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# **Handbook on guidelines for inclusion for flipped learning**

## **Deliverable 2: activity 5**

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## 1. INTRODUCTION

Inclusive education is one of the modern trends in global and European policy and practice. It is supported by numerous international documents, including the Salamanca Declaration, Spain (1994), the UN Convention on the Rights of the Child (2006), Standard rules for equality and equal opportunities for people with disabilities' (1993), Framework for Action of the Dakar Forum, Senegal (2000), etc. It is based on the belief that students of all abilities have the right to an education that is meaningful, appropriate and equal to that of their peers. Inclusive education is seen as a process that seeks to eliminate all forms of segregation and discrimination. To cover vulnerable and isolated children and students for one reason or another. To encourage and facilitate the participation of all in the educational process. The national policies of a number of countries take real action to promote inclusive education and building an inclusive environment in schools that adequately responds to the diversity of student needs. Creating an inclusive educational and social environment is considered the most effective way to combat discrimination and exclusion, to ensure access to education for all, regardless of health, ethnic, social, economic or gender status.

The texts below clearly reflect the essence of the concept of inclusive education.

“Inclusive education is a process that involves the transformation of schools and other centres of learning to cater for all children – including boys and girls, students from ethnic and linguistic minorities, rural populations, those affected by HIV and AIDS, and those with disabilities and difficulties in learning and to provide learning opportunities for all youth and adults as well. Its aim is to eliminate exclusion that is a consequence of negative attitudes and a lack of response to diversity in race, economic status, social class, ethnicity, language, religion, gender, sexual orientation and ability.” (UNESCO, 2009).



„Inclusive education as an approach seeks to address the learning needs of all children, youth and adults with a specific focus on those who are vulnerable to marginalisation and exclusion” (UNESCO, 2003).

Inclusion is both a principle and a process:

‘Inclusion and equity in and through education is the cornerstone of a transformative education agenda [...] No education target should be considered met unless met by all’ (World Education Forum, 2015, p. 2).

It can be seen as:

‘A process consisting of actions and practices that embrace diversity and build a sense of belonging, rooted in the belief that every person has value and potential and should be respected’ (UNESCO, 2020, p. 419).

The term ‘inclusion’ was often associated with disability, but now extends to wider groups as:

‘... a response to increasingly complex and diverse societies. It treats diversity as an asset which helps prepare individuals for life and active citizenship in increasingly complex, demanding, multi-cultural and integrated societies’ (Soriano, Watkins & Ebersold, 2017, p. 7).

The Agency aims ‘to ensure every learner’s right to inclusive and equitable educational opportunities’ (European Agency, 2020, p. 2) and for ‘equal access to all levels of education and vocational training for the vulnerable’ (UN, no date, SDG 4.5). ‘All aspects of Agency work must consider everything and anything that can marginalise learners and increase their chances of exclusion’ (European Agency, 2021, p. 6).

Various authors (Collins, 2018; MacLeod, 2018) and international organizations (OECD, 2011; UNESCO, 2017) have emphasized the need for higher education institutions to become more inclusive, not only because it would benefit students with disabilities, but also because it would also benefited other disadvantaged learners and all other students (Martins, 2018).

Inclusive education is applicable to different groups of learners – students with SEN, different ethnic groups, different religious groups, gender groups, etc., but since we cannot comprehensively consider the use of the flipped classroom method in each of these groups, we will focus only on students with SEN. Higher education institutions



often teach students with various disabilities and require a specific pedagogical design tailored to their specific individual needs. In the guide, special emphasis is placed on the potential of the flipped classroom to personalize the learning process depending on the educational specifics, needs and preferences of learners with special educational needs, with a view to providing opportunities for more accessible, active and independent learning. Guidelines have been provided to teachers in higher education institutions related to ensuring accessibility in the process of designing and practical implementation of flipped learning. The guidelines are aimed at students with SEND, as their learning in the context of flipped classroom method poses a number of challenges in terms of accessibility. The focus of the analysis is on three main groups of students with SEND – those with hearing impaired, the dyslexic ones and the visually impaired ones, as these are the most numerous groups in higher education and most research is available in this area. Detailed instructions on the steps to be taken by educators in designing a flipped classroom when students with such needs are present in the class are given on the following pages.

More information on the specifics of flipped classroom design and implementation in the training of gender groups can be found in the articles of Rensaa & Fredriksen (2022), Swapp, D. (2017), Kutigi et al., . (2023) Alghamdi & Almalki (2022).

In the tables below, we will systematize the specifics of the flipped classroom method in three settings:

- synchronously in a physical classroom
- synchronously in a virtual environment
- asynchronous in VLE

## 2. HEARING IMPAIRMENTS

### 2.1 GENERAL DESCRIPTION OF THE TYPE OF IMPAIRMENT AND THE RESULTING LEARNING

#### SPECIFICITIES:

Learners with hearing impairments have total or partial hearing loss, which affects their language and communicative skills, and their cognitive, social, and personal development. It is a fact that the hearing deficit is the cause for the appearance of qualitative differences between deaf and hearing individuals in acquiring language structures and oral speech function. The sensory impairment in the function of the hearing analyzer is not limited only to the total or partial inability to feel or perceive the sounds but inevitably leads to a lack of or general underdevelopment of speech. The impairment interrupts or hinders the natural perception of oral speech. This is a reason for serious difficulties in speech communication and the actual communication process. The difficulties may be more or less pronounced depending on the degree of the hearing impairment. Bench (1992) contends that there are variances in the population of individuals with hearing impairments regarding the perception of speech sounds depending on the type and degree of hearing loss. Scientific literature makes a basic distinction between individuals with moderately severe hearing impairments (with partial hearing loss – from 60 to 90 dB) and deaf individuals (with severe or profound hearing loss – more than 90 dB).

