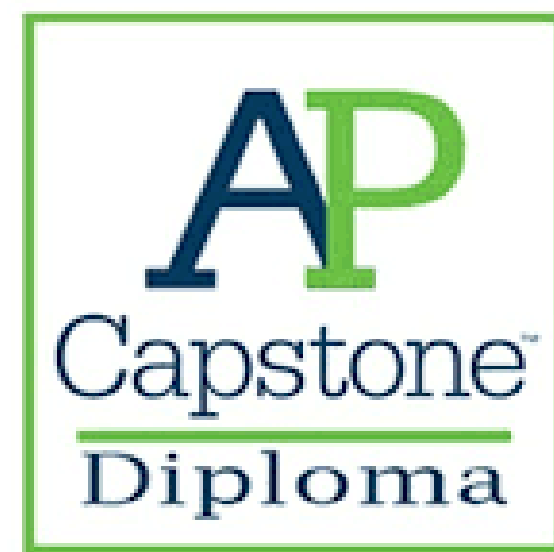




Laptop Proficiency and Academic Performance: A Mixed-Methods Study of AP High School Students

How does student laptop proficiency impact performance on high-risk school-based assessments in AP English and Computer Science high school students?

Introduction

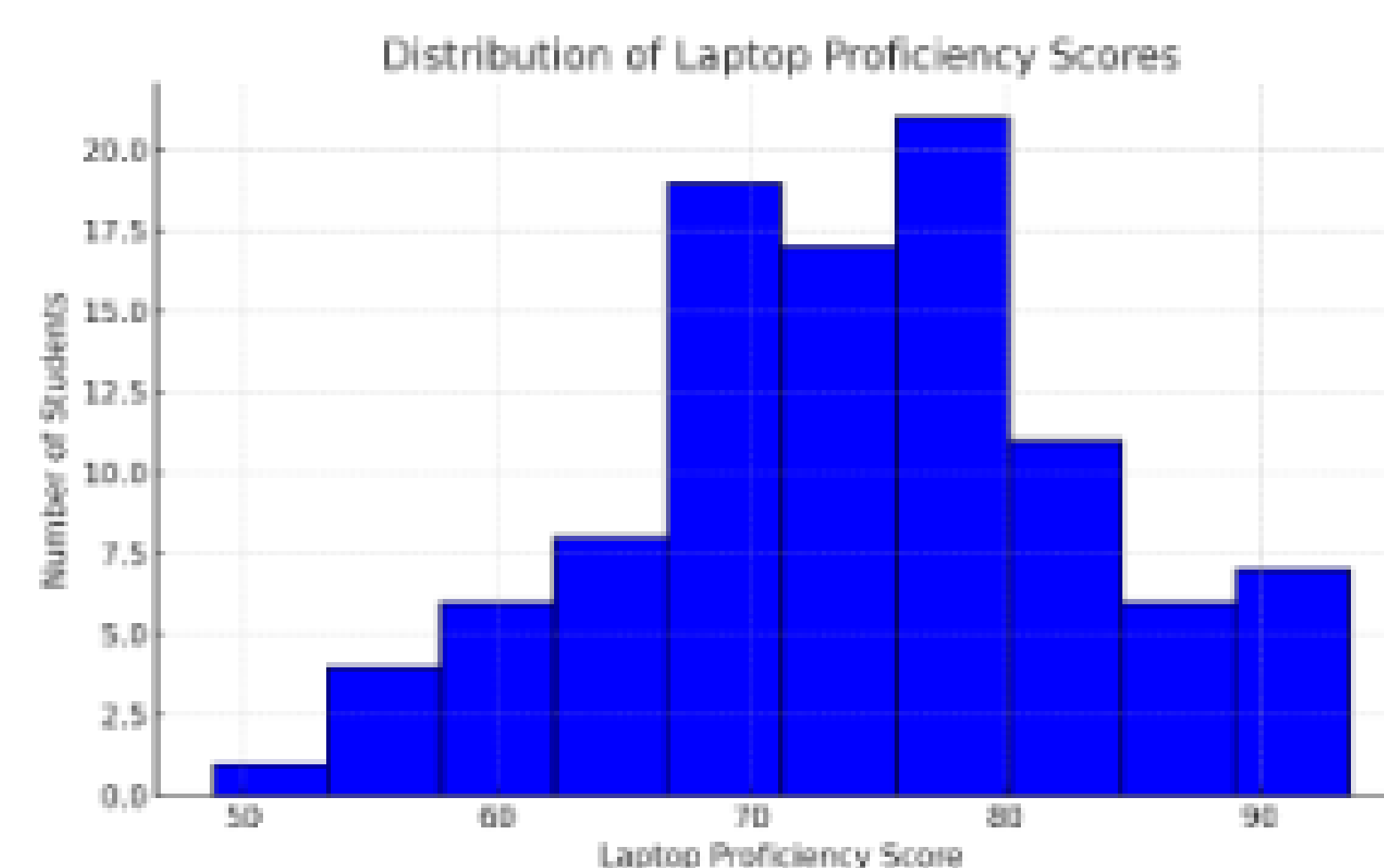
The 2020s marked a period known as the Digitally Integrated Classroom Era, where laptops, digital platforms, and online testing became fundamental components of modern education. Overall, this period fueled what would eventually come to be an academic environment built on assumed technological fluency, unequal digital training, and increasingly high-stakes digital assessments. Now, a statistically significant correlation ($p = 0.76$) has been found between laptop proficiency and high-stakes academic performance, especially in AP English and Computer Science. Earlier, Graham and Perera (2019) emphasized the importance of layered digital competencies, suggesting that foundational and applied tech skills jointly impact academic readiness. Five years later, research shows a growing concern for students' preparedness to complete extended-response and coding-based assessments in digitally administered settings. Recent research implicates foundational laptop fluency with reduced test anxiety, improved navigation, and increased self-efficacy during timed tasks (Muilenburg & Berge, 2016; Barber & Lucas, 2021). The existing literature reopens a once-dismissed link between real-time technical proficiency and academic equity, as it was often argued that today's students are "digital natives." Contrary to pre-existing claims, there is clear evidence of unequal laptop-specific skill development, though still undefined; a rise in test-specific digital stress; increasing performance gaps in STEM and humanities subjects; and the cultivation of a new, unaddressed digital divide based not on access, but on ability. Yet, this area has been neglected.

