NEStOR

Guide on Developing Educational Scenarios and The Actual Scenarios for The Web Radio to Be Used by Schools (consideration is taken for visual impaired students)

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PROJECT SUMMARY

The NEStOR project aims to establish an attractive and modern School Web Radio with Portal which will facilitate the transnational cooperation across Europe making learning more challenging and promoting Radio and other cultural products; it will provide the necessary tools and skills in order to successfully incorporate web-based radio activities into the school's educational settings in an innovative way. The project will provide a robust and safe online platform for web-based schools radio productions, giving them an educational-oriented approach, in subjects such as maths, science, languages, history, literature, journalism and also enables various literacies such as media, information and also critical thinking; enhancing in this way the digital integration in learning and training. Generally, the radio production is addressed to students without discriminations, while no strict assessment within the project is required; this explains the reason why it will be a successful method to motivate all students to learn. Disadvantaged students -even early leavers- will find this very attractive and alluring. Taking into consideration that the radio as a medium helps disabled students to express themselves and socialize, the Web Radio Portal will be designed friendlier for such target groups; for example students with visual disabilities will be given the chance to communicate via the platform with peers and they will find an new way to learn in a very exciting and new way.

The students participating in transnational co-productions with schools coming from different European countries, will enrich their creativity and innovation and will improve their skills at the area of media, journalism and sound engineering, creating for them vocational prospects for the future. In this context the proposed project will develop basic and transversal skills using an innovative method with educational added value, the Web Radio Portal. This applies also to students that are already adults and need both challenge and professional prospects and also skills and dexterities. Both students but also educators and other adult professionals, will find through the learning community the chance to get more on media and digital literacy. This is cultivated through online collaboration, exchange of experiences on the implementation of radio shows, good practices made by other teachers, and help among other professionals and educators, and training courses and seminars. Through the events all teachers who wish to participate as trainees will have the opportunity to be trained for the production process of an educational scenario, to learn who to imply training scenarios in the classroom with support of the mentors of the student radio, within the framework of the curriculum in primary and secondary schools in their educational system.

EXECUTIVE SUMMARY

This document contains a **guide** to assist educators to develop educational scenarios and the actual scenarios for the web radio to be used by schools. The guide aims to scaffold teachers who have in their classroom one or more students with visual impairment towards the development and implementation of NEStOR learning scenarios, so as to have web radio programmes by all students, including those with visual impairment. Some general information about visually impaired students and the assistive technology that can help them is initially provided. Then, follows the specially adapted guide template that the educators can use in case they have in their classroom one or more students with visual impairment.

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1 INTRODUCTION

1.1 Aim of web radio activity

The basic aim of a web radio activity is all students (including those with visual impairment) to realize that creating a radio program involves the ability to collaborate with others, accepting suggestions and criticisms, and sharing common goals. The planned initiatives aim to develop motivation and create a team where each member is required to achieve the desired result.

What is also necessary is teachers' professional learning on web radio production and media and information literacy. When a school decides to join NEStOR learning approach for web radio programmes, could start its trip firstly by introducing teachers in the school to the web radio production and media literacy. For such a task the educator can refer to output O2A1 (Task 1 and Task 2). This output discusses in depth the importance of information literacy and particularly of the radio to education. It also analyses the required skills and dexterities of students and educators to use Web Radio and Media. All that knowledge is more than necessary for educators who have in their classroom student(s) with visual impairment.

Educators should be able to use, adapt or even design their own learning scenarios for NEStOR learning approach. For this purpose they can refer to output O4. In this output a number of learning scenarios designed, developed and implemented can be a good start for schools to join NEStOR. At the same time, this output introduces educators to a visualised learning design approach that aims in the alignment of knowledge goals along with skills with activities, learning outcomes and assessment.

Below, the educator can find the guide template (chapter 2, p.10) that he/she can use, so as to implement an educational scenario for the web radio to be used by schools that have student(s) with visual impairment.

1.2 General information about visual impairment and assistive technology

1.2.1 Classifying students with visual impairment

Visual impairment is divided into two groups with distinct characteristics and needs. So, we can have individuals either with low vision or individuals with blindness.

