a necessary experience to better understand the clues and the landmarks that blind people need to move independently.

The teacher is aware of and responsible for the safety of the students and must listen to the reactions of the simulating VIP during the exercises. The blindfold experience should not be forced, but should allow the students to follow and observe the exercise. It will be necessary to offer them some time to express their feelings at the end of the exercises.

The teacher will not be able to make the students aware of all the sensory information (too vast), so he/she will give priority to treating the two senses most used by visually impaired people, namely hearing and touch.</td></tr>
<tr><td>LESSON STRUCTURE</td><td><table>
<tr><td>Activity 1</td><td>Theoretical knowledge:
Concepts concerning sensation and perception</td></tr>
<tr><td>Activity 2</td><td>Sensory modalities</td></tr>
<tr><td>Activity 3</td><td>The perception and processing of information in movement</td></tr>
<tr><td>Activity 4</td><td>Practice:
Practical indoor and outdoor (blindfolded) experiences</td></tr>
<tr><td>Activity 5</td><td>Wrap-up discussion</td></tr>
</table></td></tr>
<tr><td>DURATION</td><td>Total duration: 4 hours.

- Activity 1: 120 minutes (2 hours)
- Activity 2: 120 minutes (2 hours)
- Activity 3: 120 minutes (2 hours)
- Activity 4: 240 minutes (4 hours)
- Activity 5: 60 minutes (1 hour)</td></tr>
<tr><td>OTHER LO THAT CAN BE TARGETED BY ADAPTING THIS LESSON PLAN</td><td>LO4-B-2
Teach traffic laws and urban mobility principles as well as route planning in settings of different complexity (known, unknown, travelling), considering seasonal variation (i.e. weather conditions).

LO6-C-D-E-1</td></tr>
</table>

	Assist teachers in the learning process, support the management of tools, activities and environment and implement specialized learning activities and educational materials for VIC, collaborating with teachers.

Activity 1 - Theoretical knowledge: sensation and perception	
DETAILED DESCRIPTION OF THE ACTIVITY	Activity 1 is a lecture that introduces the concepts of "sensation and perception". In particular, it targets the following contents: - Definitions: distinction between sensation and perception - Scientific approach: the mechanisms of sensation and perception - The different senses and functions: vision, hearing, touch, kinesthetic (haptic) sense, proprioceptive sense, vestibular sense, sense of the masses - Psychological approach - development of concepts: abstraction, mental image, spatial representation (theory of difference). All cognitive processes for processing information must be addressed: representation, imagination, memorization. The lecture can be delivered in person or, alternatively, it can be presented in an online web-conference.
ROLE OF THE TEACHER	The teacher presents and delivers a traditional lesson.
STUDENT PARTICIPATION AND POSSIBLE GROUPS	The whole class is involved.
DURATION	120 minutes (2 hours)
NEEDED ICTs and/or DEVICES	If the lecture is delivered in person: computer, video projector and audio speakers. If the lecture is delivered online: computer + videoconferencing system
EVALUATION OF THE ACTIVITY	Not evaluated.

Activity 2 - Theoretical knowledge: different sensory modalities	
DETAILED DESCRIPTION OF THE ACTIVITY	This Activity is articulated into different steps. STEP 1- The teacher delivers a lecture which introduces students to sensory modalities. It focuses on: - Prevalence of vicarious senses in visually impaired people: residual vision, hearing, touch, kinesthetic (haptic), proprioceptive, vestibular, sense of the masses - Multimodal interaction: difficulty in the person with congenital blindness to give preponderance to other senses. The concept of displacement in congenital and acquired blindness and low vision: interaction of intermodal perceptions. STEP 2 - Problematizing and focusing on an exemplary scenario The teacher introduces an example of difficulties in congenital blindness, i.e. the situation in which a VIP has to prepare to cross a street (at the end of the sidewalk) and needs to find the correct body orientation (necessary to be parallel to the traffic) and follow the correct sensory information. For this, the VIP must refer to the traffic noise and not to the plantar sensation (podotactile). The congenitally blind person tends to stand on the curved shape of the pavement, perpendicular to the curb. The non-conscious sensation causes touch to take precedence over hearing. The class is invited to reflect on this exemplary scenario and is then introduced to the practice of straight walking in the exercises of STEP 3. STEP 3 - The teacher invites a couple of students to volunteer to do an exercise in which they will act as VDR or VIP wearing a blindfold. It is suggested to change couples for every

