

DigIn – Digitalisation and inclusive education

Leaving no one behind in the digital era



In(novation)–Check

Designing learning environments inclusive and accessible: A guide



The ideas presented in this document are a result of the collaboration of the following organizations and people:

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Many teachers and other members of staff in each of these partner organizations and schools contributed to the project. While it is not possible to name them all individually, we would like to acknowledge their contributions and thank them.

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The DigIn Project

"Digitalisation and inclusive education: Leaving no one behind in the digital era" (DigIn), a two-year project (2021-2023) funded by the European Union, involved one school, three universities, and two NGOs in four countries: Austria, Bosnia and Herzegovina, Italy, and North Macedonia.

During the COVID-19 crisis and its aftermath, teachers have had to adapt to new pedagogical environments, which has forced them to develop new pedagogical approaches and modes of delivery. This has been even more the case when it has come to teaching students with disabilities because they have been (even more) excluded from digital education.

And this is where the DigIn project comes in.

The focus of the project was to strengthen teachers' profiles. Because most teachers have not been trained, have not had sufficient guidance, and have lacked resources on how best to include students with disabilities in digital education, the DigIn project aimed to empower and professionalize teachers from various age groups and different school types in the fields of both digital education and inclusive education.



The In(novation)–Check

Aim

The In-Check Tool aims to support teachers in designing inclusive and accessible learning environments in line with UDL principles and guidelines.

How to use the Tool

The In-Check Tool is composed of two checklists: One focuses on teaching settings and one on teaching materials. The "Planning inclusive settings" checklist mainly follows UDL guidelines (and corresponding checkpoints; CAST, 2018; Johnson–Harris, 2014) and has various examples on how to apply them in class. The "Creating/choosing accessible materials" checklist focuses on how to design and/or select accessible materials (of different kinds) for teaching and learning.

Both checklists share the same structure:

- They include several items (left column).
- For each item, several indicators (including examples) are provided (right column).

The items of the "Planning inclusive settings" checklist are organized from basic to more complex actions. They are subdivided in three levels (items no. 1–5, 6–9, 10–14; they are also highlighted by the different color shades used for the three different sections).

Similarly, the "Creating accessible materials" checklist is subdivided in four sections and follows a structure from basic to more specific rules related to specific formats (like video). Here, each section should be integrated and added on to the previous one: The items for written information should be considered for digital texts as well; the items for audio information should be considered for video, etc.

The more items of the "Planning inclusive settings" checklist you (i.e., teachers) manage to consider and/or implement, the more inclusive your designed learning environments will be. We advise considering/implementing one item at a time, starting with the first/simpler and gradually moving towards the more complex ones. Of course, you do not need to apply all the indicators to consider an item criterion "met." They are just suggestions intended to stimulate the reflection during lesson planning.

Planning inclusive settings

1	<p>Learning content and materials are created and displayed in a way that is accessible to a wide range of users.</p>	<p>See "Creating/choosing accessible materials" checklist.</p>
2	<p>Learning content is presented in multiple formats.</p>	<ul style="list-style-type: none"> <input type="radio"/> New information (e.g., when introducing a new concept, unit, etc.) is presented in varied formats, such as a lecture, activity-based exploration, demonstration, etc. <input type="radio"/> Different media are used for the display of information (orally, digital print, hard copy print, graphic images, video, 3D representation, etc.). <input type="radio"/> Alternatives for audio perception are provided (e.g., audio transcripts, captions for videos, visual/graphic supports, etc.). <input type="radio"/> Alternatives for visual perception are provided (e.g., audio text, Braille text, objects, etc.). <input type="radio"/> Information is displayed in a flexible format so that perceptual features can be adapted (e.g., text size/font, contrast, layout, color, volume or rate of sound, etc.). <input type="radio"/> Other _____
3	<p>Learning content addresses learners' interests and preferences.</p>	<ul style="list-style-type: none"> <input type="radio"/> Learners' wide range of characteristics, abilities, backgrounds, and experiences are taken into account when designing activities and assignments. <input type="radio"/> Class content includes both elements of novelty and links with previous knowledge and experiences. <input type="radio"/> Activities and materials that are attractive and that reflect learners' interests are integrated in the lesson (e.g., students have the opportunity to choose from a broader topic a sub-theme of their interest to focus on). <input type="radio"/> Class content is culturally/socially relevant and responsive. <input type="radio"/> Other _____