Low-vision individuals have impaired visual function even after optical correction, and use or are able to use their vision to perform tasks. In the educational field, students with low vision have residual vision, which enables them to read printed material with the aid of

didactic resources and special equipment (World Health Organization, 2003, as mentioned in (Alves, Monteiro, Rabello, Gasparetto, & de Carvalho, 2009)). Some students with vision problems or visual perceptual difficulties face problems in reading some specific letters and words. For example, a student with a specific learning disability or traumatic brain injury may see p as q, d as b, or was as saw (Bender, 1998, as mentioned in (Duhaney, Laurel, & Devon, 2000)).

Blindness is the term used to describe total loss of vision. Totally blind individuals need to rely predominantly on vision substitution skills. In the educational field, a blind student does not use vision in the learning process (World Health Organization, 2003, as mentioned in (Alves et al., 2009)).

1.2.2 Assistive technology for students with visual impairment

Students with low vision may have difficulties with reading and writing activities, even when they use optical aids (that magnify the image) and non-optical resources (material adaptation and changes in the environment) (Carvahlo et al., 2004, as mentioned in (Alves et al., 2009)). Those students can benefit from the combined use of these resources with information technology, such as screen enlargers (systems that magnify the characters on a computer) and speech synthesizers (specific adaptations with voice output, which convert screen content to speech).

Information and communication technology (ICT) plays a vital role in providing quality education for students with visual impairment by supporting new learning experiences (UNESCO 2006, as mentioned in (Ramos & de Andrade, 2016)), improving the effectiveness of the teaching and learning process (Fuglerud, 2011, as mentioned in (Ramos & de Andrade, 2016)) and opening up a range of opportunities for these pupils (Junior and Coutinho, 2009, as mentioned in (Ramos & de Andrade, 2016)). International studies indicate that teachers of visually impaired students do not have enough training on technologies that are relevant to this area (Abner & Lahm, 2002). This lack of specific training is “more severe for teachers in the regular classroom” (Papadopoulos & Goudiras, 2005), than for special education teachers.

Students with visual impairments face unique challenges in the educational environment. Not only they must be able to access text information across all curricular areas, but they also need to be able to participate fully in instruction that is often rich with visual content. Assistive technology is one way of supporting them in that process. Consideration of assistive technology by the Individualized Education Program (IEP) team is required for all students with disabilities under the Individuals with Disabilities Education Act (IDEA).

This is to ensure that students with disabilities have the necessary tools to fully access and participate in the curriculum, with the greatest possible level of independence. Even more important, use of assistive technology helps prepare students for independent living, vocational pursuits, or higher education following graduation from high school! “Assistive technology” refers to a range of tools, devices, and strategies that allow a student to accomplish a task that he/she would otherwise be unable to do, or would face difficulties in accomplishing effectively. Assistive technology can be simple or complex. Examples of low tech tools for students with visual impairments might include enlarged text or raised line paper, while high tech tools may encompass digital tools that “read” to the student, connect to a braille display, or even incorporate GPS. Adaptation and conversion of learning material to make it accessible may be time consuming for the educator. It also requires knowledge and planning to ensure quality and correctness. There are various ways and methods of preparing material. Some things can be done using low-tech materials, while others will require specialized software and hardware.

The term “visual impairment” describes a broad range of visual abilities and needs. Because each child is unique, what works well for one student may not work well for another. Selection of assistive technology should be the result of a team process that takes into consideration feedback from family, educators, paraprofessionals, and the student. It is important to remember that “high-tech” is not always the best solution for a student. Selected tools should reflect the student’s unique strengths and needs, the activities he needs to be able to accomplish, and the environment in which he will be working. A student’s need for assistive technology will likely change and evolve throughout his or her education, and, in most cases, no single tool will meet all of a student’s needs.

1.2.3 Audio assistive technology for students with visual impairment

Audio assistive technology promotes inclusivity in education and ensures equitable access to educational evaluations for students with disabilities. Technologies such as text-to-speech and other forms of audio information representation have made curricula more accessible to students with visual impairments and other disabilities. Having that in mind, activities through web radio can help them to understand in a better way the information provided.

The widespread availability of computers and other devices with high fidelity audio capabilities has opened a multitude of possibilities for improving the delivery of curricula and ensuring fairness in educational assessment for people with visual impairments and other disabilities. Audio has become increasingly pervasive in many computing technologies (Hereford & Winn, 1994).

