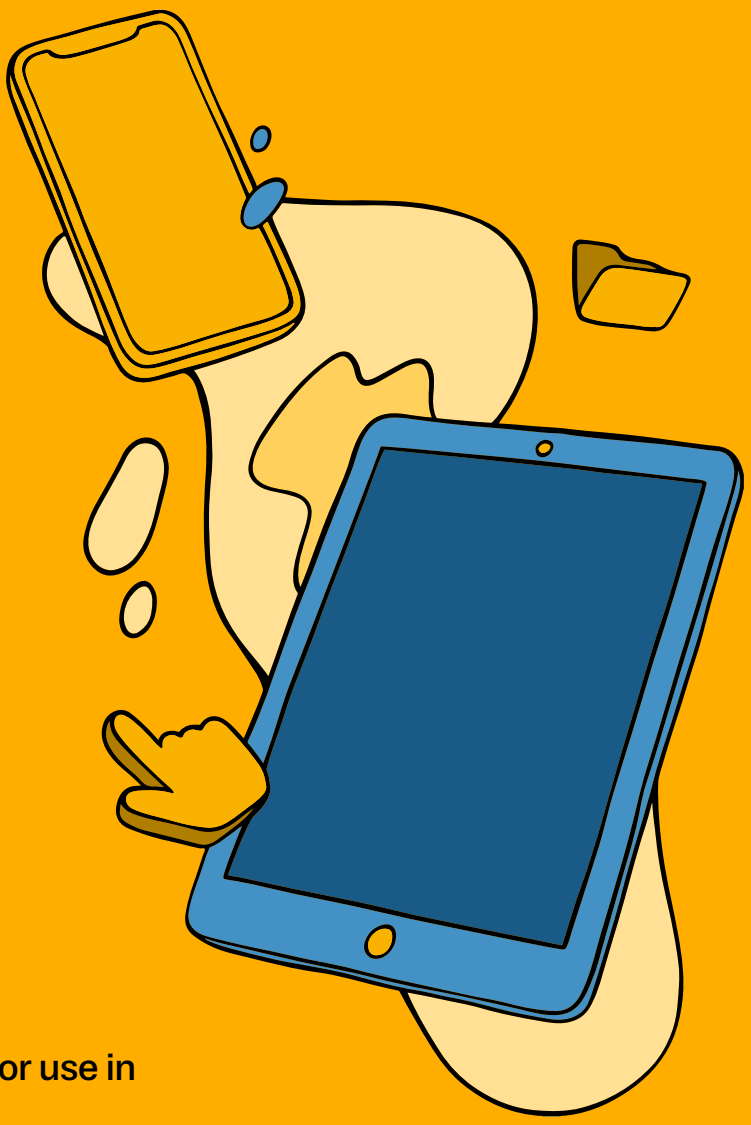
DigIn—Digitalisation and inclusive education

Leaving no one behind
in the digital era



To(ol)—Check

Instrument for checking digital tools for use in inclusive education: A manual

DigIn

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

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Content

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.

What is the Tool-Check?

The Tool-Check is an instrument that lets teachers check the usability and accessibility of digital tools for the (inclusive) classroom. This is important because:

- **not all digital tools are suitable for all students,**
- **all students should be able to fully participate in (digital) inclusive education,**
- **and all students should be given equal access to information.**

The Tool-Check focuses on eight areas where students might need support and helps you:

- **reflect on the students' need for support,**
- **raise awareness of what accessibility and usability of digital tools means in the context of your classroom,**
- **and select a digital tool that meets the needs of the students.**

Do you need prior knowledge for the Tool-Check?

No.

How does the Tool-Check work?

The Tool-Check has three steps:

Step 1: Reflect on individual student needs in your classroom:

- In what areas (e.g., auditive, visual, comprehension) do students need support?

Step 2: Visualize students' needs in the Tool-Check-wheel:

- Write the results of the reflection into the Tool-Check-wheel. This will create a poster.

