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Exploring Digital Literacy and the Use of ChatGPT among Students with Disabilities

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Introduction

- Persons with disabilities frequently face digital divide and digital exclusion.
- The purpose is to examine what is the level of digital and algorithm literacy among SwD and, further, how they use CAs, and to what extent they perceive them as useful and accessible study aids.



Artificial Intelligence Conversational Agents

- Chatbots are Artificial Intelligence systems where the computer software uses Natural Language Processing, and converses through text or voice in one or more languages (Khanna et al., 2015).
- ChatGPT became the fastest growing consumer application with over a million active monthly users (Hu, 2023).
- Use of chatbots in education has been expanding in the past five years, ranging from a very limited tool (Winkler & Söllner, 2018; Molnár & Szüts, 2018) to becoming a valuable study aid both for students and teachers (Mendoza et al., 2022).





Digital and Algorithm Literacy

- **Digital literacy** comprises three dimensions; (a) Information skills, (b) Use of digital tools, and (c) Digital transformation.
- **Algorithm literacy** is awareness of the use of algorithms in online applications, platforms, and services, knowing how algorithms work, being able to evaluate algorithm decision-making critically, as well as having the skills to cope with, or even influence, algorithm operations (Dogruel, 2022).



Aim of the Study

RQ1: What is the level of digital literacy among SwD?

RQ2: What is the algorithm literacy among SwD?

RQ3: How do SwD use ChatGPT?

RQ4: How SwD perceive the usability of ChatGPT?



Procedure

- Data obtained in July 2023.
- Participants invited through Slovene local and national associations for PwD.
- Ethical approval of the Ethical Committee at the Faculty of Arts, University of Maribor.

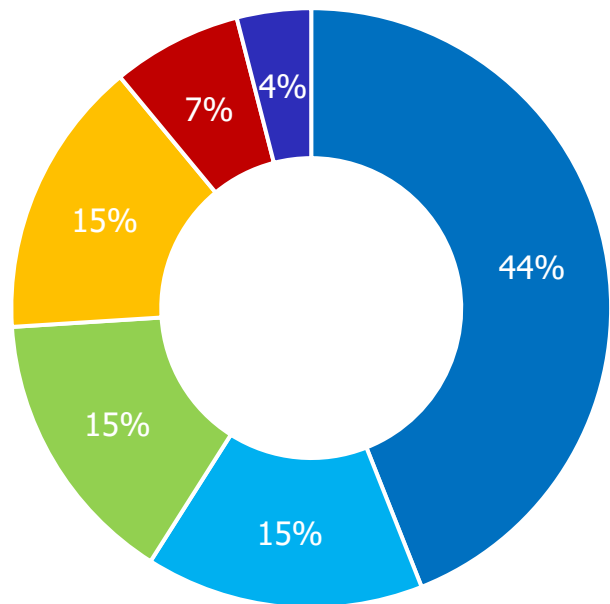


Measuring Instrument

- The survey questionnaire.
- Variables:
 - The socio-demographic characteristics of participants (gender, age and current level of schooling).
 - Purposes and frequency of Internet use.
 - Digital literacy.
 - Algorithm literacy (Dogruel, 2022).
 - ChatGPT use for general and education purposes.
 - Chatbot usability.

Participants

- 27 participants.
- 67% men and 33% women.