Observations of learners with hearing impairments reveal that there are deviations in pronunciation due to the differential properties of phonemes and this seriously impairs their speech intelligibility. Significant problems are also observed in relation to the other phonetic elements, the so-called prosodies - stress, tempo, speech rhythm, intonation, and others, leading to an altered intonation melodic relation. The specific characteristics of hearing-impaired learners include the presence of a significant vocabulary deficit and a number of difficulties in understanding and making sense of the semantics of words (Балканска, 2013; Попзлатева, 1999; Geers & Moog, 1989; Gilbertson & Kamhi, 1995; Lederberg, 2003; Paul, 1996). A natural consequence of a poor understanding of word semantics is the appearance of hard-to-overcome barriers to learning content acquisition in all study disciplines. These difficulties remain valid not only in school age but also in adulthood. Learners with hearing deficits demonstrate impaired skills of perception, decoding, and comprehending information. There is a close interconnection between the level and the volume of vocabulary and the ability to understand a text (King & Quigley, 1985; LaSasso & Davey, 1987; Paul, 2001). When reading deaf individuals understand the meaning of a significantly lower



number of words in the text than hearing individuals due to their limited vocabulary range, they have difficulties in understanding abstract meanings of words and phrases as well as of poly-semantic words. This is a serious impediment not only to successful communication but also to the acquisition of abstract theoretical knowledge as they have difficulty perceiving and understanding scientific terminology. The level of language development affects cognitive processes as well. Thinking in persons with a more severe degree of hearing impairment, as Balkanska contends, remains at the concrete operational stage and does not reach the level of abstract linguistic and logical forms (Балканска, 2013). Based on the analysis of a number of studies Hauser and Marschark (2008) conclude that there are significant qualitative and quantitative differences regarding knowledge acquisition, learning, and problem-solving approaches.

The non-impaired analyzers (visual, motor, tactile, and residual hearing) have a clearly pronounced compensatory function in deaf individuals. Visual perception plays an extremely important role in speech communication both with hearing individuals and within the hearing-impaired population. Visual speech perception (lip reading) is considered a specific ability of deaf individuals and is essential in the process of communication and learning as it increases access to speech information.

Learners with hearing impairments perceive oral speech with the help of different technical means (hearing aid, Cochlear implant, FM systems). In the process of communication and learning deaf people use alternative means – sign language and the dactyl alphabet.

Clearly, learners with hearing impairments encounter problems in the acquisition of the planned learning material mostly of abstract theoretical knowledge, because they have difficulty in perception and comprehending scientific terminology, which is complex for learning due to the high academicism.

## 2.2 GUIDELINES FOR SUPPORTING LEARNERS WITH HEARING IMPAIRMENTS IN THE FACE-TO-FACE TEACHING AND LEARNING

The support requires the provision of alternative formats for accessing the learning material in order to achieve the learning goals in addition to alternative strategies for educational communication.

Table 1 sets out some guidelines for supporting the learning process of learners with hearing impairments in the face-to-face classroom (physical classroom).

Table 1

	<b>Guidelines for supporting learners with hearing impairments in face-to-face learning (physical classroom)</b>
Learning Activities	<ul style="list-style-type: none"> <li>● Apply a differentiated approach by providing alternative learning activities considering the individual learner's abilities and extra time for their completion.</li> <li>● It is advised that learners with hearing impairments submit the results of the learning activities in writing.</li> <li>● Encourage group learning. Provide learners the opportunity to work in pairs or small groups.</li> <li>● Allow learners with hearing impairments to complete in advance some of the tasks requiring more thinking time. Teachers either give learners the tasks and activities to get familiar with in advance or let learners do the tasks and activities at home – preferably online, asynchronously, so they can assist them online. When preparing the task description on the VLE you should take into account learner specificities – e.g. provide video instructions or sign language instructions, etc.</li> </ul>
Learning Resources	<ul style="list-style-type: none"> <li>● Use more visual support for the delivered information (sign language, dactyl) or other supportive instructions for clarification of the information.</li> </ul>

	<ul style="list-style-type: none"><li>● Use educational multimedia, which is very important for illustrating the learning content.</li><li>● If you use electronic resources, provide alternative formats for access to the learning content presented in an audio or video format (textual or sign language dubbing, speech transcription, accessible on request).</li><li>● Include dynamic real-time visualizations (animations, simulations, video clips, etc.) of otherwise complex to perceive processes, phenomena, and objects, from various perspectives, and by different complementing means to support effective learning.</li><li>● Provide the resources to these learners prior to the face-to-face class to get familiar with at home (on the VLE) so they can acquaint themselves with them before using them on specific in-class tasks.</li></ul>
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Educational Communication	<ul style="list-style-type: none"> <li>● Establish guidelines for classroom communication.</li> <li>● Speak clearly and distinctly at a moderate rate.</li> <li>● Be patient when a learner with a hearing impairment is speaking; do not press them for time.</li> <li>● It is necessary to reduce the rapid pace of discussions, the rapid change of speakers, the rapid change of topics in class, the large number of participants in the discussion, and the simultaneous speaking of two or more learners.</li> <li>● The teacher must not speak while moving or facing the board because this prevents lip reading.</li> <li>● It is advisable that while giving instructions the teacher is facing the hearing impaired learner and slows the speech rate. Alternatively, the teacher may provide these learners with a video recording and written task instructions.</li> <li>● It is advisable for the teacher to paraphrase rather than repeat phrases if the learner does not understand them.</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>● Provide alternative forms of examination.</li> <li>● It is advisable that hearing impaired learners are examined in writing.</li> <li>● In view of increasing the success rate of learners the deadlines set for evaluation tasks should be extendable at the teacher's discretion in order to be completed.</li> <li>● Provide constant personalized feedback on the learner's progress preferably in writing.</li> <li>● Provide opportunities for reflection on the learned material.</li> <li>● Include a self-assessment test before the completion of a final test.</li> </ul>

Setting	<ul style="list-style-type: none"> <li>● Do not allow the increase of learner-created background noise in the classroom. The level of background noise in the room may prevent comprehension of speech information.</li> <li>● It is essential for a hearing impaired learner not to sit close to the projector/ computer as it is a noise generator with adverse effects.</li> <li>● The speaker's face must be well-lit to be visible to the hearing-impaired learner.</li> </ul>
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### 2.3. GUIDELINES FOR SUPPORTING LEARNERS WITH HEARING IMPAIRMENTS IN A VIRTUAL CLASSROOM (ONLINE SYNCHRONOUS LEARNING)

Learning in a virtual classroom creates opportunities for constructing a supportive and adapted learning environment according to the individual needs and specificities of learners with SEN. When planning online learning the teacher must take into account the educational and logistic requirements of each specific educational context and the abilities and needs of learners with hearing impairments.