Step 3: Answer questions about accessibility and usability:

- For all of students in your classroom to be able to use it, what does a digital tool need?

This manual provides step-by-step instructions, practical tips, and background information on how to conduct a Tool-Check.

Step 1: Reflect on individual student needs in your classroom

Good to know:

Not every tool is suitable for all students. It is your responsibility as a teacher to choose a tool that is appropriate for all students. All students should have equal access to and interaction with the information being taught.

What to do:

- The following eight areas provide an overview of possible students' needs.
- Read the descriptions of the eight areas and mark the items that apply to at least one student (e.g., with „✔“ for high need and „~“ for low need).
- Take notes and add special requirements that are not mentioned here.

1: Perception of visually presented content

To perceive information from digitally presented visual content such as text, videos, graphics, animations or images, students may require:

- ◯ A customized display with
  - ◯ Specific fonts or typefaces
  - ◯ Larger display and/or zoom-function
  - ◯ More contrast between the background and the text/image
  - ◯ Other color compositions
- ◯ Clearly structured texts with reference and navigation points
- ◯ Alternative texts and descriptions for images, videos, graphics, animations, or tables
- ◯ A braille display
- ◯ A screen reader
- ◯ Additional audio information and auditory cues
- ◯ Text-to-speech software
- ◯ Other

2: Perception of auditorily presented content

To access digitally presented audio and video content, students may require:

○ Specific sound settings like a higher audio volume, a better signal/noise ratio, slower rate of speech/sound, and/ or specific pitch of aurally perceived content

○ Additional information like text equivalents in the form of captions (e.g., subtitles for videos) or automated speech-to-text (voice recognition) for spoken language

○ Visual support (pictograms, diagrams, charts, notations, music, sound)

○ Written transcripts for videos

○ Translation into sign language

○ Other

3: Physical action for navigation and interaction with a tool

To get access to or interact with and use a tool, students may require alternative navigation options (instead of control by touchpad or mouse), such as:

○ Control by keyboard shortcuts and alternate keyboard commands

○ Control by a joystick or head stick

○ Control by buttons (e.g., BIGmack)

○ Control by voice commands

○ Control by eye-tracking

○ Alternative keyboard

○ Overlays for touch screens and keyboards

○ Switch and scanning options for access

○ Other

4: Comprehension of perceived information

To learn and understand the presented content, students may require proper design and presentation of content and information, such as:

- ○ Differentiated use of language (e.g., different levels of difficulty, simplified language)
- ○ Emphasized or highlighted key elements of the presented content (e.g., bold print)
- ○ Use of examples
- ○ Cues and prompts to direct the attention
- ○ Removal of unnecessary distractions
- ○ Guidance and support
- ○ Opportunity to repeat/review/practice
- ○ Clearly structured tasks with detailed instructions
- ○ Opportunities to activate background information
- ○ Other

5: Expression and communication

To express themselves and participate in communication, students may require:

- ○ A different language
- ○ A reduced vocabulary and simplified language
- ○ Supplementary pictures
- ○ A clearly structured communication flow
- ○ Image-based communication
- ○ Other

6: Supporting engagement

To be able to keep at work and fully engage, students may require:

- ○ A clear plan to follow
- ○ Encouragement for their work, even for small steps
- ○ Visibility of achievement
- ○ Rewards for their efforts
- ○ Absence of distractions
- ○ Personal guidance
- ○ Other

7: Knowledge of resources when working digitally

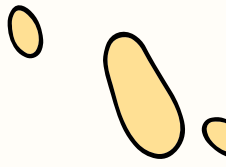
To participate in digital work, students may require:

- ○ Knowledge of their already used devices
- ○ Familiarity with their assistive tools
- ○ Strategies for searching and filtering
- ○ Individual support
- ○ Other

8: Other mentionable needs

Personal needs not mentioned in one of the other areas (e.g., a friend or an assistant must be there)

- ○ .....
- ○ .....
- ○ .....
- ○ .....
- ○ .....
- ○ .....
- ○ .....