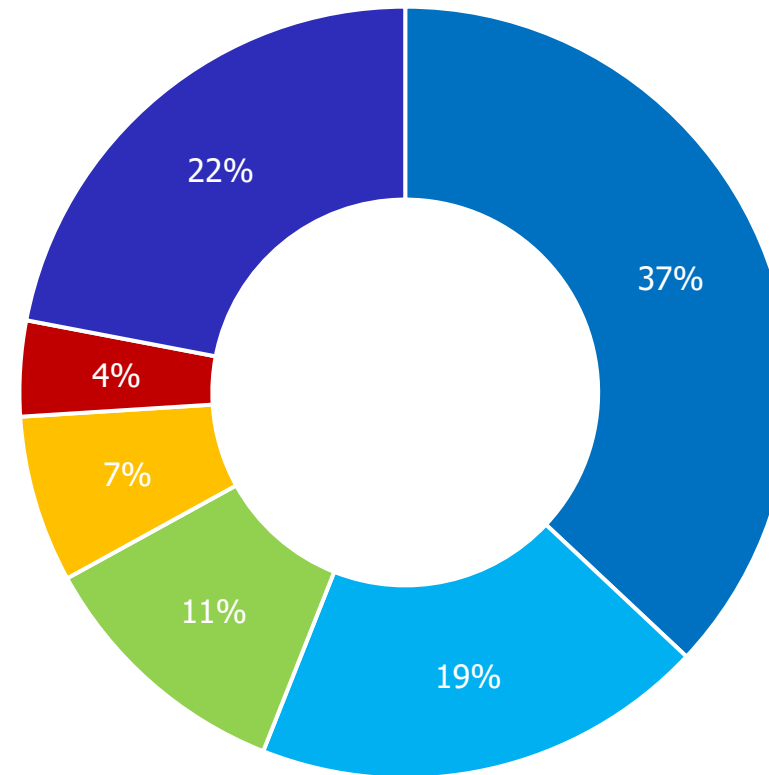


- 3-year vocational secondary school (44%)
- Gymnasium or other 4-year secondary school (15%)
- Students in Bachelor's (15%)
- Master's programmes (15%)
- 2-year lower vocational school (7%)
- PhD programme (4%)