Table 2 sets out some specific guidelines for supporting the learning of learners with hearing impairments in online learning in a virtual classroom. A large part of the instructions for learning in a face-to-face physical environment applies to face-to-face learning online.

	<b>Guidelines for supporting learners with hearing impairments in a virtual classroom/synchronous learning</b>
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Learning Activities	<ul style="list-style-type: none"> <li>● Apply a differentiated approach by providing alternative learning activities considering the individual learner’s abilities and extra time for their completion.</li> <li>● It is advised that learners with hearing impairments submit the results of the learning activities in writing.</li> <li>● Make a recording of the session in the virtual classroom so that the hearing impaired learner can repeatedly go back to it and better acquire the learning content. Thus, during the online session, they will be able to focus entirely on the lesson and participate more without having to interrupt their activity to take notes.</li> <li>● Encourage group learning activities. Provide learners the opportunity to work in pairs or small groups.</li> <li>● Provide learners with hearing impairments the opportunity to finish some of the tasks requiring more thinking time at home – preferably online asynchronously so that they can get online assistance. When preparing the task description on the VLE you should take into account learner specificities – e.g. provide video or sign language instructions, etc.</li> </ul>
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Learning Resources	<ul style="list-style-type: none"><li>● Use more visual support for the delivered information (sign language, dactyl) or other supportive instructions for clarification of the information.</li><li>● Provide alternative forms of access to the learning materials, presented in audio or video (text or sign language dubbing, speech transcription, accessible on request).</li><li>● Include interactive multimedia resources.</li><li>● Include dynamic real-time visualizations (animations, simulations, video clips, etc.) of otherwise complex to perceive processes, phenomena, and objects, from various perspectives, and by different complementing means to support the effective learning of hearing impaired learners.</li><li>● Provide uninterrupted access to learning materials so that learners are able to get familiar with them in advance and repeatedly go back to them after the lesson in the online virtual classroom.</li></ul>
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Educational Communication	<ul style="list-style-type: none"> <li>● Establish guidelines for communication in the virtual classroom.</li> <li>● Speak clearly and distinctly at a moderate rate.</li> <li>● Be patient when a learner with a hearing impairment is speaking; do not press them for time.</li> <li>● Prompt learners to use specialized speech-to-text software, which allows fast oral-to-written speech transformation within seconds after pronouncing, i.e. the hearing impaired learner does not lag behind the course of the lesson.</li> <li>● Use the correct face frame (the eyes and mouth are always clearly visible in the foreground to facilitate reading of lip and facial expressions.) or gesture-space frame (the zone from the head to the waist where signs are expressed).</li> <li>● It is necessary to reduce the rapid pace of discussions, the rapid change of speakers, the rapid change of topics in class, the large number of participants in the discussion, and the simultaneous speaking of two or more learners.</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>● Provide alternative forms of examination.</li> <li>● It is advisable that hearing impaired learners are examined in writing.</li> <li>● In view of increasing the success rate of learners the deadlines set for evaluation tasks must be extendable at the teacher's discretion in order to be completed. This can be done via VLE.</li> <li>● Provide constant personalized feedback on the learner's progress preferably in writing.</li> <li>● Provide opportunities for reflection on the learned material.</li> </ul>



	<ul style="list-style-type: none"> <li>• Include a self-assessment test before the completion of a final test.</li> </ul>
Setting	<ul style="list-style-type: none"> <li>• Do not allow the increase of learner-created background noise in the virtual classroom.</li> <li>• Prompt the hard of hearing learners to use headphones to reduce the noise for clearer audio access.</li> </ul>

#### 2.4. GUIDELINES FOR SUPPORTING LEARNERS WITH HEARING IMPAIRMENTS IN AN ASYNCHRONOUS LEARNING ENVIRONMENT

Learning in an asynchronous learning environment is especially beneficial for learners with hearing impairments, as it provides broad opportunities for access, adaptability, and personalization of learning, more learning autonomy, and independence (Betts et al., 2013; Coombs, 2010; Seale, 2006), which are crucial factors for the successful education of learners with different types of impairments.

Table 3 sets out some guidelines for supporting the asynchronous online learning process of learners with hearing impairments in VLE.

Table 3

	<b>Guidelines for supporting learners with hearing impairments in an asynchronous online learning</b>
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Learning Activities	<ul style="list-style-type: none"> <li>● Apply a differentiated approach by providing alternative learning activities considering the individual learner's abilities and extra time for their completion.</li> <li>● It is advised that learners with hearing impairments submit the results of the learning activities in writing.</li> <li>● Encourage asynchronous group learning activities. Provide learners the opportunity to work in pairs or small groups.</li> </ul>
Learning Resources	<ul style="list-style-type: none"> <li>● Create universally accessible learning content in compliance with the universal design for learning (UDL) guidelines.</li> <li>● Make use of all communication channels in the learning resources according to the principles of multimedia learning (Mayer, 2005).</li> <li>● Provide alternative forms of access to the learning materials, presented in audio or video (text or sign language dubbing, speech transcription, accessible on request).</li> <li>● Use short audio-video lessons/resources (maximum 8 minutes).</li> <li>● It is advisable that the teacher is present personally in the video so that they can explain the purpose of a task and introduce or synthesize a concept that is difficult to understand.</li> <li>● Include interactive multimedia resources, which allow the learner control over the pace and sequence of acquiring the learning material.</li> <li>● For the asynchronous activities, all materials must be provided in advance and uploaded to the VLE.</li> </ul>