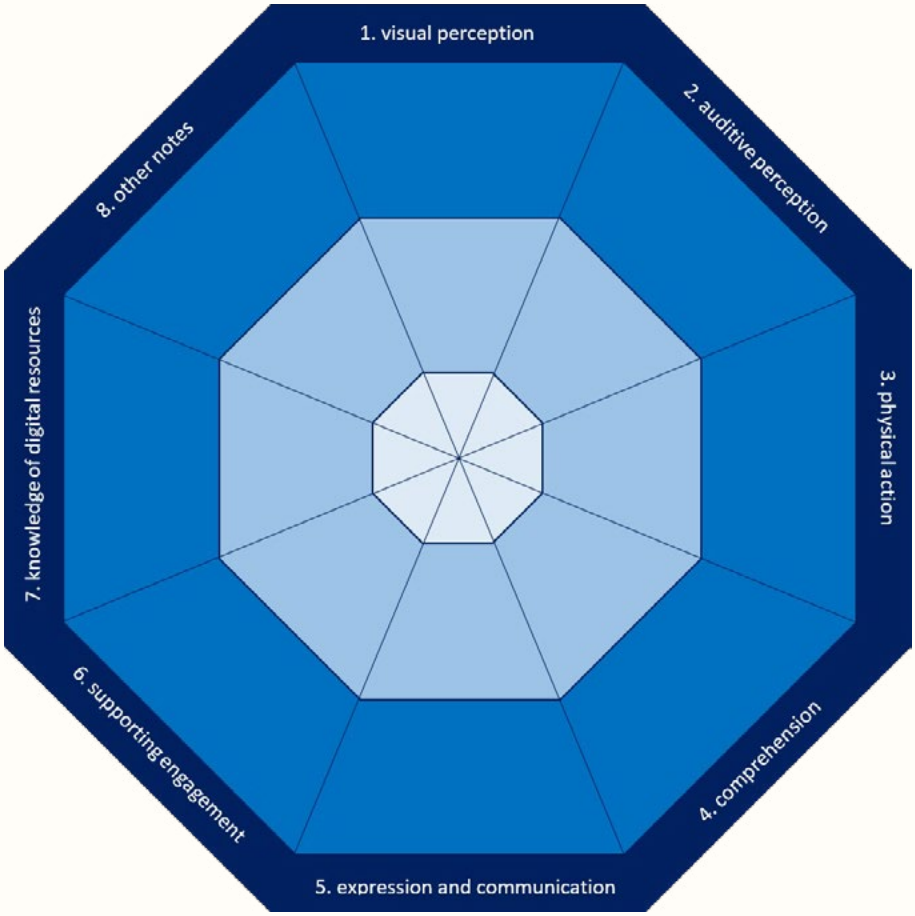


Step 2: Visualize students' needs in a poster (Tool–Check Wheel)

Good to know:

In **step 1,** specific areas where students have a need of support were marked.

In **step 2,** a poster is created to visualize the students' needs in the tool check wheel (Figure 1). This shows the areas of need, the type of support students need, and facilitates the Tool–Check in **step 3.**



For example: If students have needs in terms of visual understanding of content (area 1), a tool must be checked to see if it meets these needs. So, if students need representations in larger fonts, this should be possible with the tool (e.g., through a zoom function).

What to do:

- Print the Tool-Check Wheel (Figure 1) as DIN A3 poster.
- Transfer your notes (e.g., using sticky notes) from step 1 to the corresponding areas of the tool check wheel (Appendix 1).
- This lets you see where there are special requirements for a tool:
    - **Area in the center:** No need for support in this area.
        - When using a digital tool, **there is no need** for support, adaptations, and/or usage of assistive technologies.
    - **Light blue area:** Little need for support in this area.
        - When using a digital tool, making use of support, adaptations, and/or usage of assistive technologies is **beneficial but not necessary.**
    - **Dark blue area:** High need for support in this area.
        - When using a digital tool, support, adaptations, and/or usage of assistive technologies is **necessary.**
- The completed Tool-Check Wheel shows where students need support and what the tool requirements are.