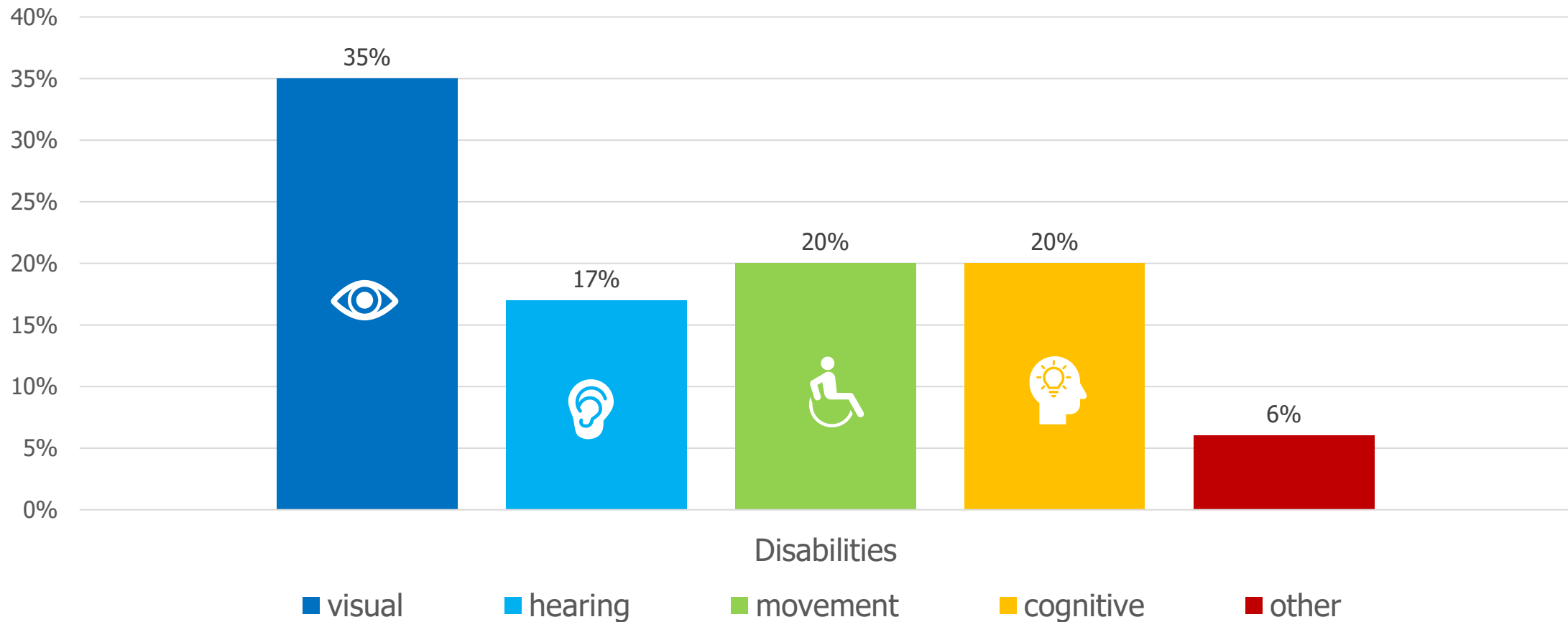
Participants

- ICT programmes (37%)
- Engineering programmes (19%)
- Business and administration (11%)
- Social sciences, agriculture, tourism, arts and humanities (7%)
- Law (4%)