4	Learners have multiple options to choose from for learning activities .	<ul style="list-style-type: none"> <input type="radio"/> Learners are offered a range of different assignments/ tasks to choose from to practice their skills and to foster understanding and knowledge (e.g., writing, oral presentation, drawing, creating videos, posters, storyboards, comics, etc.) <input type="radio"/> Learners are encouraged to engage in learning activities of their own creation and innovation. <input type="radio"/> Learners have access and can choose to use different tools supporting learning activities (e.g., software, web applications, calculators, text-to-speech, hyperlinked glossaries, concept mapping tools, spell/grammar checkers, note-taking apps, etc.). <input type="radio"/> Support is provided for how to use support tool(s) effectively. <input type="radio"/> The digital tools used/provided for learning activities are accessible and usable and/or meet the students' needs (see Tool-Check). <input type="radio"/> Other _____
5	Learners have multiple options to choose from for assessment activities .	<ul style="list-style-type: none"> <input type="radio"/> Learners are offered a range of different assignments/ tasks to choose from to demonstrate their skills, understanding and knowledge (e.g., writing, oral presentation, drawing, creating videos, posters, storyboards, comics, etc.). <input type="radio"/> Learners are encouraged to engage in learning activities of their own creation and innovation. <input type="radio"/> Learners have access and can choose to use different tools supporting assessment activities (e.g., software, web applications, calculators, text-to-speech, hyperlinked glossaries, concept mapping tools, spell/grammar checkers, note-taking apps, etc.). <input type="radio"/> The digital tools used/provided for assessment activities are accessible and usable and/or meet the students' needs (see Tool-Check). <input type="radio"/> Support is provided for how to use tool(s) effectively. <input type="radio"/> Other _____

6	<p>Language and symbols understanding are supported in many ways.</p>	<ul style="list-style-type: none"> ○ The necessary/relevant vocabulary is provided at the beginning of the lesson/activity/learning unit (e.g., before starting the lesson brainstorming activities, spider diagrams and mind maps, matching, transcoding activities can be implemented). ○ Text syntax and structure are clarified. ○ Vocabulary/phrase/sentence/symbols support is provided via hyperlink, footnotes, etc. ○ Vocabulary support is provided in language-free mode (e.g., pictograms, pictures, etc.) ○ Glossaries with key words translated in learners' first language (also in sign languages) are provided. ○ Access to digital translation tools is guaranteed and/or links to multilingual glossaries on the web are provided. ○ Audio recordings with correct word pronunciation are provided. ○ Other _____
7	<p>Relevance and value of learning goals are emphasized.</p>	<ul style="list-style-type: none"> ○ Teachers convey high expectations for all students to support their achievement (e.g., showing a positive attitude towards all students' learning). ○ Learners are encouraged to relate new concepts and information to their own experiences and to society. ○ Learners are involved in setting their own personal learning goals. ○ Activities are designed so that students are asked to produce a realistic learning outcome: in an authentic context, communicating to a real audience, and reflecting a clear communicative purpose (e.g., role-play activities, project-based learning, problem-based learning, etc.). ○ Long-term learning goals are subdivided into short-term objectives. ○ Other _____