	exercise to experience different attitudes and communication skills. The teacher gives instructions and invites the whole class to observe the roles played, to ask questions and to make suggestions. The teacher watches over the couples and their cooperative work. Exercise 1) Proposing proprioception exercises aiming at becoming aware of the podotactile sense of the walk: - Students have to walk while being aware of the rolling of the foot, the swing of the arms and the body axis. - Then, they have to walk on mats of different heights, different textures (carpets, stone, tiles, grass), or on sensory plates, while being aware of the position of the foot in relation to the edge of a mat or tile. Exercise 2) Proposing an auditory exercise with the aim of maintaining a straight line. - Know how to locate a sound (notion of distance). For this exercise, maracas are needed. The person with the maracas places him/herself in the room, far from the blindfolded student, and moves the maracas. The role of the blindfolded student is to listen, extend the arm in the direction of the sound and, very precisely, orient the whole body in the direction of the source saying out loud the direction of the sound source. To better understand the notion of distance, the blindfolded student should provide an estimate of the distance, then verify it while moving. For the students' safety, teachers should make sure that there are no obstacles in the way. - Know how locate a sound The blindfolded student is fixed and the sound is mobile. The teacher suggests that the student divide the space referring to clock dials instead of those of the body (right, left, back, front, parallel, perpendicular) and then locate the sound inside these references. - Aligning and walking parallel to a sound source The student playing the VDR moves while emitting a sound. The blindfolded student moves parallel to him/her while keeping the same distance. The sound must be emitted during the whole movement. The blindfolded student must project a straight line, the head acting as a rudder, and thus walk parallel to the sound source. Exercise 3) Proposing an exercise with the aim of crossing the street This exercise involves multimodal interaction: both tactile and auditory. For this exercise, a carpet and a rope are needed. The rope will be used to simulate and make concrete the round shape of the sidewalk. - The blindfolded student has to position him/herself on the carpet while maintaining a line of direction by actively listening to the sound and not referring to the podotactile sensation. The lesson can be carried out in a spacious room, like a gym or a hall that allows walking space. It could be better if there is an outdoor open space like park or sidewalk with flowerbed or gravel.
ROLE OF THE TEACHER	The teacher gives a hands-on lesson. He/she is responsible for security and observing the students' work. Moreover, she/he must listen to the reactions of simulating VIPs during the exercises. The teacher must provide ccontinuous feedback and demonstrations, correct techniques, highlight positive elements and promote self-assessment while following the exercises. He/she must also observe and guide both the simulating VIP (blindfolded student) and the student who plays the VDR. The teacher must always take care of and remind to students the notions of security and safety.
STUDENT PARTICIPATION AND POSSIBLE GROUPS	The teacher invites a couple of students to volunteer to do an exercise in which they will act as VDR or VIP wearing a blindfold. It is suggested to change couples for every exercise to experience different attitudes and communication skills.
DURATION	120 minutes (2 hours)
NEEDED ICTs and/or DEVICES	Computer and video projector. In the classroom are needed carpets (straight and circular if possible) or thin matresses, tiles or sensory plates, ropes. Tools like musical maracas or plastic bottles within stones, blindfolds for each student. Eventually a nearby outdoor open space like park or sidewalk with flowerbed or gravel.

EVALUATION OF THE ACTIVITY	The teacher monitors the ability of the student (who plays VIP role) to perform the activity safely, and also the ability of the other student (who plays an assistant role) to give accurate and correct instructions and support to the simulated VIP will be assessed.