- Other (22%)





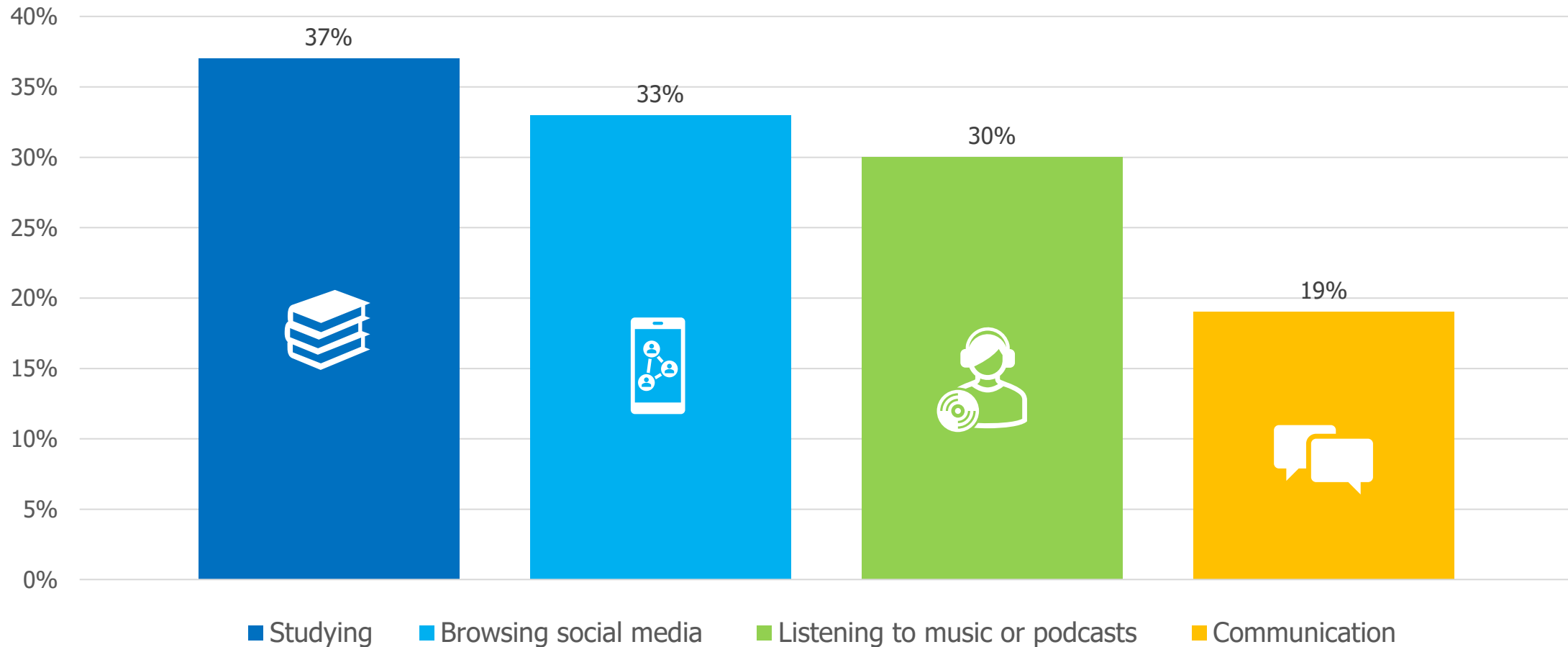
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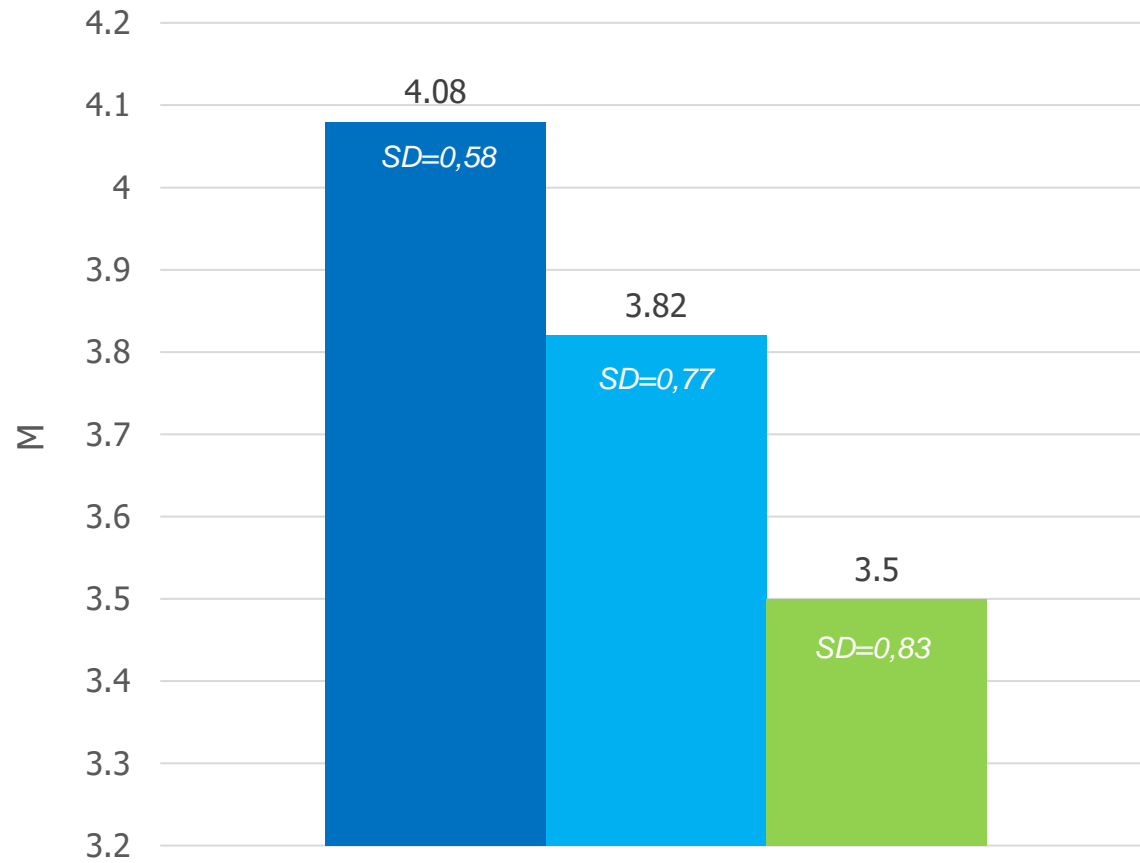
Six participants reported having multiple disabilities.



