Using the Potential of GenAI Tools for Accessibility

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Abstract

The increasing use of Generative artificial intelligence (GenAI) and related tools in computing education offers new forms of on-demand support but also raises concerns about accessibility and equity. Evidence suggests that learners with disabilities may struggle with verbose, unstructured, and biased GenAI outputs, potentially exacerbating existing inequities. Despite extensive research on GenAI integration in computing education, accessibility and inclusivity considerations remain largely unexplored. This working group investigates how current GenAI tools align with accessibility and Universal Design for Learning (UDL) principles in computing education. Through a systematic literature review, the group examines tool features, identifies accommodations for students with disabilities, and exposes gaps in inclusive design and pedagogical integration, with the goal of informing more equitable GenAI-supported learning environments.

CCS Concepts

• **Social and professional topics** → **Computing education**; • **Applied computing** → **Interactive learning environments**.

Keywords

Generative AI, LLMs, Accessibility, Inclusion, Diversity, Equity, Feedback, Students, computing education, computer science

ACM Reference Format:
Natalie Kiesler, Bedour Alshaigy, Yasmine N. Elglaly, Ilenia Fronza, Alex Gerdes, Earl W. Huff Jr, Sven Jacobs, Dominic Lohr, Raymond Pettit, Andreas Scholl, Sandra Schulz, and David H. Smith IV. 2026. Using the Potential of GenAI Tools for Accessibility. In *Proceedings of the 31st ACM Conference on Innovation and Technology in Computer Science Education V. 2 (ITiCSE 2026), July 10–15, 2026, Madrid, Spain.* ACM, New York, NY, USA, 2 pages. https://doi.org/10.1145/3803401.3812045

1 Introduction

As GenAI and related tools like ChatGPT become increasingly common in computing education contexts [7], it is vital to ensure they support, not hinder, all learners including students with disabilities[1]. Neurodiverse computing students, for example with ADHD or autism, often face unique challenges when engaging with these tools due to their unstructured responses, complex explanations, and potential misinformation [5, 8, 10]. Without intentional design in their use and pedagogical integration, these technologies risk exacerbating existing inequities in computing education.

Carik et al. [4] found that neurodiverse individuals often rely on LLMs "as a patient personal tutor" especially when learning to code and programming activities, allowing them to ask repeated questions without fear of judgement. On the other hand, those individuals also report struggling with prompt formulation and frustration with neurotypical biases in the LLM outputs: "ChatGPT's outputs are very neurotypical, as expected, so they do not clearly capture my thought process" leading to repeated prompt

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[1]We are using people-first language in accordance with the UN guidelines [9]

ITiCSE 2026, Madrid, Spain

ACM ISBN 979-8-4007-2633-0/2026/07
https://doi.org/10.1145/3803401.3812045

refining and disengagement. Similarly, Apiola et al. [2] reported on students' feelings of exclusion, unfairness, and lack of diversity when using GenAI-based tools. Moreover, it should be noted that GenAI tools were predominantly developed by able-bodied individuals, alongside the absence of design guidelines specifically tailored for the inclusivity of GenAI tools, which are relatively new [1]. In addition, these tools are intransparent by design [6].

A 2024 ITiCSE Working Group [7] offered a comprehensive literature review on how instructors are integrating GenAI into computing education. However, the review did not capture the experiences or needs of diverse students. Hence, there is a pressing need for research that centres more diverse students and explores how they can effectively engage with GenAI tools, supported by thoughtful instructional design and feedback.

2 Goals

The overall goal of the working group is to explore GenAI tools, their accessibility and inclusivity, focusing on how well these tools reportedly serve students with disabilities and align with UDL principles. This goal can be split into the following subtasks that the working group will undertake:

- Conduct a review of the literature aimed at examining recent GenAI tools, and their features (e.g., feedback options).
- Identify if and how GenAI tools accommodate students with disabilities.
- Expose gaps in the current landscape of tools trying to accommodate students with disabilities.

3 Proposed Methodology

For the methodology, we will be conducting a systematic literature review following the PRISMA 2020 guidelines [3]. The review will address the following research questions:

- RQ1 *What GenAI tools are currently being used or researched in computing education contexts.*
- RQ2 *What features do these GenAI tools offer, e.g., feedback, code generation, explanation capabilities, multimodal outputs.*
- RQ3 *How do these GenAI tools accommodate students with disabilities, and to what extent they align with accessibility standards like UDL principles and Web Content Accessibility Guidelines.*
- RQ4 *What gaps exist in the current research and development landscape regarding GenAI tool accessibility for students with disabilities in computing education.*

We will search the ACM Digital Library as the primary source for computing education research, and IEEE Xplore for technical and educational computing papers. We utilize reference papers on GenAI tools (cf. [7]) to validate our search string and strategy. We will include publications from January 2023 to March 2026 to capture research since the broad availability of modern GenAI tools.

4 Expected Deliverables

We expect to produce the following results, which are in alignment with the outlined goals. (1) We will deliver a comprehensive report documenting GenAI tools currently being used or researched in computing education contexts, addressing RQ1 and RQ2. This inventory will catalog each tool's name, type, primary features such as code generation, explanation capabilities, feedback mechanisms, and debugging assistance, as well as the modalities they support, including text, voice, and visual outputs. The report will also document how these tools are integrated into educational contexts, e.g., as standalone applications, IDE plugins, or LMS integrations. This deliverable will provide the computing education community with a current landscape view of available GenAI tools and their capabilities, serving as a reference for educators considering adoption.

(2) We will produce a synopsis of GenAI tools' accessibility based on the systematic literature review, addressing RQ3. This assessment will document the extent to which current GenAI tools accommodate students with disabilities and align with established accessibility standards. The report will identify which disability types are addressed by current tools, including visual, auditory, motor, cognitive impairments, and neurodiversity such as ADHD, autism, and dyslexia. It will catalog explicit accessibility features that have been implemented or evaluated. This deliverable will also synthesize reported barriers that students with disabilities face when using GenAI tools.

(3) We will deliver a synthesis of research and development gaps regarding how GenAI tools accommodate students with disabilities, addressing RQ4. This will include the gap analysis matrix to represent where research and design efforts have been concentrated and where critical gaps remain by crossing GenAI tool features with accessibility considerations. The analysis will identify missing accessibility features, underexplored disability types in the literature, and areas where pedagogical integration strategies are lacking.

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