Original Research Paper

A New Approach to HCI in Technical Education: Creating Mobile Communication Tools with the User in Mind

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Abstract: The increasing impact of human-computer interaction has created new chances to assist learners traversing intricate and technical educational pathways. Despite the swift advancement of digital technology and the growing accessibility of specialized professions, several students encounter difficulties in completely engaging due to communication obstacles. A primary obstacle is the lack of organized, accessible vocabulary relevant to their disciplines, which impedes their capacity to interact with resources and articulate concepts proficiently. This study investigates the essential components necessary for creating a mobile platform that assists learners in overcoming communication barriers in technical and scientific fields. The research underscores the significance of connecting digital solutions with the genuine requirements and preferences of learners, prioritizing user experience and interface design. The results offer valuable insights for developers, educators, and content creators aiming to design interactive technologies that are both accessible and effective. Focusing on the user during the design process helps maximize human-computer interaction, hence improving understanding, involvement, and sustained engagement in specialized domains.

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Title:
New Qualitative Perspective in Human–Computer Interaction: Designing Mobile English for STEM.

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Abstract:
The emerging field of human–computer interaction (HCI) opens up more opportunities for technology integration in language learning. Technology creates more workforces in the Science, Technology, Engineering, and Mathematics (STEM) fields, yet the number of STEM pursuers is declining due to poor command of the English language. There is a gap in English vocabulary specific to STEM, which requires a novel solution from the perspective of HCI. This study aims to explore the needs of STEM learners in creating a mobile module to improve English language competency. Using a qualitative methodology, seven 17-year-old STEM learners participated in semi-structured interviews. The results are categorized into four main themes: (1) the importance of learning English, (2) problems faced by learners, (3) strategies for English language learning, and (4) learners' readiness to use a mobile app. This study is significant for mobile app designers, English language teachers, and course designers, as it provides an overview of STEM learners' needs in English language learning. Designing a mobile app based on learners' perspectives enhances the effectiveness of HCI, thereby supporting successful second language acquisition. Future work can focus on designing and developing a mobile app tailored to enhance STEM learners' English competency according to their perspectives.

Keywords:
English language, human-computer interaction (HCI), mobile, needs analysis, Science, Technology, Engineering, Mathematics (STEM), vocabulary.

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