Auditory-based assistive technology for students with visual impairment includes simply tape recording a lesson to review later, use of a talking calculator, software programs such as “Jaws" that convert text to voice or Braille and voice recognition computer systems such as the Kurzweil 1000 that converts text on the computer or from scanned pages to speech. As the reading demands increase for older students, the use of recorded books and speech recognition systems may take on greater importance to save time and energy (http://www.brighthubeducation.com/special-ed-visual-impairments/74539-assistive-technology-for-students-with-visual-impairments/).

But, why sound tends to be such an important tool for students with visual impairment? First, educational experiences become more accessible with sound. Further, sound may be an important tool for universal design (Nees & Walker, 2009, as mentioned in (Nees & Berry, 2013)), which emphasizes accessibility for all students, including those with disabilities (Connell et al., 1997, as mentioned in (Nees & Berry, 2013)). Research (Sloutsky & Napolitano, 2003) has suggested that audition may be dominant over vision in young children in some circumstances. Thus, audio may present unique learning opportunities for children (Droumeva et al., 2007, as mentioned in (Nees & Berry, 2013)).

Perhaps the most common audio assistive technology is synthetic speech (Massof, 2003, as mentioned in (Nees & Berry, 2013)). Synthetic speech is most often delivered via text-to-speech (TTS) engines, whereby the digital text from e-books, web pages, word processing software, e-mails, etc., is translated to an audible, speech-like signal. TTS sounds are different from natural human speech in that they are produced via computer algorithms. TTS has been implemented with considerable success in screen readers, software packages that interface with a computer or mobile operating system to translate text, menus, and commands in the interface into audio. TTS also has been implemented widely in increasingly popular e-books delivered via e-reader platforms. One of the potential advantages of electronic texts is their ability to provide flexible modes of output (including audio) and supplemental learning information to the reader (Anderson-Inman & Horney, 2007).

With these text-to-speech applications, sometimes referred to as “screen readers,” students who are visually impaired can have any text found on the computer screen read aloud. Text-to-speech technologies also facilitate the rereading and editing of previously written text. By this way they provide students with visual impairments with opportunities to participate in the same tasks with their nondisabled peers (Ted S. Hasselbring et al., 2000). According to Jackson (2012), the use of a screen reader for reading with audio support allows an improvement of the speed on information processing by students (Ramos & de Andrade, 2016). Thus, it allows a better understanding of the text meaning, shortening the time required to complete the academic tasks (Jackson, 2012, as mentioned in (Ramos & de Andrade, 2016)).

When software applications and web content are designed to be accessible to screen readers (see, e.g., Asakawa & Leporini, 2009, Mankoff et al., 2005, as mentioned in (Nees &

Berry, 2013)), people with visual impairment or other disabilities can access the text content of a variety of educational materials via audio. E-Books, web pages, and educational software can be studied in collaboration by students with and without visual impairments. Previous modes of alternative presentation such as braille were limited in availability, but digital educational materials are arguably more accessible to people with disabilities now than at any other time in human history (Grammenos et al., 2009, as mentioned in (Nees & Berry, 2013)).

2 GUIDE TEMPLATE OF EDUCATIONAL SCENARIO (ADAPTED TO THE NEEDS OF VISUALLY IMPAIRED STUDENTS)

2.1 Educational scenario

(title and short description)

2.2 Level of education-students' age group

(e.g. the scenario can be applied to primary school students of third grade)

If the scenario accepts an interdisciplinary approach and covers a more general subject like "environment", it can be adapted in some way, so as to be applied to high school students too. In that case, the educator adapts the teaching objectives to the students' level of knowledge, skills, and attitudes/behaviours).

2.3 Subject area(s)

(the educator mentions in which of the course(s) that are included in the curriculum, the educational scenario can be integrated)

There are three main types of approaches:

- *Intra-curricular*: if the educational scenario is integrated into learning outcomes, learning activities, or assessments of an academic course or a teaching program, commonly via collaborative partnerships between academic and external bodies.
- *Inter-curricular*: if the educational scenario is provided as an add-in session(s) for an academic course or program by external bodies in consultation with or at the request of individual academic staff.
- *Extra-curricular*: if the educational scenario is provided by external bodies outside of an academic curriculum, and attendance is voluntary.

Advice: Educators who teach a course related to the educational scenario collaborate and help each other, in order for the subject of the scenario to be fully covered. Moreover, they can join NEStOR teachers' community.