Results: Internet Use

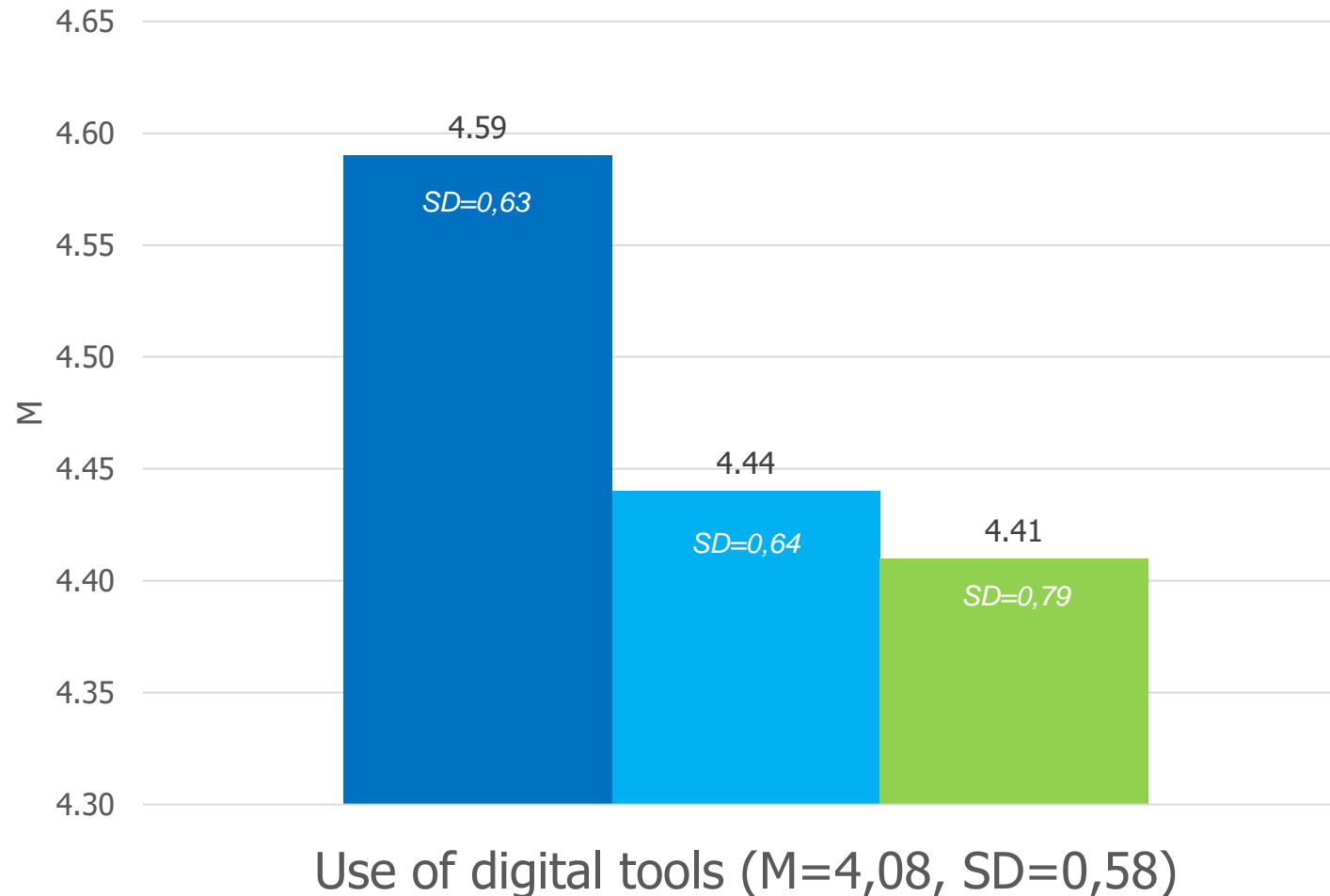


Results: Digital Literacy



- Participants exhibited the highest proficiency in the use of digital tools (M=4,08, SD=0,58)
- Participants exhibited considerable proficiency in information skills (M=3,82, SD=0,77)
- Participants also demonstrated an above average level of proficiency in the domain of Digital Transformation (M=3,5, SD=0,83)