Activity 3 – Perception and processing of information in movement	
DETAILED DESCRIPTION OF THE ACTIVITY	This Activity is articulated into different steps. STEP 1: The teacher takes a lecture which is a theoretical introduction of Body and spatial (environmental) concepts. - Body concept: notion of laterality on oneself and on others (reversibility); knowledge of right, left, front, behind; alignment of the body: head, shoulder, foot. - Process of orienting and moving a person with blindness or low vision based on personal body references. - Spatial and environmental concepts that make it possible to represent one's environment and to build a precise mental map: design the shape, position, dimension and direction of objects (a block, interior spaces, etc.). - For this activity, the teacher will summarize in broad terms the cane techniques, protection techniques and guided walk techniques to perform the exercises. STEP 2: The teacher invites a couple of students to volunteer to do an exercise in which they will act as VDR or VIP wearing a blindfold. It is suggested to change couples for every exercise to experience different attitudes and communication skills. The teacher gives instructions and invites the whole class to observe the roles played, to ask questions and to make suggestions. The teacher watches over the couples and their cooperative work. <u>Exercise 1) Body awareness:</u> The student playing the VIP role wears a blindfold and the other student playing the accompanying person stands in front of him/her. The guiding person assumes a body position and the VIP uses his/her hands to 'study' the position of the partner and tries to reproduce the same position. <u>Exercise 2) Body awareness:</u> The student playing the VIP is still wearing the blindfold. Lying on the mat, he/she must move his/her own body until it is aligned and centered on the mat. The accompanying person must check the alignment and centering of the body. At the beginning, the VDR student can guide the VIP through oral instructions, and, after three attempts, he/she can help and guide the VIP also physically. This exercise can also be performed standing. <u>Exercise 3) Environmental representation</u> This exercise should be practiced in a hallway. Non-hazardous objects such as a chair, a table or sensory plates can be placed in the hallway and teachers can consider involving opening doors or windows as well. As for safety, teachers should check that there is nothing at shoulder or head height. This exercise should be carried out in pairs: one student should wear a blindfold and act as the VIP and the other should play the role of the accompanying person, i.e. the guide. All the students are invited to practice in pairs. The simulating VIP wears the blindfold and walks down the hallway along the walls. In this way, he/she can discover a number of things and try to identify them. The guide follows him/her without hindering him in his tactile discovery but ensuring his/her safety. When the VIP has walked the corridor and returned to the starting point, he/she has to repeat orally the sequence of what he/she has discovered down the hallway. He/she has to locate the different objects and refer to distances in relation to the hallway space. At the end, the blindfolded student has to build the spatial representation of the hallway with the different objects encountered, using a suitable tool such as magnets on a magnetic board plate.
ROLE OF THE TEACHER	The teacher gives a practical lesson. He/she must observe and guide both students and is responsible for security. Moreover, the teacher must listen to the reactions of simulating VIPs during the experience. The teacher's tasks include: following the exercise, continuous feedback, correction of techniques, demonstration, highlighting positive elements and promoting self-evaluation.

STUDENT PARTICIPATION AND POSSIBLE GROUPS	The teacher invites a couple of students to volunteer to do an exercise in which they will act as VDR or VIP wearing a blindfold. It is suggested to change couples for every exercise to experience different attitudes and communication skills. For exercise 3, all students are invited to practice in pairs.
DURATION	120 minutes (2 hours)
NEEDED ICTs and/or DEVICES	Computer and video projector. Blindfold for each student. A tactile surface for mapping the acquired spatial representation (in exercise 3), as magnets on a magnetic board plate.
EVALUATION OF THE ACTIVITY	The teacher monitors and assesses the ability of the student who plays the VIP role to perform the activity safely, and also the ability of the guiding student to give accurate and correct instructions and support.

ACTIVITY 4: Practical indoor and outdoor (blindfolded) experiences	
DETAILED DESCRIPTION OF THE ACTIVITY	In this activity, the teacher proposes that students experience sensitivity in a situation of blindness, essentially putting them under a blindfold to prioritize the practice of focusing on hearing and touch. To better follow the students' practice, the class can be split in groups of six people, which are further divided in three pairs. In every pair, one student is blindfolded and plays the role of VIP and the other plays an accompanying VDR, namely a professional who is a locomotion instructor. Activity 4 has to be performed when students have acquired protection techniques and guided walking in Orientation and Mobility (OM) and at least basics of long cane movements. Practical experiences can be organized both indoors (in the institution's premises) and outdoors (in the street or a park) as a sort of field work. Some sensory exercises in terms of auditory and tactile information can be proposed. Students work in pairs as follows: one is blindfolded and plays the VIP role and the other is a VDR. The student acting as VDR has to prepare the experience, organize the setting, give instructions to the classmate acting as a VIP, follow the activity and summarize his/her observations. **SIMULATION IN INDOOR ENVIRONMENT** **Step 1) Auditory information:** Students are supposed to move in a location that can either be a corridor, a hall or big room. The VIP student has to be attentive to his/her environment. He/she has to: - Determine the nature of a sound source from environmental sounds (voice, footsteps, telephone ringing, air conditioning, vacuum cleaner...); - Locate the direction from which the environmental sounds come by pointing to the sound source; - Evaluate the estimated distance of a sound source in meters and steps; - 'Navigate' the environment in interior protection technique or with a white cane (techniques introduced theoretically in UOL4) and then stop next to the sound source without bumping into it. **Step 2) Tactile information:** Location: room with objects and different textures on the floor. The blindfolded student, i.e. the simulating VIP, has to discriminate between feet, hands and cane: - Podotactile perception: exercises to recognize different textures: carpet, door bar, tiles, wood flooring… This exercise must be done in two stages: firstly, barefoot and secondly, with the shoes on in order to evaluate tactile discrimination. - Tactile perception at the hands level: active or haptic touch for active exploration of objects. The simulating VIP performs some exercises based on recognition, discrimination of shapes, sizes, textures, objects of everyday life or tactile cards (representation by embossing technique).