Tips:

- If an area is left blank, you do not need to pay special attention to it when checking a tool in step 3.
- Do not write students' names on the poster.
- Create the poster once, and use it as often as you like for tool checking.
- Adjust the poster from time to time as conditions (e.g., individual requirements or class compositions) change.
- Get input from students, colleagues, parents, and/or school assistants (see Appendix III) when making the wheel.

Step 3: Answer questions about accessibility and usability

Good to know:

The third and final step is to take up the previously presented areas. For each area, you need to answer a series of questions to ensure that the digital tool you are considering for use in the classroom is accessible and usable for all students. If a tool does not meet the requirements, you should consider alternatives.

If areas were left blank in step 2, you do not need to consider them in step 3.

What to do:

- Prepare your notes (step 1) and complete the Tool-Check Wheel (step 2).
- In step 3, answer the questions about the functions of a tool in the areas where students need support.
    - For example: From steps 1 and 2, it appears that support is needed in your class in area 1 („perception of visually presented content“). In step 3, then, answer the questions relevant to area 1.
- Mark the relevant items and indicate whether the tool meets the requirements (✔) or not (✖).
- To answer the questions and find out if a tool meets the requirements, you can:
    - Test the tool yourself
    - Ask students to test the tool or test it with them
    - Ask experienced colleagues or external experts
    - Read reviews, manuals, or (if available) the tool's accessibility and usability explanation
- Evaluate the tool check.

Questions about the Tool

1: There is a need for support in the area of "visual perception" of content:

- ○ Are features available to make texts more readable?
- ○ Is the presented information well structured?
- ○ Are there alternative texts for images, tables, animations, or videos?
- ○ Can a braille display be used?
- ○ Is it possible to use the tool with a screen reader?
- ○ Can the tool be controlled without seeing the interface (e.g., via voice control, screen reader)?
- ○ Can the tool be controlled with keyboard shortcuts?
- ○ Is the tool controllable via eye tracking or a headstick?
- ○ Can the tool be customized for:
    - ○ Specific fonts or typefaces?
    - ○ Larger display and/or zoom-function?
    - ○ More contrast between the background and the text/image?
    - ○ Other color compositions?
- ○ Are there additional audio information and auditory cues?
- ○ Is text-to-speech software usable?

2: There is a need for support in the area of "auditive perception" of content:

- ○ Is there audio output?
- ○ Is the audio output adjustable (e.g., changing sound settings)?
- ○ Is additional information given (subtitles/captions for videos)?
- ○ Are there sufficient visuals and graphic representations support?
- ○ Are there transcripts for videos?
- ○ Can audio be translated into written language?
- ○ Can audio be translated into sign language?

3: There is a need for support in the area of "physical action" for navigation and interaction with a tool:

- ○ Can the tool be controlled with keyboard shortcuts?
- ○ Can the tool be controlled via voice?
- ○ Can the tool be controlled via joystick or button set?
- ○ Can the tool be controlled with an eye tracker or head stick?
- ○ Can the tool be controlled with the students' own assistive tool if they use one?

4: There is a need for support in the area of "comprehension" of perceived information:

- ○ Are the texts suited for the language level?
- ○ Can texts be simplified if necessary?
- ○ Can you turn a written text into spoken language?
- ○ Are the tasks clearly structured?
- ○ Are instructions detailed and clearly defined?
- ○ Is there an opportunity to repeat/review/practice?
- ○ Are the instructions adequate?
- ○ Can important information be highlighted or marked?
- ○ Are examples provided?
- ○ Can unnecessary distractions be removed?
- ○ Is guidance and support provided (e.g., cues, info buttons, prompts, checklists)?