2.4 Web radio type

(the educator mentions the type of the web radio activity, e.g. interview, reportage, debate, digital storytelling, narration/recorded or live)

2.5 Duration

(the educator mentions the specific number of teaching hours needed for the educational scenario to be completed)

2.6 Goal

(the educator describes the general goal of the scenario referring to both the curriculum and the web radio context)

e.g. Students must *gain knowledge* on a specific topic, *be sensitized* to that topic, and *be motivated* to participate in the web radio product that they will create.

2.7 Specific learning outcomes-aims *(according to the curriculum)*

(the educator, using Bloom's taxonomy verbs for cognitive, affective and psychomotor domain, describes the expected students' learning outcomes in relation to the curriculum subject area(s), digital skills and transversal skills aims. Note: aims related to the web radio production should also be incorporated)

- Subject knowledge aims - related to the curriculum subject area aims (e.g. students must be able to know, define, locate, choose, make a summary, expand……).
- Digital skills aims - related to the use of digital technologies (e.g. students must be able to approach information and communication technologies in education, to search for information on the web, to acquire skills of cooperative learning creating their audio document through applications that allow shared use, to record their texts, to process audio files with a recording program, like Audacity, to compose a multimodal text using multimedia, to create an interactive online presentation……).

(In case of student(s) with visual impairment the educator must be more energetic when the recording and the sound editing is done. A good method is the recording of speech on a sound recording device. After that the IT educator can do the processing. Some students may find it easier to use keyboard shortcuts, when they have to use Audacity. "Logic" (https://www.apple.com/logic-pro/) is a program that helps students. In terms of accessibility of the proposed software, Audacity, there is information on the audacity website at the following links:

http://manual.audacityteam.org/man/accessibility.html

http://wiki.audacityteam.org/wiki/Audacity_for_blind_users

http://wiki.audacityteam.org/wiki/BlindKeyboardShortcuts).

- Transversal skills aims - related to specific attitudes and behaviours developed through the learning process (e.g. the students must be able to develop cooperation and interaction skills, in order to achieve the aims of the cognitive domain, to develop their ability to think critically and creatively, to express their feelings through the recording process, to take decisions, to share their experience with students from other schools encouraging a similar activity……).

(In case of student(s) with visual impairment, the educator must encourage them to express their feelings and to communicate with their peers. Sometimes, students with a disability are isolated and prefer not to participate in collaborative activities. The educator must praise their action and urge them to continue).

Aims must be realistic, precisely and clearly formulated, and achievable in the certain amount of teaching hours that the educator mentioned before. Moreover, they can both be high and low level. High-level aims are related to the development of specific capabilities, while low-level aims are related to the development of knowledge, attitudes and certain skills.

2.8 Relevance to the school curriculum

(the educator refers to the subject areas and gives a short description on how they are covered)

Example: Let's assume that the educational scenario is part of the curriculum of literature, language, music and information technology. The educator must briefly describe how all these different areas are covered

- *Literature*: students are looking for poems or quotes from the writings of well-known poets and writers, who have written something related to the context of the educational scenario
- *Language*: students produce a spoken narrative or a written text, improve their vocabulary, search for new terminologies and their meaning, develop their communicative skills while they share their ideas with other students, they learn how to argue, in order to support their point of view
- *Music*: students choose the most suitable songs for their radio show
- *Information technology*: students learn how to record and to process the sound.

(In case of student(s) with visual impairment, educator's help is necessary at this stage. When students have to produce a written text a braille machine is necessary. Moreover, they need computer access software like NVDA (NonVisual Desktop Access) https://www.nvaccess.org. This is a free reading program that can be either installed on the hard drive or on a USB pen drive to go. Other computer access software are

magnification or screen saver software (text-to-speech output) or presentation software in refreshable braille (text-to refreshable braille output). A refreshable braille display can be used as a peripheral device with a desktop, laptop, or mobile computing device providing braille translations of documents, websites, and other text information. Students can also use keaboard shortcuts).

2.9 Roll assignment

(the educator splits the tasks having to do with the web radio activity to different students)

The tasks include:

- technology handling (install software, connection to internet etc.),
- sound programs/screening programs/music production programs,
- sound editing
- microphone use (this role can be taken by the student(s) with visual impairment)
- information gathering from textbooks, newspapers, internet and other resources,

(In case of student(s) with visual impairment, a video magnifier, or closed-circuit television (CCTV) system can be used. It uses a stand-mounted or handheld video camera to project a magnified image onto a video monitor, a television (TV) screen, or a computer monitor. In order to help students find the information they need, optical character recognition systems(OCR) are necessary. Optical character recognition (OCR) technology offers blind and visually impaired persons the capacity to scan printed text and then speak it back in synthetic speech or save it to a computer).