Use of Digital Tools



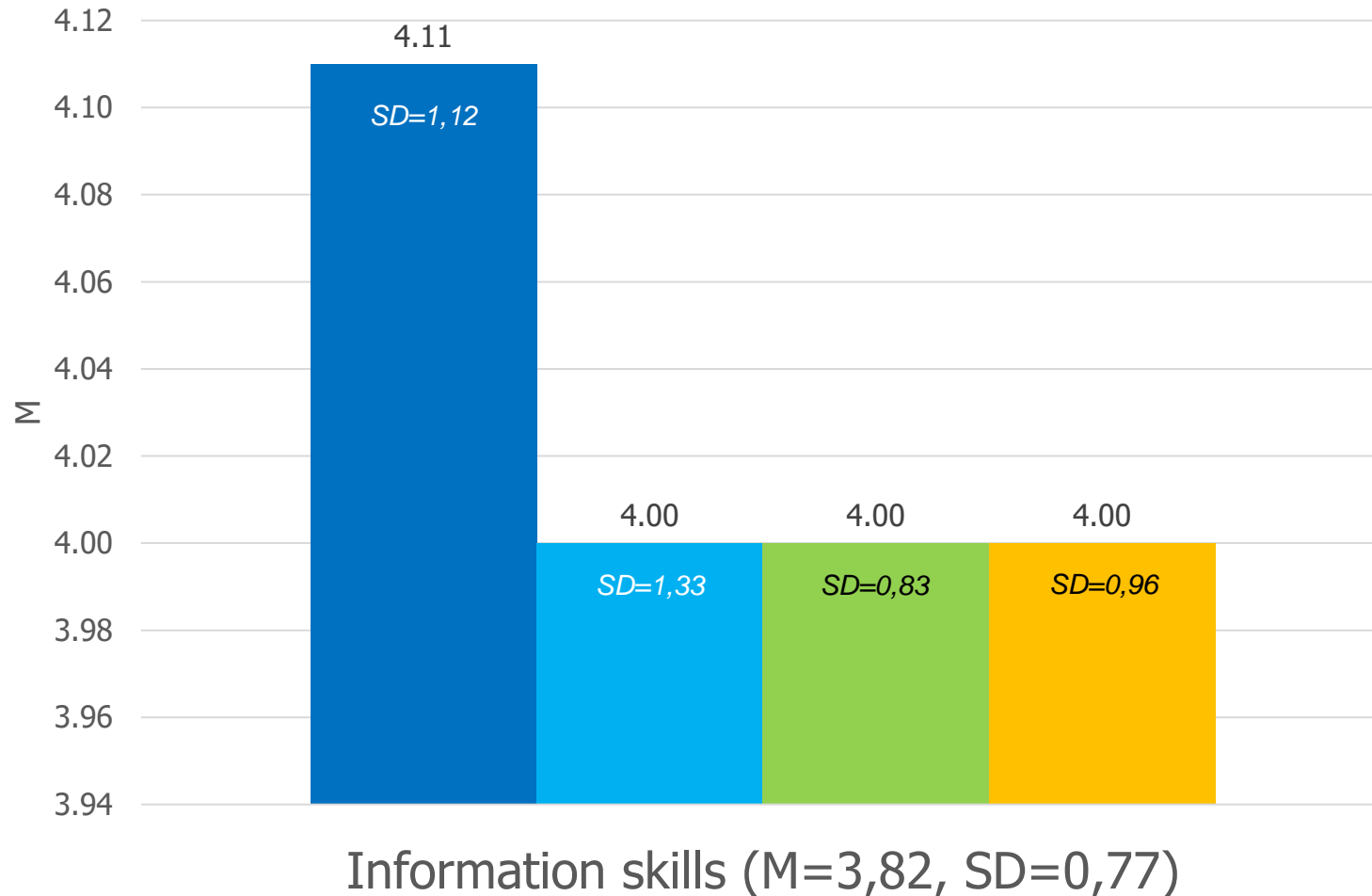
■ Awareness about the advantages, disadvantages and impact of Internet use (M=4,59, SD=0,63)

■ Learn and adapt to new technologies (M=4,44, SD=0,64)

■ Importance of ethical Internet use and prevention of cyber harassment (M=4,41, SD=0,79)