Methodology

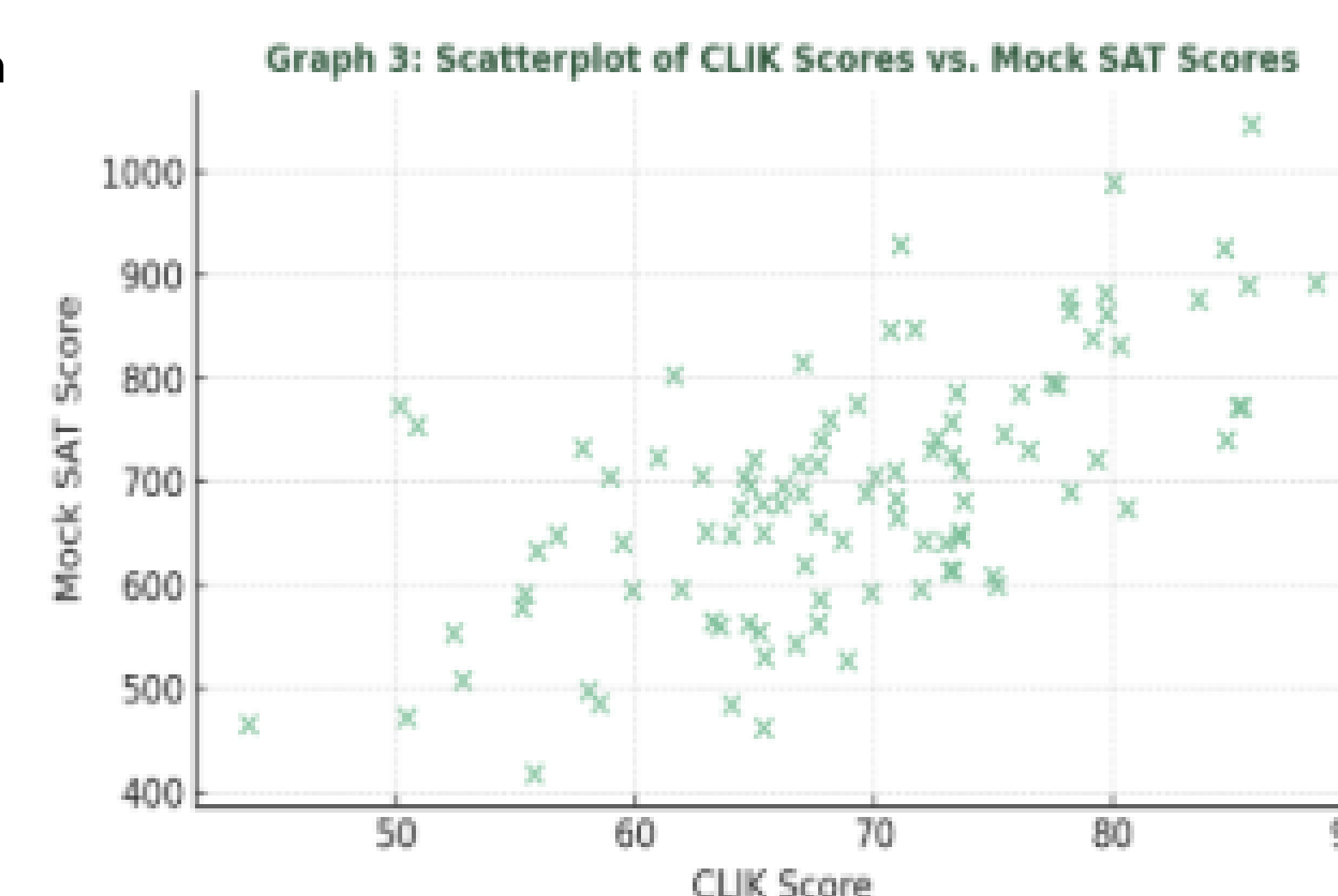
The study employed a multi-method, classroom-based design with a sample of around 50 high school students enrolled in **AP English and AP Computer Science**. Quantitative data was collected through three structured assessments: the CLIK Test (measuring foundational laptop skills), the **iSkills™ Assessment** (evaluating applied academic proficiency), and a **mock digital SAT** (serving as a standardized performance benchmark). Qualitative data was gathered through surveys and open-ended responses assessing students' digital habits, AP test experiences, and perceived preparedness. All assessments were administered under time-controlled conditions using school-issued laptops to simulate high-stakes digital testing environments. Performance data was analyzed using Pearson correlation and regression models, while qualitative responses were categorized to identify key themes such as **digital anxiety, software navigation issues, and perceived readiness**. Together, these methods provided a comprehensive view of how laptop proficiency influences academic outcomes in digitally mediated AP setting