	<ul style="list-style-type: none"> <li>● Include dynamic visualizations (animations, simulations, video clips, etc.) of otherwise complex to perceive processes, phenomena, and objects, from various perspectives, and by different complementing means to support effective learning.</li> <li>● Provide uninterrupted access to learning materials on the VLE.</li> </ul>
Educational Communication	<ul style="list-style-type: none"> <li>● Establish guidelines for communication in the virtual environment.</li> <li>● It is necessary to reduce the large number of participants in the asynchronous discussion.</li> <li>● Provide different communication channels (forum, chat, videoconference, email, etc.), so that if learners with hearing impairments have questions, misunderstanding, or concerns that they will not be able to cope with the set tasks, they can receive immediate additional feedback.</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>● Provide alternative forms of examination.</li> <li>● It is advisable that hearing-impaired learners are examined in writing.</li> <li>● In view of increasing the success rate of learners the deadlines set for evaluation tasks should be extendable at the teacher's discretion in order to be completed.</li> <li>● Provide constant feedback on the learner's progress preferably in writing.</li> <li>● Provide opportunities for reflection on the learned material.</li> </ul>

	<ul style="list-style-type: none"><li>• Include a self-assessment test before the completion of a final test.</li></ul>
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### 3. DYSLEXIA

The British Dyslexia Association defines this disorder as a neurological condition that affects many areas of learning and manifests as a specific difficulty in reading, spelling, and writing, not necessarily all areas being affected. Mathematical, musical, motor, and organizational skills may also be impaired (British Dyslexia Association, 2011).

Dyslexic learners encounter many difficulties in the process of learning which manifest in varying degrees with each individual learner but they do not indicate a negligent attitude to learning or a lack of motivation, they are the result of the specific way of processing incoming information, its classification, storing, differentiation and transfer. Todorova (2016) systematizes the most frequent manifestations as follows:

- Inconsistency between intellectual abilities and the demonstrated writing skills (reading and writing);
- Inconsistency between oral and written language performance – for example, the spoken expression is much easier and better in a dyslexic learner than the written expression; in instances of spontaneous writing, the vocabulary range is smaller, and incorrect sentence structure is often observed;
  - Specific mistakes in reading, writing, and spelling;
  - Difficulties in structuring written text;
  - Impairments in visual and/or audio perception;
  - Specificities of short-term memory;
  - Difficulties in visual and motor coordination;

- Difficulties when working with numbers and figures;
- Difficulties in time management and planning activities;
- Difficulties with spatial orientation (determining the right/left directions);
- Difficulties pronouncing unknown and multi-syllable words.

Typical (dyslexia) reading errors and problems include replacement of letters with such that are visually similar or whose phonemes sound similar; omission of letters; addition of non-existent letters or syllables in a word; word substitution; severe difficulties when reading aloud; mirror reading; letter-by-letter or syllabic reading; impaired understanding of read phrases and texts; broken intonation; slow reading; fatigue after fast reading, etc.

Typical errors and problems in writing (dysgraphia) are misspelling of letters; replacement of letters in writing that are visually similar or whose phonemes sound similar; addition of non-existent letters or syllables in a word; mirror writing; displacement of letters and syllables in a word; failing to follow lines, inconsistent word spacing and letter sizing; mixing up typed and handwritten letters due to difficulties in learning the handwritten; bad spelling; agrammatism; erroneous punctuation; slow tiring writing and quick fatigue, etc. In addition, some learners may have finger cramps when writing, decreasing writing speed for longer texts, difficulty in organizing their writing on a page, etc.

Despite the abovementioned specificities and difficulties, this group of learners is able to achieve high academic results with the correct educational approaches. They are intelligent, capable of understanding and processing the information correctly, and successfully constructing their own expressions and ideas, however, they need more time for this. Teachers need to be aware that dyslexic learners process information and learn in a different way from other learners. Therefore, they need the support and specialized assistance of their teachers in the learning process who on their part can facilitate their learning in different ways by adapting learning resources and evaluation methods according to learners' individual needs.

### 3.1 GUIDELINES FOR SUPPORTING LEARNERS WITH DYSLEXIA IN A FACE-TO-FACE TEACHING AND LEARNING

The support requires the adaptation of learning resources, activities, and evaluation methods in accordance with the learner's individual needs.

Table 4 sets out some guidelines for supporting the learning of dyslexic learners in the face-to-face classroom (physical classroom).

Table 4

	<b>Guidelines for supporting learners with dyslexia in face-to-face learning (physical classroom)</b>
Learning Activities	<ul style="list-style-type: none"> <li>● Apply a differentiated approach by providing learners the opportunity to demonstrate their knowledge in a specific study discipline in different formats. For example, presentations, cardboard notice boards, and discussions are various forms for dyslexic learners to demonstrate their knowledge without the fear of failure.</li> <li>● Begin with a brief summary of the lesson and make one at the end of the class.</li> <li>● Divide the tasks into parts; do not give the whole task at once.</li> <li>● More time is necessary for the completion of written tasks because a dyslexic learner is slow at reading, planning, writing, and editing a text.</li> <li>● Allow learners with dyslexia to complete in advance some of the tasks requiring more thinking time. Flipped classroom: Teachers either give learners the tasks and activities to get familiar with in advance or let learners do the tasks and activities at home – preferably online,</li> </ul>