- music editing,
- announcers/presenters (these roles can be taken by the student(s) with visual impairment)
- sound engineers.

2.10 Prerequisites/prior skills and knowledge

(the educator describes what kind of skills and knowledge the students need to have prior the learning scenario)

E.g.

- Students must be able to work collaboratively
- Students must be familiar with new technologies (computer as a tool for learning and searching for information on the internet)
- Students must be able to be working on a text using Google Docs
- Students must be able to visit webpages that extract the sound of a YouTube video to mp3

- Students must have experience in recording programs (Audacity).

(In case of student(s) with visual impairment the educator can use the links for Audacity from "digital skills aims". In order to use a computer, these students may need Adaptive Hardware. Hardware such as enlarged, large print or high contrast keyboards, as well as enlarged monitors may provide adequate support to students with low vision, allowing them to use the computer independently. Moreover, they need Operating System Accessibility. Whether using a Mac, PC, desktop or mobile device, all operating systems have built-in accessibility features that may make the device easier to use. These include changes to visual display (i.e. high contrast, color scheme, font size), enlarged icons, screen magnification, enlarging the cursor or pointer, or a built-in screen reader. Finally, they need Specialized Accessibility Software. When built-in accessibility features do not provide adequate support, specialized software can be used to create a highly customized computer environment. This may include features such as text-to-speech feedback with and without text highlighting, the ability to customize what is magnified on the screen, greater customization of visual displays, voice navigation, and advanced screen reading features.).

2.11 Brief description of the web radio activity

(the educator describes generally the web radio activity and the expected result/general aims)

- The activity may be a digital storytelling, an interview, a reportage, a spoken narrative, a debate etc.
- The educator describes briefly all the steps of the web radio activity.
- Connection with the micro level learning design.

Example: If the web radio activity is an interview that the students take from a person related to the educational scenario, the educator can follow the following procedure:

- He/she urges students to listen to an interview, either on radio or on TV, so that to get some ideas on how they can construct their own interview.
- He/she provides them with some information having to do with the basic rules and steps (a protocol of a successful interview).

(In case of student(s) with visual impairment this material must be printed on a braille printer).

- He/she shows examples of interviews and asks from the students to make comments
- He/she gives a specific topic and asks from the students to make questions and find possible answers (students work in pairs, one is the interviewer and the other is the interviewed, all the questions/answers are written down, students are voting for the best ones) (students with visual impairment need a braille machine)
- Students are organizing in groups the final interview.

- Students apply the interview live on the radio using audacity

(In case of student(s) with visual impairment the educator can use the links for Audacity from “digital skills aims”).

2.12 Technology

(microphones, computers, audacity, web camera, printer, scanner, video projector, speakers…)

(In case of student(s) with visual impairment, braille display technology is necessary. This is a system of touch reading and writing for blind persons in which raised dots represent the letters of the alphabet. This technology shows up to 80 characters from the screen which are refreshable. That means that the characters change continuously as the user moves around on the screen. The braille display sits on the user’s desk, often underneath the computer keyboard. Braille display offers direct access to information, is quiet, and can check format, spelling and scanning. Among braille display products are braille printers and electronic braille notetakers.

Braille printers provide hardcopy information from computer devices and they print on heavy weight paper. The first step in converting a computer file into a braiile document is to choose the type of braille. Grade 1 braille consists of letters, numbers and punctuation marks, while grade 2 braille includes contractions of common combinations of letters and words. To print grade 2 braille requires the use of a braille translations program.

Electronic braille notetakers are small portable devices with braille keyboards for entering information. They use a speech synthesizer or braille display for output. The user enters the information on the braille keyboard and has the option of transferring it to a larger computer with more memory, reviewing it using the built-in speech synthesizer, or printing it on a braille inkprint printer. To view a short video about braille transcribing software and braille embossers the educator can choose the following link: Video on braille transcribing software and braille embossers.).

2.13 Assessment of the process

(the educator gives a short description on the assessment approaches to be followed referring to both formative and summative assessment, he/she can also use the pilot evaluation tools from output O4)

Assessment can be done through either a *quantitative* research which explains a particular phenomenon by collecting numerical data that are analyzed using mathematically based methods, or a *qualitative* research which provides a detailed description of a given event or phenomenon. Quantitative research techniques are needed when generalizations are

needed across a population, while qualitative research techniques are more appropriate when detailed information is needed.