5: There is a need for support in the area of "expression and communication":

- ○ Is the used language appropriate or is differentiation possible?
- ○ Are language settings adjustable (e.g., change content into first language of the student or another form of language the student speaks)?
- ○ Is the used vocabulary known to the student, or are there glossaries to support the used language?
- ○ Is there non-linguistic or linguistic support for vocabulary (e.g., images, graphics, tables, written supportive information)?
- ○ Is the communication flow clearly structured and understandable?
- ○ Is image-based communication available?

6: There is a need for support in the area of "student engagement":

- ○ Does working with the tool follow a clear plan?
- ○ Does the tool motivate the student to go on working?
- ○ Is the achievement clearly visible?
- ○ Are students rewarded for their efforts?
- ○ Are unnecessary distractions avoided?
- ○ Is personal guidance offered?

7: There is a need for support in the area of "knowledge of resources" when working digitally:

- ○ Can the students launch or stop the tool autonomously and save the results?
- ○ Can the students apply their personal assistive tools?
- ○ Do the students have the necessary basic IT knowledge and skills required by the tool?
- ○ Is individual support provided?

8: There is a need for support in the area of "other" needs:

- ○ Can the additional requirements be fulfilled?

- ○ .....
- ○ .....
- ○ .....
- ○ .....
- ○ .....
- ○ .....
- ○ .....

Tool-Check Results

The Tool-Check can produce the following results:

1. The digital tool fulfills the requirements:

- This means that further support, adaptations, and/or assistive tools may be **beneficial but not necessary.**