	<p>asynchronously, so they can assist them online. When preparing the task description on the VLE you should take into account learner specificities – e.g. provide video instructions or audio instructions, etc.</p> <ul style="list-style-type: none"> <li>• The text must be short and illustrated by pictures or figures as much as possible for better understanding.</li> </ul> <p>The dyslexic learner must not read in front of the class to avoid worry. Reading in front of other learners must be done only if they wish to do so and if they are confident that they know the text well and can read it correctly. Alternatively, you can give them a text prepared in advance and uploaded in the learning management system.</p>
Learning Resources	<ul style="list-style-type: none"> <li>• Adapt the learning resources by using specific non-serif fonts (Verdana, Calibri, Comic Sans, Trebuchet, Arial) larger than standard, (14pt), with more space between the lines and letters.</li> <li>• Prompt the learner toward a more intensive use of the materials uploaded by you in the learning management system (e.g., Moodle) so they can work with them for as long as they need prior to the face-to-face lesson, at home before they have to work with them on specific tasks in class.</li> <li>• Provide an audio recording of the lessons, which can be used by the learner at home. Include slides and an opportunity for listening to key information.</li> <li>• Make sure that the audio recording is of good quality, free of background noise, and that it is possible to control the sound level.</li> <li>• Use “mind maps” to illustrate learning material.</li> </ul>

	<ul style="list-style-type: none"> <li>● The text must be well structured and formatted, ensuring that it is accessible from different devices and specialized reading programs.</li> <li>● Use true text rather than scanned in an image format.</li> <li>● The font and background style, size, and color should be adjustable.</li> <li>● Present the information through different media such as audio and visual elements, in addition to text, which allows dyslexic learners to understand the content at their own pace.</li> <li>● Choose a single color background for resources; avoid patterned backgrounds or distracting images.</li> <li>● Avoid multiple columns.</li> <li>● Provide the resources to these students prior to the face-to-face class so that they can have sufficient time to get familiar with them at home (on the VLE) before working with them to do specific tasks in class (flipped classroom).</li> </ul>
Educational Communication	<ul style="list-style-type: none"> <li>● Establish guidelines for classroom communication.</li> <li>● Speak more slowly and use simple sentences.</li> <li>● Be patient when a learner with dyslexia is speaking; do not press them for time.</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>● Whenever possible evaluate the dyslexic learner orally, not in writing.</li> <li>● If you are examining them in writing, prepare the exam material in larger print.</li> <li>● At the exam, allow them at least 30% more time than the other students to finish their work.</li> <li>● If they must write in the exam, it would be preferable to do it on a computer.</li> </ul>



	<ul style="list-style-type: none"> <li>• In evaluating their written work, do not lower your grade because of spelling or punctuation mistakes.</li> <li>• In view of increasing the success rate of learners, the deadlines set for evaluation tasks should be extendable at the teacher's discretion in order to be completed at home and submitted in a learning management system (e.g. Moodle).</li> <li>• Provide constant personalized feedback on the learner's progress preferably in oral form.</li> <li>• Provide opportunities for reflection on the learned material.</li> <li>• Include a self-assessment test before the completion of a final test.</li> </ul>
Setting	<ul style="list-style-type: none"> <li>• Seat the dyslexic learner close to the teacher.</li> </ul>

### 3.2 GUIDELINES FOR SUPPORTING LEARNERS WITH DYSLEXIA IN A VIRTUAL CLASSROOM (ONLINE SYNCHRONOUS LEARNING)

Table 5 sets out some guidelines for supporting the learning of dyslexic learners in a virtual classroom. Some of the guidelines for face-to-face learning are applicable to learning in a virtual classroom and a VLE.

Table 5

	<b>Guidelines for supporting learners with dyslexia in a virtual classroom /synchronous learning</b>
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Learning Activities	<ul style="list-style-type: none"> <li>● Personalize learning by giving the dyslexic learner an opportunity to apply the self-study knowledge acquired out of class from the provided resources in virtual classroom activities.</li> <li>● Provide assistance in the virtual classroom in cases when the dyslexic learner encounters difficulties with text or word comprehension in their self-study work with the resources.</li> <li>● Make a recording of the session in the virtual classroom so that the dyslexic learner can repeatedly go back to it at their own pace and better acquire the learning content. This will enable them to focus entirely on the lesson and participate more without having to interrupt their activity to take notes during the online session.</li> <li>● Avoid text-based or collaborative synchronous activities. Text-based synchronous online learning activities may have an isolating, demotivating, and disappointing effect on dyslexic learners because of their difficulties with reading, spelling, word order, and argumentation.</li> <li>● Avoid disorganized synchronous discussion, as dyslexic learners are unable to keep pace and participate as actively as the others.</li> <li>● Allow the dyslexic learners to use a text editor as it helps them by underlining spelling and grammar mistakes.</li> <li>● Allow learners with dyslexia to complete some of the tasks requiring more thinking time after the class and to upload the results in the learning management system.</li> </ul>
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Learning Resources	<ul style="list-style-type: none"> <li>• Provide the resources to these learners prior to the face-to-face class to get familiar with at home (on the VLE) so they are able to acquaint themselves with them before using them on specific in-class tasks.</li> </ul>
Educational Communication	<ul style="list-style-type: none"> <li>• Establish guidelines for communication in the virtual classroom.</li> <li>• Avoid synchronous online text messaging as dyslexic learners need more time to read and understand text messages, which prevents their active participation in learning activities.</li> <li>• Increase teacher-learner interaction and group collaboration by providing the dyslexic learner the opportunity to get familiar with the learning content in advance out of class.</li> <li>• Speak clearly and distinctly.</li> <li>• Be patient when a learner with dyslexia is speaking; do not press them for time.</li> <li>• Encourage dyslexic learners to use specialized text-to-speech software (screen reader), which allows fast transformation of written speech into spoken, i.e. the dyslexic will not lag behind the lesson.</li> <li>• Do not use acronyms, abbreviations, and other types of Internet jargon as this causes confusion for dyslexic users.</li> </ul>