8	Cooperative learning is implemented.	<ul style="list-style-type: none"> <input type="radio"/> Different learning contexts are alternated in learning activities (e.g., in-pairs, large groups, small groups, heterogeneous groups). <input type="radio"/> Opportunities for flexible grouping are provided (e.g., temporary groups, guided groups, turn-and-talk stations, station rotation models). <input type="radio"/> Learners can choose autonomously between different grouping options (e.g., in-pair vs group, individual vs group). <input type="radio"/> Peer interactions are encouraged to promote students' social development, mutual support, and relationships. <input type="radio"/> Other _____
9	Feedback is frequent, timely, and specific.	<ul style="list-style-type: none"> <input type="radio"/> Prompt, ongoing, and instructive feedback is given to support learning and self-assessment. <input type="radio"/> Feedback points out learners' progresses and where their effort resulted in success. <input type="radio"/> Emphasis is put on effort/improvement rather than grades. <input type="radio"/> Differentiated/personalized feedback is provided. <input type="radio"/> Other _____
10	Learners' content comprehension is supported in many ways.	<ul style="list-style-type: none"> <input type="radio"/> Background knowledge is supplied/activated. <input type="radio"/> Lists of key terms and definitions are given. <input type="radio"/> Patterns/relationships/critical features/big ideas are highlighted. <input type="radio"/> Prompts or cues for steps in a process are provided. <input type="radio"/> Checklists/graphic organizers/concept maps are provided and supported. <input type="radio"/> Learning strategies are taught/reinforced. <input type="radio"/> Review is constantly provided (e.g., after explaining a concept, during and after activities, etc.). <input type="radio"/> Other _____

11	<p>Learning content, materials, and supports are always available for learners to access independently.</p>	<ul style="list-style-type: none"> <input type="radio"/> An electronic archive of class materials is available (e.g., in Google Drive, Dropbox, etc.). <input type="radio"/> Lessons are recorded and posted in a shared folder/platform. <input type="radio"/> A list of (digital) tools that learners can use as support is provided (with links to download/find them and to material explaining how to use them). <input type="radio"/> Other _____
12	<p>Activities are structured in different levels of complexity.</p>	<ul style="list-style-type: none"> <input type="radio"/> The degree of difficulty/complexity of activities can be differentiated. <input type="radio"/> Learners can choose among different available tools and scaffolds. <input type="radio"/> A wide range of acceptable performance is admitted. <input type="radio"/> Different types of response are accepted (e.g., non-verbal, single/multiple response, individual/group response, etc.). <input type="radio"/> Other _____
13	<p>Learners' executive functions are supported in many ways.</p>	<ul style="list-style-type: none"> <input type="radio"/> Learners are supported in managing their time/workspace. <input type="radio"/> Learners are supported in effectively employing attention skills. <input type="radio"/> Learners are supported in setting personal learning goals and planning how to achieve them. <input type="radio"/> Learners are supported in organizing materials/resources/tools, etc. <input type="radio"/> Learners are assisted in becoming skillful at planning and decision making about their own learning based on clear and consistent criteria. <input type="radio"/> Other _____

14	<p>Learners' self-regulation skills are supported in many ways.</p>	<ul style="list-style-type: none"> ○ Students are offered different scaffolds (e.g., rubrics, guides, reminders, checklists, feedback, etc.) to reflect on personal ambitions, objectives, emotions and motivations. ○ Systematic observation and diverse and developmentally appropriate formative tools are used to reflect on the process and learning outcomes. ○ Students are taught a range of strategies they can apply when they get stuck (i.e., their problem-solving skills are supported). ○ Students are supported to recognize how their emotional status impacts their learning and are provided with strategies to manage emotions. ○ Students are offered a variety of options, scaffolds and strategies to support self-assessment (e.g., task checklists, scheduled time for self-reflection, peer reflection, frequent check-in points, self-assessment templates, etc.). ○ Other _____
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Creating/choosing accessible materials