Moreover, there are three types of assessment: *initial*, *formative* and *summative*. With the initial assessment the educator detects students' prior knowledge of a specific subject. Formative assessment occurs during the process of student's learning activities and provides detailed qualitative feedback information about strengths and weaknesses during the learning process. In that stage, students go to google docs and they correct/complete their documents. While students make comments on their peers' documents they learn how to think critically and they improve their speaking. Finally, summative assessment focuses on the end of an event, so as to see if the predetermined objectives have been achieved. The educator discusses with the students what was easy for them during the whole procedure, what was difficult and if they were expecting something more. He/she can provide students with a questionnaire where they will have the chance to express their point of view. The questions can be both closed-response and open-ended questions.

The general goal of the evaluation is to find what students earned after participating in the web radio activity in terms of knowledge, understanding, skills and attitudes. The type of the evaluation depends on the type of the educational scenario. If the scenario joins the curriculum, then it must be considered as part of the general evaluation of the educational procedure (e.g. the educator can check if the students improve their grades in a specific course or if they perform better on a specific written test, after having been involved in the web radio activity).

The assessment of students' work is done both from the students (peer review) and from the educator and has to do with goal/aim achievement, the collaboration between the members of each group, and the expression of feelings (satisfaction, fun, difficulties) during the implementation of the educational scenario.

If the educator considers that it is better to use a qualitative research method, then he/she can use:

- Observations: they provide the educator with first-hand information concerning the performances or behaviors of groups or individuals. This method is commonly used to gather data about oral presentations, team activities and seminars. Since web radio activity is a team activity, then this method of assessment can be used.
- Interviews: they can be structured or unstructured. Structured interviews include predetermined and unchanging set of questions, while in the unstructured interview the interviewer can deviate from the standard widely used interview questions, so as to probe interesting responses that emerge during that

procedure. Generally speaking, an interview works like a mechanism for capturing the participant's thoughts and perspectives. There is also a special type of interview, which is called focus group. This kind of interview takes place with a group of people and it is appropriate when the group dynamics of the interview are expected to stimulate a more detailed response, since the comment of one student may stimulate the memory of another student. The interaction of these thoughts and ideas can contribute to rich and detailed descriptions of the phenomenon of interest.

(In case of student(s with visual impairment), they can be assessed through an observation or an interview)

- Documents: they include items such as portfolios, samples of written performance or open-ended questionnaires that are filled by the participants in the web radio activity.

2.14 Technical infrastructure

(the educator refers to the technical and digital infrastructure and tools needed) – preparation of the classroom)

Make sure that:

- there are students in the classroom who are willing to get interfered in a web radio activity.
- he/she has briefly described how web radio works.
- the students know how to search for information on the internet and how to evaluate published information, instead of passively accepting it as legitimate.
- there is connection to the internet.
- the number of computers is enough, so that small group of students can work on them.
- school is fully equipped with all the materials that are needed for a web radio activity (e.g. web cameras, microphones, scanners, video projectors, printers etc.).
- students know how to share ideas and create online.
- students require the basic information and communication technology skills (e.g. E-mail, World Wide Web, multimedia, videoconferencing, skype).
- Audacity and interactive communication tools, such as skype, are available.
- students have access and can work on Google Drive.
- students acquire the required technical skills (e.g. how a microphone works, how they can deal with the sound).
- he/she has organized classroom in a way that helps students to work in small groups.
- he/she has assigned roles to students (researchers of information, announcers, live directors, sound engineers, editors etc.).

(In case of student(s) with visual impairment, the educator must make sure that school is equipped with devices that are needed to provide academic services to students with visual impairment:

- Text-to-Braille translation software – programs that translate print to Braille

Embosser – aka Braille printer, a device used to emboss text in Braille

- Braille instruction support tools.
- Scanner with Optical Character Recognition (OCR) software – device used to convert paper text into digital format. Optical Character Recognition OCR is software that converts the image of the text on pages that are being scanned and turns it into e-text.
- Image simplifying software – programs that convert images from visual to textual by simplifying their content.
- Image embossing devices – hardware that makes flat print images tactually accessible.
- Color copier with enlarge function – a device that allows enlargement of print material.
- Text-to-audio software – programs that convert electronic text into an audio format. Some programs also save files as portable audio files like .mp3 or .wav.
- Voice recording software – programs that allow digital voicing recording and editing. Files can be saved in various formats and subsequently either listened to on the computer, or transferred to portable media players).