Evaluation	<ul style="list-style-type: none"> <li>● Provide alternative forms of examination.</li> <li>● It is recommended that dyslexic learners be examined in oral form.</li> <li>● In view of increasing the success rate of learners the deadlines set for evaluation tasks should be extendable at the teacher's discretion in order to be completed.</li> <li>● Provide constant personalized feedback on the learner's progress preferably in oral form.</li> <li>● Provide opportunities for reflection on the learned material.</li> <li>● Include a self-assessment test before the completion of a final test.</li> <li>● Include audio/video instructions for the exam tasks.</li> </ul>
Setting	<ul style="list-style-type: none"> <li>● Do not allow the increase of learner-created background noise in the virtual classroom.</li> </ul>

### 3.3 GUIDELINES FOR SUPPORTING LEARNERS WITH DYSLEXIA IN AN ASYNCHRONOUS LEARNING MANAGEMENT SYSTEM (LMS)

Table 6 sets out some guidelines for supporting the learning process of dyslexic learners in a learning management system/asynchronous learning.

Table 6

	<p><b>Guidelines for supporting the learning process of dyslexic learners in an asynchronous online learning</b></p>
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Learning Activities	<ul style="list-style-type: none"> <li>• Apply a differentiated approach by providing alternative asynchronous learning activities considering the individual learner’s abilities and extra time for their completion.</li> <li>• It is advisable that the results from the learning activities of dyslexic learners be in oral form. Where possible, require that they upload the results from their study work in the form of an audio file (e.g. answers to questions, poster presentation, etc.)</li> <li>• Provide video/audio dubbing of the learning activity/task instructions on the VLE.</li> </ul>
Learning Resources	<ul style="list-style-type: none"> <li>• Create universally accessible learning content in compliance with the universal design for learning (UDL) guidelines.</li> <li>• Provide an opportunity for multisensory learning by the e-resources on the VLE. The presentation for dyslexic learners will improve significantly if they simultaneously use acoustic and visual stimuli.</li> <li>• Include multimedia (video recordings and PowerPoint lectures with audio recordings) which can be watched out of class at home.</li> <li>• Don’t use text crammed with pictures (or moving and flashing elements) and links, and where navigation requires a screen-reading scroll bar because dyslexic learners encounter difficulties focusing on.</li> <li>• Provide access to the resources prior to the in-class lesson so that dyslexic learners are able to prepare in advance for the in-class activities.</li> <li>• Provide uninterrupted access to the learning materials on the VLE, which the learners will work on in the traditional or virtual classroom.</li> </ul>

Educational Communication	<ul style="list-style-type: none"> <li>• Establish guidelines for communication in the virtual classroom.</li> <li>• in case of large number of participants, create groups or divide the discussion into diverse topics to reduce the number of students participating in a discussion.</li> <li>• Provide different communication channels (forum, chat, videoconference, email, etc.), so that if learners with dyslexia have questions, misunderstanding, or concerns that they will not be able to cope with the set tasks, they can receive immediate additional feedback.</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>• Provide alternative forms of examination.</li> <li>• It is advisable that dyslexic learners are examined in oral form.</li> <li>• In view of increasing the success rate of learners the deadlines set for evaluation tasks should be extendable at the teacher's discretion in order to be completed.</li> <li>• Provide constant feedback on the learner's progress preferably in writing.</li> <li>• Provide opportunities for reflection on the learned material.</li> <li>• Include a self-assessment test before the completion of a final test.</li> </ul>
Virtual Learning Environment	<ul style="list-style-type: none"> <li>• The virtual learning environment should provide the user with the opportunity to customize it to avoid information overload, for example, by using a calendar.</li> <li>• Resources and tasks should be clearly numbered and named.</li> <li>• The names of the separate resources and folders should correspond to their content.</li> </ul>

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|  | <ul style="list-style-type: none"> <li>• The VLE must be compatible with the screen readers.</li> </ul> |
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#### 4. VISUAL IMPAIRMENTS

Students with visual impairments are also an inhomogeneous group which covers learners with total or partial visual loss – visually impaired (partial vision loss) and blind (total or severe vision loss). It is known that the visual system provides rich input of information, between 80 and 90% of the information that an individual receives about the surrounding world. The cognitive system processes it and stores it in the form of visual images, from which ideas and concepts form. It is mostly information perception and processing that are problematic for visually impaired learners. In addition, visual impairment in varying degrees leads to specificities in cognitive ability, and verbal communication, manifested mainly in the understanding and use of non-verbal communication (facial expression, body language) and limited interaction with the social environment. Some authors draw attention to specificities and difficulties in the formation of representations (concepts) (Балканска, 2013; Левтерова-Гаджалова, 2002; Радулов and Цветкова-Арсова, 2011). As argued by Radulov and Tsvetkova-Arsova (2011), in general, the visually impaired form representations that are highly narrowed, fragmented, and inadequate, with a low level of generalization, schematism, verbalism (the inability to relate the words they use to real representations of the object and the subject) among others, which leads to difficulties in learning, the psycho-emotional sphere and daily activities. Speech communication exhibits specificities: verbal and semantic speech aspects (distancing the word from its concrete meaning), dyslalia – stigmatism, lambdacism, rotacism, and others, change in the tempo and strength of the voice, stuttering, insufficiency or lack of speech expressiveness. These speech impairments affect written expression as well.

The visual function plays an important role in the overall spatial orientation of the individual, for their cognitive and emotional development. One of the major barriers for visually impaired people is related to mobility due to coordination and orientation impairments, which makes it difficult to form spatial representations. It is important to note that visual impairment affects the personality in varying degrees depending on a

number of factors such as the degree of impairment, onset age, early diagnostics, early intervention (the age at which the intervention starts), family environment, adequate intervention and training on the part of experts (Балканска, 2013).

