

Investigating Computer Science Students' Attitudes And Perceptions Of Accessibility In Software Design

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Inspiration

Teaching Accessible Computing (TAC)

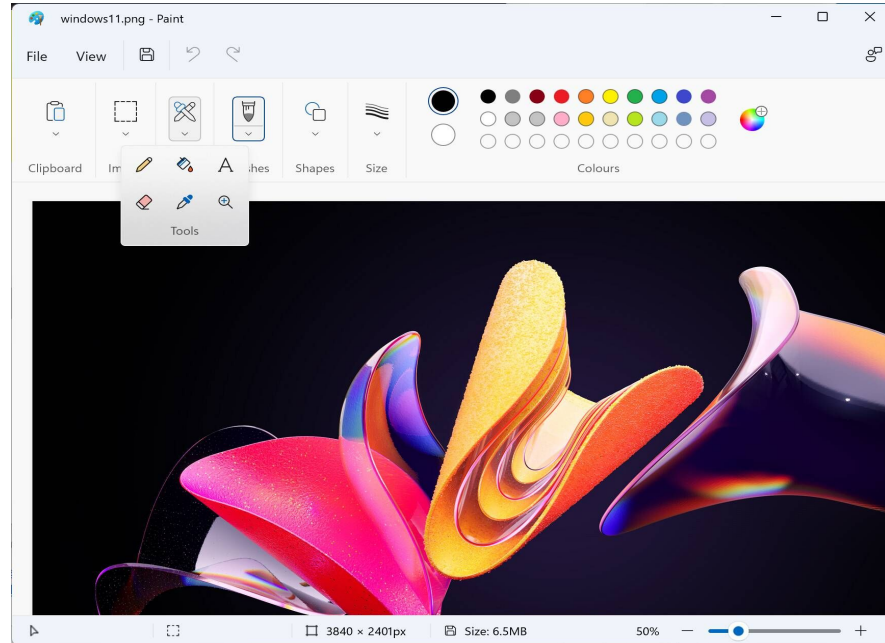
An e-book that helps educators integrate accessibility throughout computer science curricula by Alannah Oleson, Amy J. Ko, and Richard E. Ladner