2.15 Pedagogical approach

- Connection with the macro level learning design.
- The educator describes the pedagogical method he/she uses e.g.:
  a) *Collaborative learning models and zone of proximal development (ZPD)*
  Collaborative peer groups are groups of equals who learn in a group to share ideas and experiences and to assist one another in solving problems and reach a common goal. According to sociocultural learning theories, the more students engage in group activities and interact with each other, the better they will learn. In a collaborative peer group, students share their views and perspectives with their peers so that they can explore different ways of approaching the learning objects and solving problems. They also can build on each other's contributions to reconstruct their new knowledge and, therefore, construct their own thinking process. One type of peer groups is *problem-based learning model*. Problem-based learning emphasizes collaborative learning. Students explore, solve problems, and understand the process of how the problems were solved, which encourages the deep learning approach rather than simply memorizing the solution. Through solving problems, students learn to effectively find information and critically evaluate information resources;

therefore, their cognition is. developed. Another type of peer groups is *resource-based learning model*. Resource-based learning is learning directly by engaging with resources. Resources could include books, journals, television, online databases, radio, and CD ROMs. All these sources are considered to be learning tools. It involves a collaborative learning environment where students utilize a variety of information resources to solve problems under the supervision of teachers and librarians and collaborating within their group. Since collaboration between students is one of the most basic elements in web radio activities, collaborative learning models can help both the educator and the students to achieve their goals.

b) *Self-determination theory*

This theory focuses primarily on three such innate needs: the needs for competence, relatedness, and autonomy (or self-determination). Competence involves understanding how to attain various external and internal outcomes and being efficacious in performing the requisite actions, relatedness involves developing secure and satisfying connections with others in one's social milieu, and autonomy refers to being self-initiating and self-regulating of one's own actions. Intrinsically motivated behaviors are engaged in for their own sake- for the pleasure and satisfaction derived from their performance. When intrinsically motivated, people engage in activities that interest them, and they do so freely, with a full sense of volition and without the necessity of material rewards or constraints. Extrinsically motivated behaviors, on the other hand, are instrumental in nature. They are performed not out of interest but because they are believed to be instrumental to some separable consequence. The three innate needs that were mentioned before can be seen in a web radio activity, since it combines personal effort with collaboration. The educator should motivate students intrinsically.

c) *Social constructivism*

Constructivism concentrates on the idea that learners actively build, create, or construct new mental models as a result of their interactions and experiences. Constructivists propose that learners are particularly likely to develop new ideas when they are actively involved in making some kind of external artifact (e.g. a web radio activity) that causes them to reflect upon what they are learning and share that learning with others. Constructivists counter that learning is more dependent upon the types of opportunities or experiences offered than on the learners' maturational stage of development. Learning for the constructivist is viewed as a process in which learners construct meaning rather than merely take in ideas and memorize them. The constructivist model depends quite a bit on social interactions that allow learners to test their understandings against those of others. Social construction of knowledge occurs when communities of learners collaborate to formulate ideas and test the validity of those ideas. Since interaction between students from the same or from different schools is

necessary for the completion of a web radio activity, the educator can use this pedagogical approach.

2.16 Classroom organization

(the educator describes briefly the classroom organization referring to the students' and teacher's role)

Desks must be positioned in such a way so as to serve the group cooperative teaching. The educator distributes roles to each group's members, and the final product depends on the effort that each team has made.

The organization of the classroom has two separate forms:

- Each team works individually (students search for information and prepare a written document according to the roles that they were given by the educator and, of course, within their group.
- All teams are working together, they merge the material they produced and they record it.

Role of educator: He/She should be instructive and supportive, and control both the web radio activity and the collaboration between the students. He/She should also observe/check first, if each student responds to his/her duties, and then, if the whole group achieves its goals. The educator should provide students with clarifications and technical/cognitive help, only if it is necessary and students ask for it. The traditional student's role as a knowledge receiver and note-taker also shifts to that of a more active problem solver, contributor, and discussant. The educator is no longer a manager, but becomes the motivator in creating a climate fostering collaborative learning and the guide who aids the students' learning. He/She prepares and check the webpages that students will visit, prepares the worksheets, and make sure that all groups work properly.