1. Written information		
1.1	Choose a format that is easy to read, easy to follow, and easy to photocopy (e.g., A4, A5).	
1.2	Make sure text backgrounds do not make the document hard to read.	<ul style="list-style-type: none"> <input type="radio"/> Avoid pictures, patterns, etc. <input type="radio"/> Make sure there is enough color contrast between the text and its background. <input type="radio"/> Avoid dark backgrounds (or pay attention that the text is clear enough to be easily read).
1.3	Use a clear and easy-to-read font.	<ul style="list-style-type: none"> <input type="radio"/> Choose a font with clear letter shapes (e.g., Verdana, Tahoma, Andika, etc.). <input type="radio"/> Avoid serif fonts (e.g., Century, Times New Roman, etc.). <input type="radio"/> Choose a font size that is adequate (e.g., minimum 11-12). <input type="radio"/> Avoid underlining, italics, special writing designs, and/or writing in color. <input type="radio"/> For emphasis use bold. <input type="radio"/> Avoid writing whole words in capitals. <input type="radio"/> Avoid using special characters (\, &, <, §, #) <input type="radio"/> Avoid using initials/abbreviations.
1.4	Use simple layouts/designs to maximize readability.	<ul style="list-style-type: none"> <input type="radio"/> Align the text to the left of the page (do not use the justified text alignment). <input type="radio"/> Do not use columns. <input type="radio"/> Make sure there is enough space between lines (e.g., line spacing 1.5 or more). <input type="radio"/> Do not indent the text. <input type="radio"/> Avoid narrow margins.

1.5	Keep the text structure simple.	<ul style="list-style-type: none"> <input type="radio"/> Use headings that are clear and easy to understand. <input type="radio"/> Avoid too many layers of subtitles or bullet points. <input type="radio"/> Leave space between paragraphs.
1.6	Use visual/graphic information to make the text easier to understand.	<ul style="list-style-type: none"> <input type="radio"/> Put images next to the text to describe what it is about. <input type="radio"/> Choose images that are clear, easy to understand and adjusted to the text/document target (e.g., children). <input type="radio"/> When using graphs (or tables) make them simple and explain them in the text.
2. Digital information		
2.1	Always provide digital (customizable) alternatives for printed material.	
2.2	The content presented is clear and easy to understand.	<ul style="list-style-type: none"> <input type="radio"/> Use clear and consistent layouts to present content. <input type="radio"/> The content is clearly structured. <input type="radio"/> Provide a table of contents for longer documents. <input type="radio"/> Avoid flashing content.
2.3	Insert meaningful hyperlinks (URL).	<ul style="list-style-type: none"> <input type="radio"/> Always activate the links. <input type="radio"/> Use short URL to reduce long links (e.g., using services like bitly.com). <input type="radio"/> Create descriptive hyperlinks so that the content of the linked resource is clarified (e.g., put a link in correspondence to an explanatory word). <input type="radio"/> Give hyperlink text a different color from the rest of the text and underline it. <input type="radio"/> Mention in the text if a file is linked to the URL (e.g., a PDF document).
2.4	Choose accessible formats for digital information.	<ul style="list-style-type: none"> <input type="radio"/> Avoid or minimize use of PDF files (use the original format instead: Word, HTML, or text). <input type="radio"/> If you use PDF documents, create them in a way that is accessible (e.g., when you export the document, select the option PDF/UA Universal Access or ISO 14289). <input type="radio"/> Use the available accessibility checker of the file/software you are working with (e.g., Word).

2.5	Format electronic documents so that they can be read by a screen reader.	<ul style="list-style-type: none"> ○ Identify the language of the document. ○ Use built-in title, subtitle, and heading styles (for example, in Word) to structure the document. ○ Use preset formats such as bullet points, numbering, and tables. ○ Add image descriptions to all essential images and charts (e.g., in Word, with the function "Edit Alt Text"). ○ Fill out document properties (author, title, subject, and keywords) using the correspondent software option (e.g., Word). ○ When exporting a document into a PDF, make sure accessibility features such as tagging are turned on when saving (e.g., Word).
3. Audio information		
3.1	The audio content is clear and easy to understand.	<ul style="list-style-type: none"> ○ The person who is speaking has clear pronunciation. ○ The person who is speaking speaks slowly and clearly. ○ The person who is speaking uses clear language (e.g., avoids or explains jargon, acronyms, and idioms). ○ The person who is speaking provides redundancy for sensory characteristics. ○ People have enough time to understand the information.
3.2	The sound is clear.	<ul style="list-style-type: none"> ○ Audio quality is high. ○ Background sounds are minimized or eliminated (or can be turned off).
3.3	Make sure to offer alternatives to audio information.	<ul style="list-style-type: none"> ○ All prerecorded audios must have a transcription of all meaningful sounds (dialogs, narration, etc.).