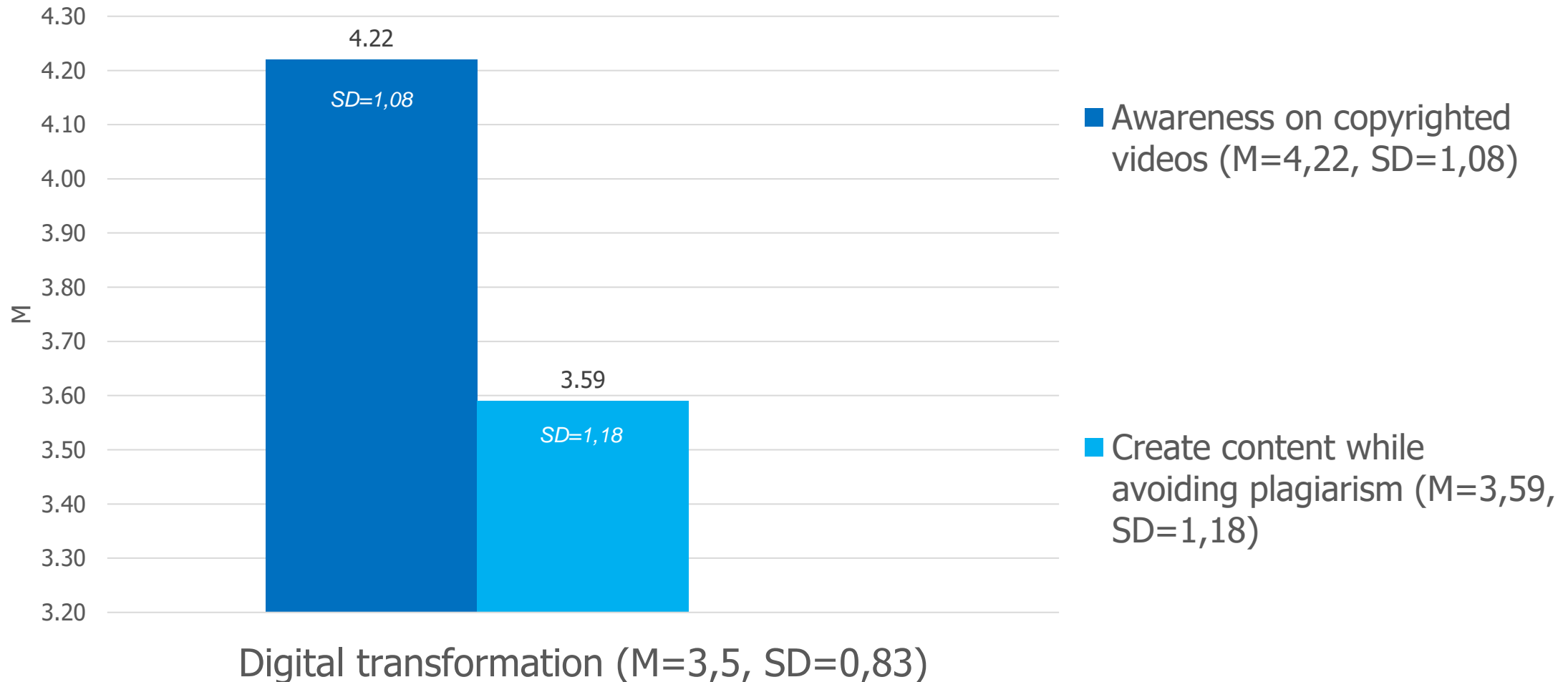
Information Skills



- Ability to verify the information's accuracy (M=4,11, SD=1,12)
- Share data files online (M=4,0, SD=1,33)
- Assess reliable information sources (M=4,0, SD= 0,83)
- Distinguish between facts and opinions (M=4,0, SD=0,96)



Digital Transformation





Results: Algorithm Literacy

- Algorithm literacy was assessed with 11 true/false statements.
- On average, participants recognised 6,52 statements correctly.
- Most participants were able to discern accurately that algorithms offer both opportunities and risks (89%, n=24).
- Among the incorrect responses, a considerable number of participants assumed erroneously that algorithms operate independently of human involvement (52%,n=14).



Results: ChatGPT Use and Perceived Usability

- Most participants (59%) already used ChatGPT.
- ChatGPT was used for studying or other assignments (85%), developing of creative ideas or problem-solving (74%) and chatting (22%).
- Perceived usability of ChatGPT ($M=3,56$, $SD=0,84$, $\min=1$, $\max=5$).
- There was no significant correlation between ChatGPT use and perceived usability.



Conclusion

- The participants demonstrated a high level of digital literacy.
- The sufficient understanding of the role of algorithm literacy.
- Most participants reported using ChatGPT for studying, developing creative ideas, and problem-solving.
- Participants found ChatGPT to be highly useful for their academic work, and appreciated its ability to produce correct and contextually relevant responses consistently.
- Participants suggested additional usability and accessibility features, such as subtitles, text-to-speech conversion and content summaries, and the integration of voice assistants.