2. The digital tool does not fulfill the requirements:

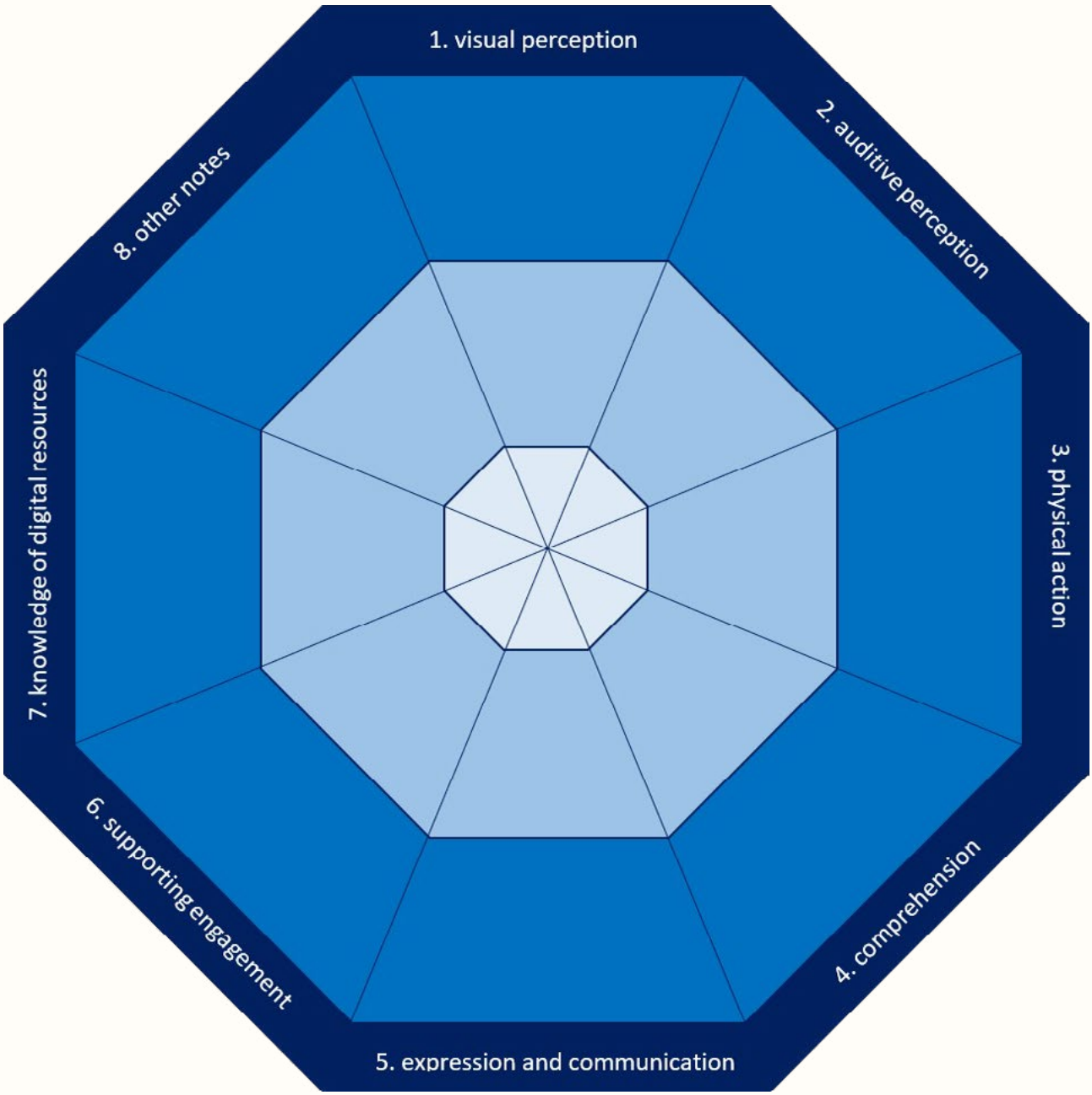
- When there are notes in the light blue area: support, adaptations, and/or assistive tools **may be required.**
    - **For example:** If a larger font would be beneficial but is not absolutely needed (light blue area), then it is not necessary for a tool to have these features either. Other adaptations or assistive technologies may need to be provided.
- When there are notes in the **dark blue area:** If the tool is nevertheless used in class, individual help/support and/or an equivalent alternative is required for certain students.
    - **For example:** If a student needs texts in a larger font (dark blue area), the settings of the tool must allow this (change of font size, zoom function, etc.). If a tool has the required settings and functions, it can be used. If it does not have the required settings, additional adjustments must be made, or you need to provide other assistive technologies. You could also use a different tool.

What if the tool failed the Tool-Check?

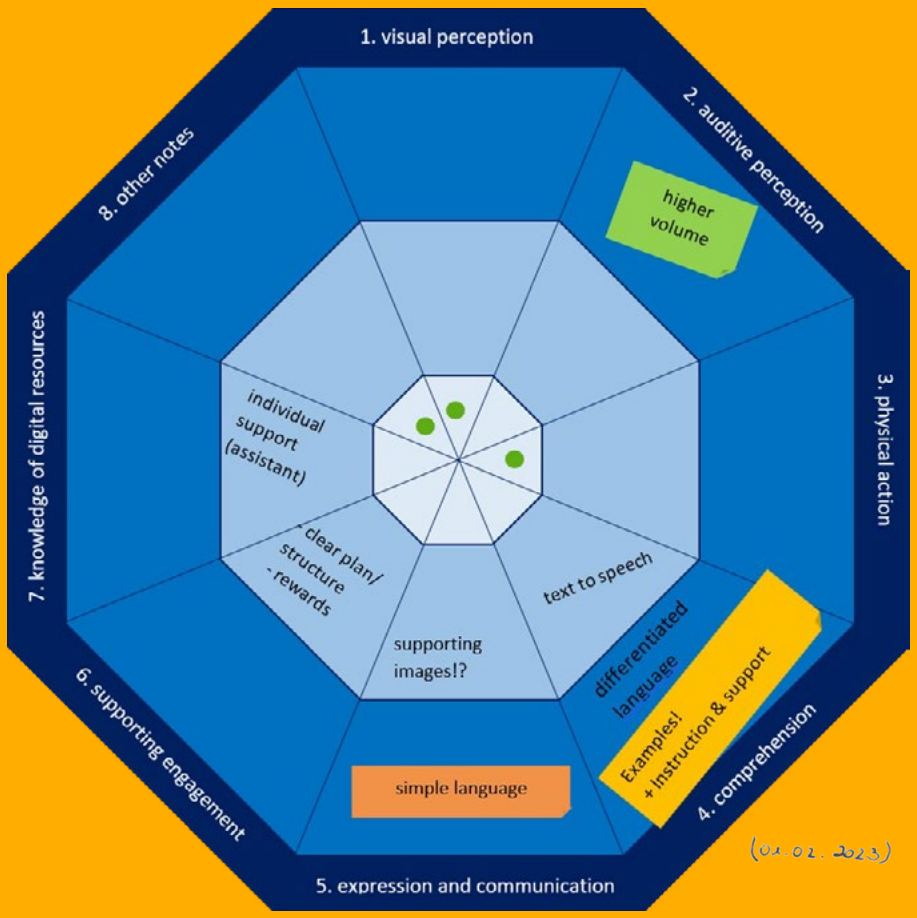
A failed check does not mean that the tool cannot be used at all. It means that individual support or an alternative tool may be necessary to reach a learning goal at the classroom level.