<https://bookish.press/tac>

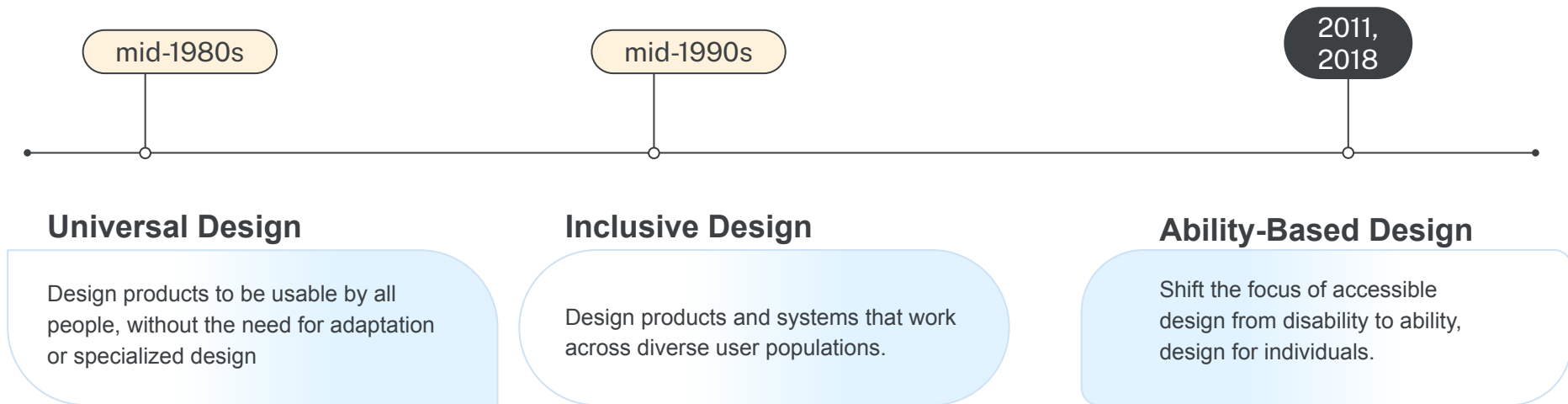
Accessible Software Design

Designs software that account for all abilities



Microsoft Paint Program

Timeline of Design Frameworks

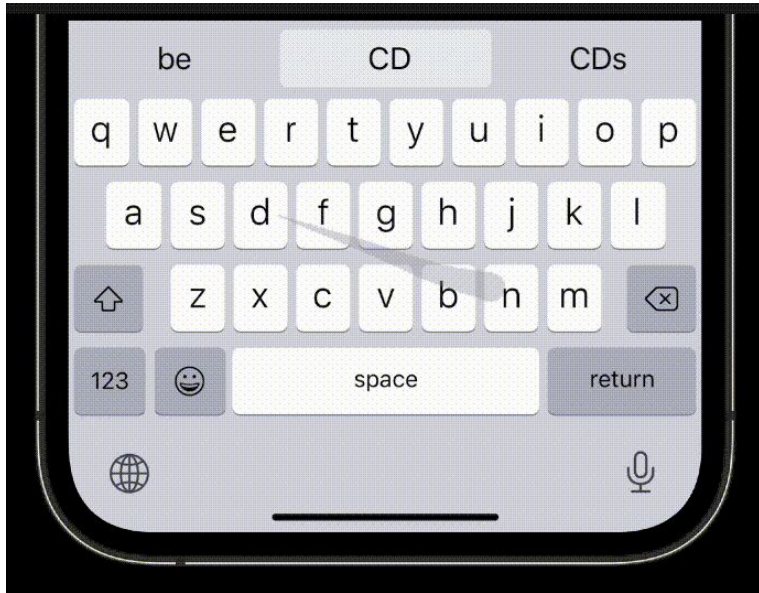


Ability-Based Design Principles (ABD)

J. O. Wobbrock, K. Z. Gajos, S. K. Kane, and G. C. Vanderheiden, "Ability-based design," Communications of the ACM, vol. 61, no. 6, pp. 62–71, May 2018. doi:10.1145/3148051

Principle	Description
Ability	Designers focus on users' abilities, not disabilities, striving to leverage all that users can do in a given situation, context, or environment.
Accountability	Designers respond to poor usability by changing systems, not users, leaving users as they are.
Availability	Designers use affordable and available software, hardware, or other components acquirable through accessible means.
Adaptability	Interfaces might be adaptive or adaptable to provide the best possible match to users' abilities.
Transparency	Interfaces might give users awareness of adaptive behaviors and what governs them and the means to inspect, override, discard, revert, store, retrieve, preview, alter, or test those behaviors.
Performance	Systems might sense, monitor, measure, model, display, predict, or otherwise utilize users' performance to provide the best possible match between systems and users' abilities.
Context	Systems might sense, monitor, measure, model, display, predict, or otherwise utilize users' situation, context, or environment to anticipate and accommodate effects on users' abilities.

Example of Ability-Based Design



QuickPath Swipe Keyboard was to help improving manual dexterity (i.e., “type” quickly).

But many users outside of this group also use this feature.

The Intervention

Prepare

Computer Science faculty (I) collaborated with a few colleagues from Philosophy to provide a **one-hour guest lecture** before students began working on their paint-like program (~Week 7 in a 12-week course).

Practice

Student wrote a ~**200 - 350-word accessibility feature proposal** advocating for a single, carefully chosen accessibility feature in their Paint programs during tutorial. This was driven by the **Ability-Based Design (ABD) Principles**.

Perform

Implemented the accessibility feature they proposed.

Methodology: Surveys

Oct

19

Pre-survey sent out



Pre-Survey: 56 participants
Post-Survey: 60 participants
Matched Pairs: 29
participants

Nov

09

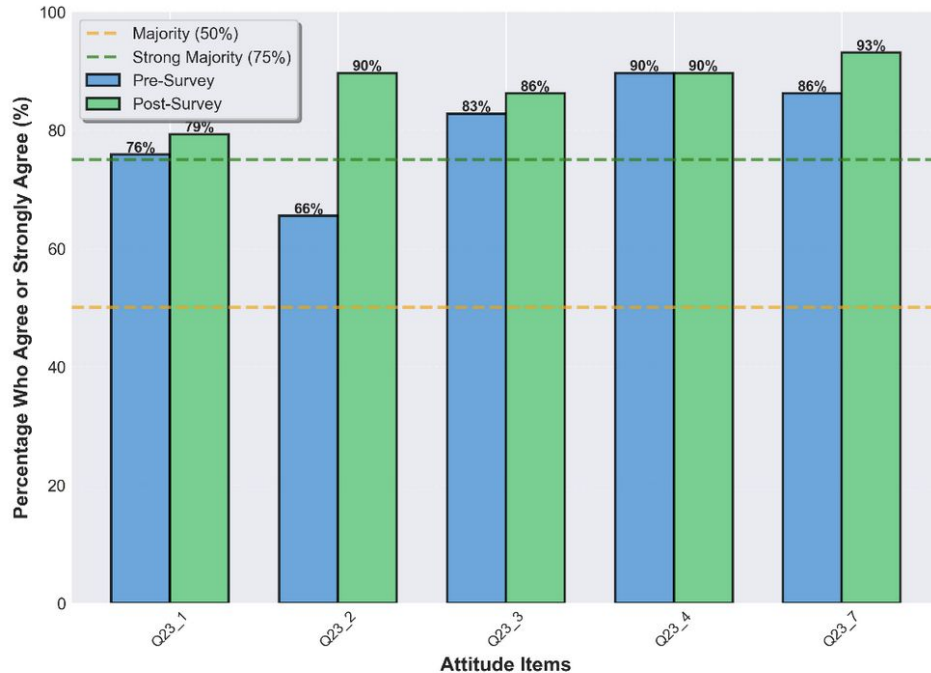
Post-survey sent out



I was interested in looking at the **attitudes and perceptions** and **confidence**.