	- Use of the white cane: the simulating VIP is able to explore the objects on his/her trajectory, also in terms of height, width, material and orientation, and go around them. **OUTDOOR SIMULATION** **Step 3) Auditory information:** Students are supposed to move on a sidewalk in a quiet neighborhood and without too many fixed or mobile obstacles at the beginning. Displacement technique (techniques introduced at least theoretically in UOL4): - Exercises for listening, discrimination and orientation: - Recognizing, discriminating, locating environmental sounds; - Recognizing the direction of car traffic and the number of lanes; - Evaluating the distance of a car travelling parallel or perpendicular to the student's position. **Tactile information:** Location: a park. Moving in a park (techniques introduced at least theoretically in UOL4): - Detection of different soil textures (asphalt, grass, gravel, paving stone...) - Learning of cane techniques adapted to the textures of the ground (techniques introduced at least theoretically in UOL4)
ROLE OF THE TEACHER	The teacher gives a practical lesson. He/she must observe and guide both students (the simulating VIP and VDR) and is responsible for security. Moreover, the teacher must listen to the reactions of simulating VIPs during the experience. The teacher's tasks include: following the exercise, continuous feedback, correction of techniques, demonstration, highlighting positive elements and promoting self-evaluation.
STUDENT PARTICIPATION AND POSSIBLE GROUPS	In order to follow the students' practice, the class is divided into groups of six, namely three pairs. Students must always be in pairs and must alternate between the roles of VIP and locomotion instructor. They must have a maximum preparation time of 1 hour to identify the suitable location(s) for the exercise before each turn.
DURATION	120 minutes indoor (2 hours) + 120 minutes outdoor (2 hours) – the same day
NEEDED ICTs and/or DEVICES	No ICTs are needed. Blindfolds, white long canes (sized for the students heights)
EVALUATION OF THE ACTIVITY	The teacher monitors and evaluates the ability of students who are performing the VDR to organize the session and to give instructions, feedback and support. On the contrary, performing the VIP enables internalization and empathy as transversal skills and these will be self-assessed by the students.

ACTIVITY 5 – WRAP-UP DISCUSSION	
DETAILED DESCRIPTION OF THE ACTIVITY	Using the notes taken during activities 1, 2 and 3, the teacher presents students with a wrap-up of the main 'lessons learnt' during the activities. The teacher also asks the students to share their experiences during the activities when they were blindfolded in the VIP role and when they were in the assistant role. The teacher puts forward some "triggering questions" to stimulate discussion. Then, he/she divides the blackboard in two parts (1) lessons learnt – risks; 2) lessons learnt – chances) and asks students (one by one) to fill in the list.
ROLE OF THE TEACHER	After the sum-up of the activities has been carried out, the teacher acts as a moderator in the classroom, putting forward "triggering" questions and moderating interactions among students.
STUDENT PARTICIPATION AND POSSIBLE GROUPS	The whole class is involved. Students share their individual experiences during the activities.

DURATION	60 minutes (1 hour)
ICT NEEDED	No ICTs are needed.
EVALUATION OF THE ACTIVITY	Not evaluated.

GENERAL INFORMATION – SUMMARY	
CONTENTS DETAILS	• The difference between sensation and perception from a scientific and a psychological point of view; • Multimodal interaction; • Practical knowledge of vicarious senses acquired from the blindfolded experience; • Body, spatial and environmental awareness.
REFERENCE MATERIALS	Blindfolds, white long canes, carpets (straight and circular if possible) or thin matresses, tiles or sensory plates, ropes. Tools like musical maracas or plastic bottles within stones.
TEACHER PROFILE	Lecturer at the university. Instructor in locomotion / psychomotrician
ONLINE LEARNING	Activity 1 and Activity 5 can be organised online.
ICTS SUPPORT THE LESSON	Computer and video projector for activity 1, 2 , 3
CHARACTERISTICS OF THE FACE-TO-FACE LEARNING ENVIRONMENT	A big room with enough space to walk around is necessary for activities 2, 3 and 4. Matresses, chairs and tables are also needed. The outdoor settings for activity 4 can be a sidewalk in a quiet residential area and a park.
NUMBER OF STUDENTS INVOLVED AND POSSIBLE GROUPS	A minimum of 6 and maximum of 12 students for practical activities (Activity 4). If it possible, split the class for activity 2 and activity 3. A maximum of 30 students for the theoretical part of the activities.