Thus, it is still possible to use the tool if personal assistance is available. Although this could reduce the personal autonomy of the student, it is better for a student to participate in classroom activity with assistance than not participate at all. Another option is to provide an equivalent alternative tool when required. As long as the learning goals remain connected to those of the class, the use of an alternative approach or toolset is fine.

Appendix I: Tool-Check Wheel



Appendix II: Completed Tool-Check Wheel



Example:

In the Tool-Check Wheel, you can see that there is a high need for support in the areas of auditive perception (area 2), comprehension (area 4), and expression and communication (area 5).

In area 2 (dark blue area), a student needs a higher volume for perceiving information (e.g., audio, video). This means that a tool must have the necessary settings and features (e.g., changeable volume and tone settings) to be usable. Otherwise, additional assistive technology must be provided, or another tool must be used.

If explanatory or assistive images would be beneficial (expression and communication, area 5) but are not mandatory (light blue area), the tool can be used even if images are not available. Other adaptations or assistive technologies may need to be provided.

Think about each area individually.

Appendix III: Ideas for Creating the Poster

Teacher only

It is possible to create the poster on your own. You need to reflect on the skills and required needs of each child and take as many notes as you can. Use sticky notes to fill the empty areas of the poster. This lets you identify the areas in which support is needed and the special requirements for a tool.

Joint activity in the classroom with students

This option gives the students the opportunity to reflect on their needs and express their requirements. As a teacher, you can strengthen the students in this and foster the students' understanding for the needs of others. For this method, use Figure 1 in the size of an A1 poster. Lay the poster on the classroom floor. Each student has a set of stickers or post-its. Introduce the different areas one after the other and name some examples of possible requirements in each area. Before putting the stickers on the poster, discuss the ideas together as a class. The initial ideas of the students might get modified as other inputs come along. The students then put their stickers in the specific area according to their needs (center, light blue, or dark blue).

Teachers in cooperation with other teachers

Get support from other teachers at your school when reflecting on students' needs. They may know the students too or have similar requirements to consider in their classrooms. Exchanging ideas can be especially beneficial for the students if the other teacher(s) are also teaching in their classroom because they also know then what requirements to pay attention to when working digitally.

Teachers in cooperation with the students, other teachers, school assistants, and parents

Another option is to create the poster with other teachers and students as well as school assistants and parents. This option is more time-consuming but also more extensive because of the different perspectives it includes.

Tip: If you create the tool check together with others, you can also collaborate digitally. This saves time.

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