Overall Perception and Attitudes

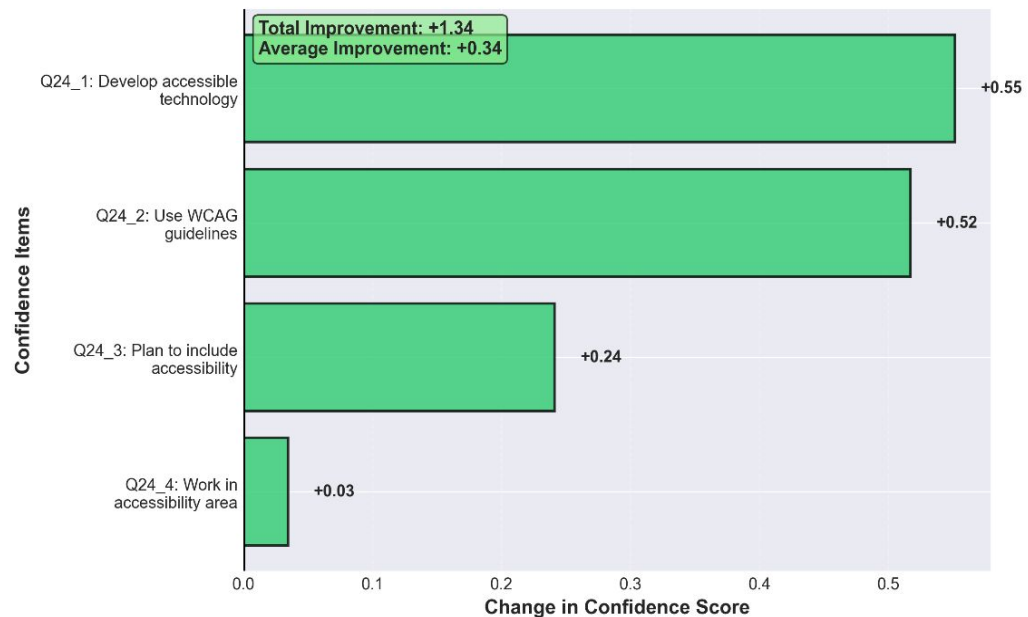
Strong Support: High Percentage of Agreement



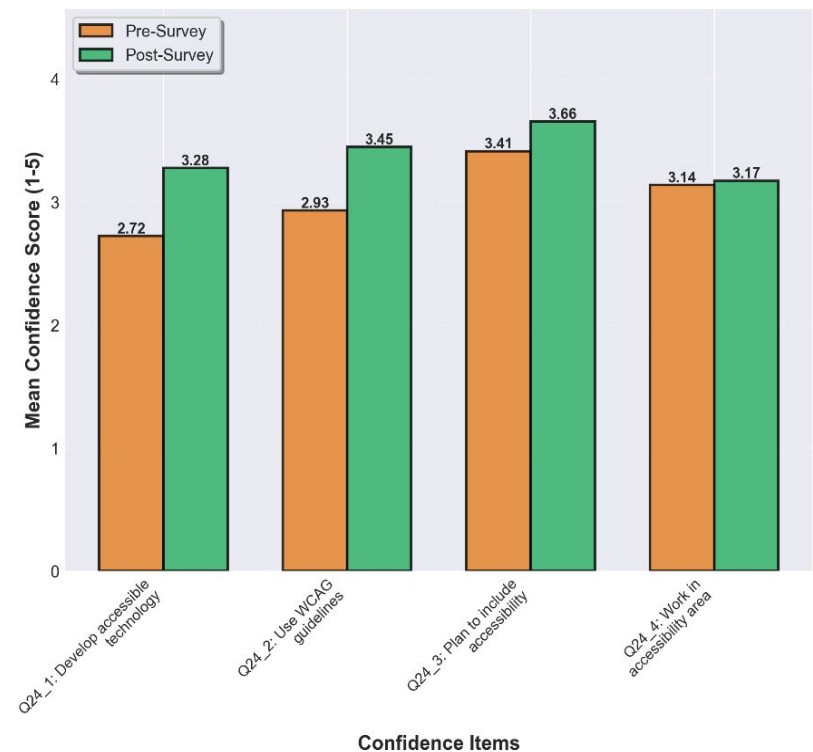
Q23_1	Accessibility should be integrated across the undergraduate computer science courses.
Q23_2	Learning about accessibility and learning about inclusivity are related but different goals.
Q23_3	Every student studying computer science should learn foundational accessibility concepts.
Q23_4	Learning about accessible design is appropriate for Software Design.
Q23_7	Accessible design benefits everyone, not just people who identify as disabled.

Confidence

Confidence Improvements: All Items Showed Gains



Confidence Levels: Pre vs Post Comparison



Conclusion

The results indicated a **strong positive attitudes and perceptions** towards incorporating accessible software design topic and we also see students **feeling confident** about developing accessible software.

This year I am looking forward to seeing if this trend continues.



Questions?

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