Findings

The quantitative analysis revealed a strong positive correlation ($p = 0.76$) between students' laptop proficiency scores and their self-reported performance on high-stakes AP English and Computer Science exams. Students in the "high proficiency" group (CLIK score 80-100%) consistently outperformed peers in both mock SATs and AP exams, suggesting that proficiency in applied digital tasks—like formatting documents or navigating software—directly impacts performance. Qualitative data uncovered three major barriers affecting student outcomes: (1) inconsistent exposure to academic digital tools prior to AP testing; (2) performance anxiety triggered by unfamiliar digital exam formats; and (3) a mismatch between daily laptop use (e.g., casual browsing) and skills required during high-stakes testing. Participants expressed general confidence in using laptops for everyday purposes, but significant gaps were revealed in translating that comfort into academic success, indicating that targeted laptop training may serve as an equity tool for closing achievement gaps in digitally administered assessments.



Similarly, post-experimentation survey insights from Wysa users revealed that digital tools can also support students' mental health and resilience. Many participants reported that Wysa helped them manage stress more effectively and provided them with a "new perspective," reflecting the impact of cognitive behavioral therapy techniques integrated into the app. According to the survey, 61% of students were able to improve their mental health using Wysa's support tools, including planning exercises, goal-setting features, and reflective prompts. These tools enabled students to better cope with personal challenges and build emotional resilience.



Despite these benefits, participants also identified significant limitations in the app's functionality. A recurring concern was that Wysa's "personalized" responses felt vague and repetitive. For example, Student B stated that the app "seemed to repeat the same things every day and didn't give actual advice," while Student D expressed that the predictability of responses made them feel demotivated to engage. These experiences suggest that while Wysa is accessible and easy to use, it often lacks the depth and adaptability of human support systems. As a result, its long-term effectiveness may be limited without further refinement.

Together, these findings from both the academic and emotional domains illustrate that digital proficiency and support are not automatically developed through casual technology use. Instead, students benefit most when digital tools are implemented with purpose, structure, and responsiveness. Schools and institutions should prioritize both academic interventions that simulate real testing environments and mental health resources that offer authentic, adaptive feedback. In doing so, digital platforms can serve not only as academic aids but also as tools for promoting equity and resilience among students.

Conclusion

Findings highlight the need for targeted **digital skill-building interventions** in high school academic settings. The strong correlation between laptop proficiency and AP performance underscores the importance of integrating structured digital literacy into core curricula. Providing students with regular exposure to academic software, testing platforms, and troubleshooting scenarios could address the gaps revealed in this study. The three major barriers—**limited exposure** to academic **digital tools**, **anxiety** during digital assessments, and reliance on non-academic tech habits—necessitate proactive support and instructional design. Promoting confidence through guided practice, and fostering an environment where digital learning is intentionally taught, **not assumed**, could help mitigate academic disparities. Implementing such programs and prioritizing equitable access to digital training could enhance student outcomes, reduce performance anxiety, and ensure all learners are prepared for the **demands of modern assessments**.

Future Research

There are a few important limitations of this research. First, selection bias may have influenced the results. The study focused on a specific subset of students—those enrolled in AP English and Computer Science—which may not reflect the broader high school population or students in other academic environments. Second, **the Hawthorne Effect** may have impacted responses, as students could have overstated or understated their digital confidence and AP performance due to being observed or feeling evaluated. While efforts were made to maintain anonymity and clarify survey questions, misrepresentation and misunderstanding—especially around self-reported **AP scores and proficiency**—cannot be ruled out. Additionally, the study was conducted over a short timeframe and in a controlled setting, which may not fully capture how laptop proficiency plays out over a full academic year. Future research could address these limitations by using larger, more diverse samples, incorporating longitudinal designs, and including comparative groups, such as students in non-AP courses or from different school systems. Further investigation could also explore how **specific digital tools, exam platforms**, or even teacher practices affect performance outcomes. Lastly, continued research into the intersection of digital stress, confidence, and equity could offer valuable insights for designing more inclusive and supportive techintegrated classrooms.