2.17 Description of activities

(the educator describes the activities - each one separately - as detailed as needed.)

He/She refers to the:

- title of the activity,
- teacher's and students' actions/role,
- expected outcomes,
- learning/classroom organization,
- tools/resources/materials,
- assessment.

(*This section can be developed using the micro level design*.)

Let's assume that the educational scenario has to do with marine pollution. The educator could do the following:

- Activity 1: "*Brainstorming and initial assessment*"

- discussion on the subject
- presentation of specific sources on the web
- research by students on the specific topic (the educator supports and guides whenever it is necessary)
- study of digital sources and search for specialized scientists
- effort to get in touch with them and ask for an interview

- Activity 2: "*Interview-transcription-preparation of the radio broadcast*"

- interview using teleconferencing
- students listen carefully and keep notes on their notebooks
- recording of the interview using an mp3 skype recorder
- splitting pupils into groups
- brief presentation of questions/answers of the interview on a written document
- the students are working on the shared document on Google Docs that has to do with their group
- in pairs they write dialogues using the notes they have kept before, so as to present them to the radio show
- they search in www.youtube.com songs related to the topic
- using the webpage http://www.youtube-mp3.org/gr, they extract the sound from a video, they download the files, and they put them in the shared folder on Google Drive
- they make corrections of their written documents in Google Docs
- they download the songs they have chosen into a shared folder on Google Drive
- the peers make corrections (*peer review*) to the document that contains the text of the broadcasting
- the educator supervises the whole procedure

- Activity 3: "*Creating radio broadcasting*"

- using the Audacity students record their dialogues
- they put songs related to the topic, making at the same time the connection between the song and the topic through comments
- they process the sound
- they convert the file to mp3 file format
- the duration of the broadcasting is 15 minutes

- Activity 4: "*Promotion of radio broadcasting*"

- students are divided into groups
- each group writes an article and send it to other schools to inform them for the broadcasting
- they create a clever logo to promote the cooperation with other schools
- they present the beginning time of the broadcast

- Activity 5: "*Transmission of the broadcasting*"

- students transmit the broadcasting
- they record it
- they communicate with listeners from other schools through the chat of e.g. European School Radio

- Activity 6: "*Reflection*"

- students listen carefully to their broadcasting and discuss possible improvements
- through guided questions the educator elicits the pedagogical benefit of the whole procedure
- the educator asks students some brief closed-response questions, so that to assess the whole procedure. He/She can use the following general questions. The educator can add more questions, according to the web radio activity on which students worked. Some of the questions can be the following:
  - Did you enjoy the process? (value from 1 to 5, 1= not enjoy at all, 5= enjoy very much)
  - Did you find the process easy? (Yes/No)
  - Do you think that using web radio activities in school environment can ameliorate the way that students learn? (Yes/No)
  - Will you interfere again in a web radio activity? (Yes/No)
  - Do you think that your academic achievement was improved after participating in that web radio activity? (Yes/No)
  - Would you like to make your own broadcast live radio and how often? (once a week/twice a month/never/other).

(At this stage the educator can use Text-to-Braille translation software – programs that translate print to Braille and an Embosser – aka Braille printer, a device used to emboss text in Braille. So, instead of asking all the above-mentioned questions in oral form, he/she can provide students with this material in hard copy form. Students, from their side, can answer using the same programs).

- the educator provides students with worksheets which must include activities that

- have different levels of difficulty
- promote students' self-sufficiency and creativity
- require little help from the educator
- motivate students to think critically
- can be done either individually, or collaboratively
- check the achievement of all goals and aims (including those referred to the web radio activity), the educator creates an assessment criterion for all goals/aims, e.g.
  - questionnaires with closed-response questions
  - open ended questions
  - planning activities (to draw something)
  - creation of a mental map
  - problem solving activities
  - metacognitive activities (these activities summarize what students learned and gained after the whole procedure)
- give to the students the possibility to evaluate themselves

2.18 Material and resources

(the educator attaches or gives links to the material and resources needed for the educational scenario implementation, such as presentations, worksheets, student guides, tests, etc.)

2.19 Products

(the educator attaches or gives links to the products and artefacts of the educational scenario, such as the web radio broadcast, radio scenarios, interviews questions and results, photos etc.)

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