Visual deprivation leads to some deviations in the neuropsychological development of the individual. They are most often characterized by insufficient understanding of the memorized content, speed of memorization, difficulties in remembering material that is not meaningfully coherent, delays in the development of visual-figurative thinking, the formation of ideas, and difficulty in attention distribution and focus in spatial orientation.

Depending on their individual characteristics, some learners with visual impairments in higher education cope easily and without problems, but others have extremely great difficulties, which may place them in an isolated position or obstruct their graduation process. They need a differentiated learning approach that takes into consideration their specificities (cognitive and psychological). This calls for enhancing the specific knowledge, skills, and competencies of university teachers for working with this group of learners.

#### 4.1 GUIDELINES FOR SUPPORTING VISUALLY IMPAIRED LEARNERS IN A FACE-TO-FACE TEACHING AND LEARNING

The support involves timely assistance provision through an adequate choice of different approaches and adaptation of individual learning components.

Table 7 sets out some guidelines for supporting the learning process of learners with visual impairments in the face-to-face classroom (physical classroom).

Table 7

	<p><b>Guidelines for supporting visually impaired learners in face-to-face learning (physical classroom)</b></p>
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Learning Activities	<ul style="list-style-type: none"> <li>● Involve the visually impaired learner in all activities.</li> <li>● Encourage cooperative learning activities. Provide learners the opportunities to work in pairs or small groups.</li> <li>● Teachers either give learners the tasks and activities to get familiar with in advance or let learners do the tasks and activities at home – preferably online, asynchronously, so they can assist them online. When preparing the task description on the VLE you should take into account learner specificities – e.g. provide audio instructions, etc.</li> <li>● Be prepared to set an alternative task of the same scope and level of difficulty.</li> <li>● Set extra time for the completion of each learning task or activity.</li> <li>● Provide learners sufficient time to get familiar with the text so they can adequately organize their activity related to the set tasks.</li> <li>● Give clear instructions.</li> <li>● Learners using a screen reader need extra time to transition between tasks.</li> <li>● During the activity, learners will not be able to check questions as they listen, so it is important to break the task into smaller parts to reduce the amount of information they have to remember per task.</li> <li>● Provide them the opportunity to use assistive devices.</li> </ul>
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<p>Learning Resources</p>	<ul style="list-style-type: none"> <li>● Provide the resources to these learners prior to the face-to-face class so they can have sufficient time to get familiar with them at home (on the VLE) before doing the set tasks in class.</li> <li>● Provide learning resources in audio files as an alternative to text-based learning resources. They are useful for providing learning content on a topic, forming a discussion or giving instructions.</li> <li>● For the visually impaired learners provide resources in larger print and an appropriate background color.</li> <li>● Include an audio description of the images.</li> <li>● Make sure that the audio recording is of good quality, free of background noise, and that it is possible to control the sound level.</li> <li>● The font and background style, size, and color should be adjustable.</li> <li>● Include learning materials in Braille and tactile graphics for visually impaired learners who use them.</li> </ul>
<p>Educational Communication</p>	<ul style="list-style-type: none"> <li>● Establish guidelines for classroom communication.</li> <li>● Speak in a clear and loud voice without turning around so that the learner can hear you.</li> <li>● While writing on the board, read aloud so that the visually impaired learner can write it down.</li> <li>● Allow visually impaired learners to use a voice recorder or another personal audio recorder.</li> </ul>

Evaluation	<ul style="list-style-type: none"> <li>● Provide special conditions for examination and evaluation via assistive means and technologies.</li> <li>● Where possible, evaluate the visually impaired learners in oral form instead of written.</li> <li>● Provide extra time for written examinations (the regular time plus half, which is usually accepted as the norm) so that set tasks and exercises are completed.</li> <li>● Use larger print for the examination's written materials</li> <li>● It would be beneficial for the visually impaired learner if the tasks especially long-term projects and theses are assigned as early as possible.</li> <li>● In view of increasing the success rate of learners the deadlines set for evaluation tasks should be extendable at the teacher's discretion in order to be completed at home and submitted via the virtual learning environment (e.g. Moodle).</li> <li>● Provide constant personalized feedback on the learner's progress preferably in oral form.</li> <li>● Provide opportunities for reflection on the learned material.</li> </ul>
Setting	<ul style="list-style-type: none"> <li>● Seat the visually impaired learner close to the teacher.</li> <li>● Consider adapting the learning environment, e.g. lightning, contrast between materials, and the use of tactile graphics in the classroom with a view to encourage learner autonomy and mobility.</li> <li>● Make sure the classroom is quiet as visually impaired learners have difficulty distinguishing voices in noisy environments.</li> </ul>

#### 4.2 GUIDELINES FOR SUPPORTING LEARNERS WITH VISUAL IMPAIRMENTS IN A VIRTUAL CLASSROOM (ONLINE SYNCHRONOUS LEARNING)

Table 8 sets out some guidelines for supporting the learning process of learners with visual impairments in synchronous learning in a virtual classroom.

Table 8

	<b>Guidelines for supporting learners with visual impairments in a virtual classroom/synchronous learning</b>
Learning Activities	<ul style="list-style-type: none"> <li>• Personalize learning by giving the visually impaired learner an opportunity to apply the self-study knowledge acquired out of class from the provided resources in virtual classroom activities.</li> <li>• Make a recording of the session in the virtual classroom so that the visually impaired learner can repeatedly go back to it at their own pace and better acquire the learning content. Thus, during the online session, they will be able to focus entirely on the lesson and participate more without having to interrupt their activity to take notes.</li> <li>• Allow visually impaired learners to complete some of the tasks requiring more thinking time after the class and to upload the results in the Learning management system.</li> </ul>
Learning Resources	<ul style="list-style-type: none"> <li>• Provide the resources to these students prior to the synchronous so that they can have sufficient time to get familiar with them at home (on the VLE) before working with them to do specific tasks in class.</li> <li>• The VLE learning materials must be compatible with the screen readers (e.g. JAWS, NVDA, Voice Over, Narrator, TalkBack, etc.).</li> </ul>