3.4	Offer audio control to users.	<ul style="list-style-type: none"> <input type="radio"/> Audio can be paused and stopped. <input type="radio"/> Fast rewind and forward functions are provided. <input type="radio"/> Audio volume can be adjusted. <input type="radio"/> Audio speed can be customized. <input type="radio"/> Audio frequency can be changed with an equalizer.
3.5	Choose a media player with accessibility support.	<ul style="list-style-type: none"> <input type="radio"/> The media player presents interactive transcripts. <input type="radio"/> The media player has keyboard-accessible fast forward, rewind, and pause functions.
4. Video information		
4.1	Video content is clear and easy to understand.	<ul style="list-style-type: none"> <input type="radio"/> Audio and video quality is high. <input type="radio"/> If there is text displayed on the video, it is large enough to be read easily. <input type="radio"/> Colors are clearly distinguishable from one another. <input type="radio"/> The voice track and background music/sounds are well balanced and do not make the video difficult to understand. <input type="radio"/> Avoid fast flashing content.
4.2	Make sure to offer alternatives to audio information.	<ul style="list-style-type: none"> <input type="radio"/> The video is provided with captions. <input type="radio"/> The video is provided with transcripts. <input type="radio"/> The video is provided with audio descriptions.
4.3	Captions are easy to read and understand.	<ul style="list-style-type: none"> <input type="radio"/> The viewers have enough time to read the captions <input type="radio"/> The contrast between the captions and the background should be high. <input type="radio"/> The captions follow the guidelines for written information (should be easy to read).

4.4	Offer video control to users.	<ul style="list-style-type: none"> ○ Video can be paused and stopped. ○ Audio volume can be adjusted. ○ The video provides fast rewind and forward functions. ○ Avoid automatic playing of video.
4.5	The media player used is accessible (e.g., QuickTime, RealPlayer, and YouTube).	<ul style="list-style-type: none"> ○ The video player chosen supports captions and audio descriptions. ○ Video files are embedded or displayed in a player that can be accessed by a screen reader via keyboard prompt. ○ The player allows media to be controlled with keyboard shortcuts.

References

UDL Fidelity Tool (UDL-FT) – in Johnson-Harris, K. M. (2014). The effects of universal design for learning on the academic engagement of middle school students. Southern Illinois University at Carbondale.

Murawski, W. W., & Scott, K. L. (Eds.). (2019). What really works with Universal Design for Learning. Corwin Press.

CAST (2018). Universal Design for Learning Guidelines version 2.2. Retrieved from: udlguidelines.cast.org
(last accessed 10th October 2022)

Inclusion Europe (2010). Easy-to-read standards guidelines. Retrieved from: www.inclusion-europe.eu/easy-to-read-standards-guidelines
(last accessed 10th October 2022)

Burgstahler, S. (no date). 20 Tips for Teaching an Accessible Online Course. Retrieved from: www.washington.edu/doi/20-tips-teaching-accessible-online-course
(last accessed 10th October 2022)

ICT for Information Accessibility in Learning. Guidelines for Accessible Information. Retrieved from: www.ict4ial.eu
(last accessed 10th October 2022)

Web Accessibility Initiative (WAI), 2021. Making Audio and Video Media accessible. Retrieved from: www.w3.org/WAI/media/av
(last accessed 10th October 2022)

NC State University. IT Accessibility. Retrieved from: accessibility.oit.ncsu.edu/accessible-hyperlinks
(last accessed 10th October 2022)

UNICEF (2021). Accessibility toolkit for digital learning materials. Retrieved from: accessibledigitallearning.org/resource/accessibility-toolkit
(last accessed 10th October 2022)

European Agency for Special Needs and Inclusive Education (2015). Guidelines for Accessible Information. ICT for Information Accessibility in Learning (ICT4IAL). Retrieved from: www.european-agency.org/sites/default/files/Guidelines%20for%20Accessible%20Information_EN.pdf
(last accessed 10th October 2022)



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