Educational Communication	<ul style="list-style-type: none"> <li>• Establish guidelines for communication in the virtual classroom.</li> <li>• Increase teacher-learner interaction and group collaboration by providing the visually impaired learner the opportunity to get familiar with the learning content in advance out of class.</li> <li>• Speak clearly and distinctly.</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>• Provide alternative forms of examination.</li> <li>• It is advisable that visually impaired learners are examined in oral form.</li> <li>• In view of increasing the success rate of learners the deadlines set for evaluation tasks should be extendable at the teacher's discretion in order to be completed.</li> <li>• Provide constant personalized feedback on the learner's progress preferably in oral form.</li> <li>• Include a self-assessment test before the completion of a final test.</li> <li>• Provide audio/video instructions for the examination tasks.</li> </ul>
Setting	<ul style="list-style-type: none"> <li>• Do not allow the increase of learner-created background noise in the virtual classroom.</li> </ul>

### 4.3. GUIDELINES FOR SUPPORTING LEARNERS WITH VISUAL IMPAIRMENTS IN AN ASYNCHRONOUS LEARNING MANAGEMENT SYSTEM (LMS)

Table 9 sets out some guidelines for supporting the learning process of learners with visual impairments in asynchronous learning in a virtual learning environment.

Table 9

	<b>Guidelines for supporting the learning process of learners with visual impairments in asynchronous online learning</b>
Learning Activities	<ul style="list-style-type: none"> <li>● Apply a differentiated approach by providing alternative asynchronous learning activities considering the individual learner's abilities and extra time for their completion.</li> <li>● Provide video/audio dubbing of the learning activity/task instructions on the VLE.</li> </ul>
Learning Resources	<ul style="list-style-type: none"> <li>● Create universally accessible learning content in compliance with the universal design for learning (UDL) guidelines.</li> <li>● Use accessibility-testing tools that identify accessibility issues and make suggestions to help ensure access to content.</li> <li>● Follow the basic accessibility functions for visually impaired people (e.g. brightness, color, fonts, reading distance, elements identification, content's complexity, etc.)</li> <li>● Add alternative text and audio descriptions to the graphic elements that are not subject to automatic reading or description by the screen reading devices such as non-decorative images, tables, diagrams, video clips, etc.</li> </ul>

	<ul style="list-style-type: none"> <li>● Provide access to the resources prior to the in-class lesson (a face-to-face or virtual classroom) so that visually impaired learners are able to prepare in advance for the in-class activities.</li> <li>● For the asynchronous activities, all materials must be provided in advance and uploaded to the VLE.</li> <li>● Provide uninterrupted access to the learning materials on the VLE, which the learners will work on in the traditional or virtual classroom.</li> <li>● Use the available open educational resources. Their aim is to remove barriers to content accessibility and allow for the free sharing of accessible educational content that meets the needs of learners with disabilities to increase their opportunities for electronic inclusion in educational environments.</li> <li>● Use clear, consistent layouts, navigation, and organizational charts to present content. Keep paragraphs short and avoid flashing content.</li> <li>● Use descriptive wording for the text of the hyperlink (For example, “CREATE a website” rather than “click here”).</li> <li>● Use high-contrast color patterns distinguishable by colorblind people (a color-contrast web resource). Do not use only color to express or render meaning.</li> <li>● There should be high contrast between background and foreground elements, such as text and graphics so that visually impaired learners can distinguish the elements. The most commonly used high contrast is black on white.</li> <li>● The print should be larger than usual. It is recommended that the font size be at least 18 pixels.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Letters should be easy to read, so a non-serif font is recommended, as it does not add ornaments to letters and makes the text easy to read. Arial and Tahoma fonts are recommended.</li> <li>• If you use a graphic element, a caption should describe what is in the picture.</li> <li>• Make an audio-audio recording of the whole information (all the recorded information should be available in audio form, despite the fact that the person may use a screen reader as well).</li> </ul>
Educational Communication	<ul style="list-style-type: none"> <li>• Establish guidelines for communication in the virtual environment.</li> <li>• Provide different communication channels (forum, chat, videoconference, email, etc.), so that if visually impaired learners have questions, misunderstanding, or concerns that they will not be able to cope with the set tasks, they can receive immediate additional feedback.</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>• Provide multiple ways for learners to demonstrate what they have learned (e.g. different kinds of test tasks, portfolios, presentations, discussions on a single topic).</li> <li>• Provide alternative forms of examination.</li> <li>• Provide constant feedback on the learner's progress preferably in writing.</li> <li>• Provide opportunities for reflection on the learned material.</li> </ul>



Electronic Learning Environment	<ul style="list-style-type: none"> <li>● Select online learning platforms and applications that allow the use of accessibility functions (enlarging and selecting fonts, adjusting color contrast and display preferences, adapting page content, simplifying interfaces, eliminating redundant details, using keyboard navigation, etc.).</li> <li>● Ensure compatibility with assistive technologies, enabling the correct presentation of digital educational content in a variety of ways that meet better the needs and preferences of visually impaired learners.</li> <li>● Resources and tasks should be clearly numbered and named.</li> <li>● The names of the separate resources and folders should correspond to their content.</li> </ul>
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In conclusion, it is important for the teacher to know the specific needs and preferences of their SEND learners and apply a personalized approach when using the flipped classroom method. Learners with SEND are an extremely heterogeneous group, which necessitates the application of adaptive pedagogical approaches and improvement of pedagogical and technological accessibility. This poses new challenges for higher education institutions, which must respond adequately to the needs of students with various disabilities, to offer an accessible and motivating educational environment, built on the principles of equality of students, which leads to successful professional and career development. The flipped classroom strategy has more advantages for learners with SEND and suggest implementing this effective innovative pedagogical approach in diverse higher education contexts. It gives equal chance and access to students with different types of disorders to education highly adapted to their individual potential and specific needs.



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