

Enhancing Sketch-Based Educational Software Using Trends in Student Interaction

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Abstract

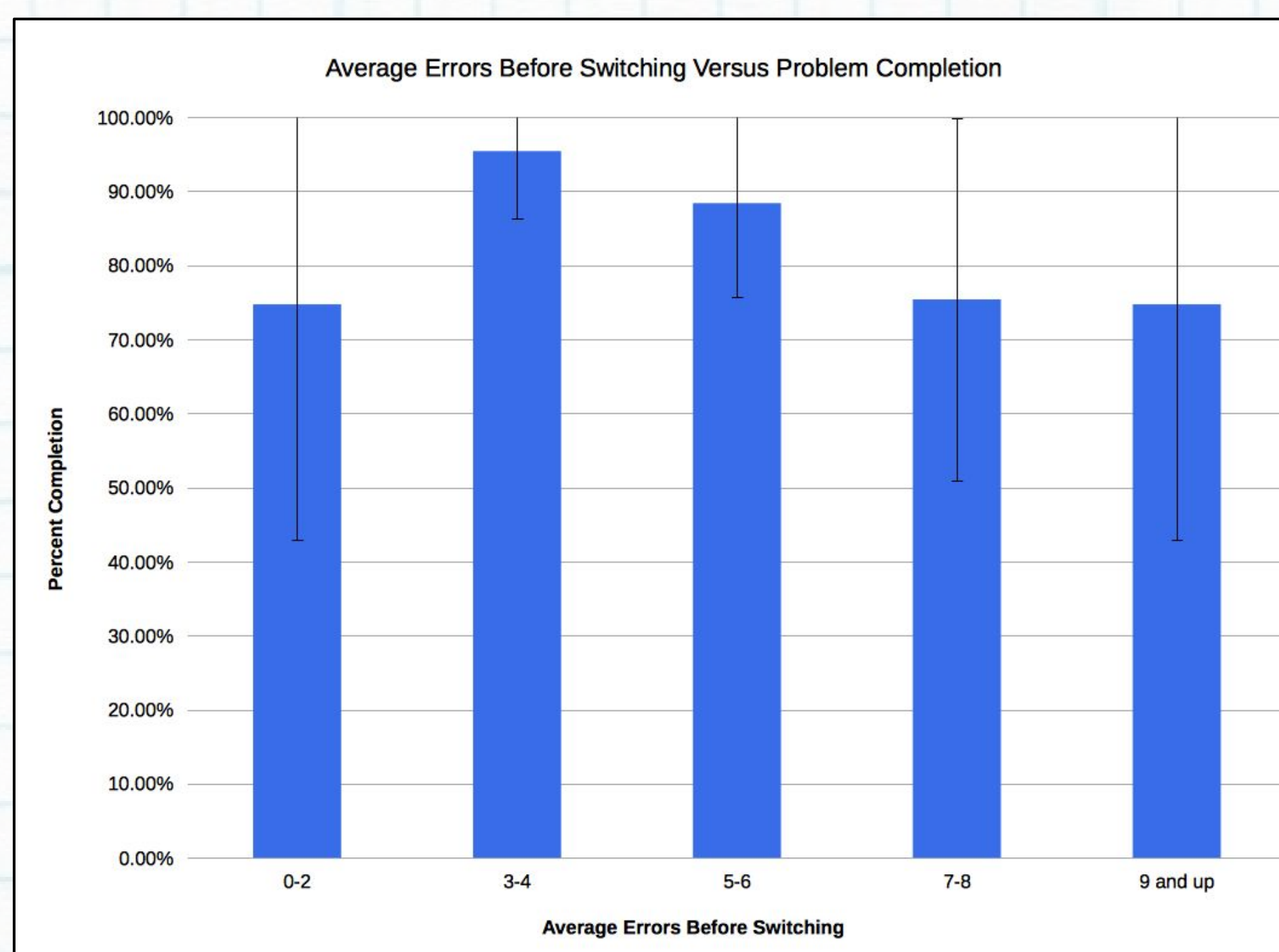
The growing use of educational software can be an opportunity to help students learn. Sketch-based tools are intuitive and may use intelligent behaviors based on student interaction¹.

Introduction

Mechanix allows students to solve truss and free body diagram problems on their computer. Advanced sketch recognition algorithms and real-time evaluation help Mechanix teach concepts².

Analysis

Data from 52 Georgia Tech students and their usage of Mechanix was analyzed using several metrics. Some patterns emerged in their activity.



Number of Attempts before Switching

Willingness to move to other problems when stuck helped the students complete assignments without giving up in frustration

Conclusion

Patterns in student activity suggest that software could detect when students are frustrated or stuck on a particular concept. Offering intervention will improve their learning experience.

Acknowledgements

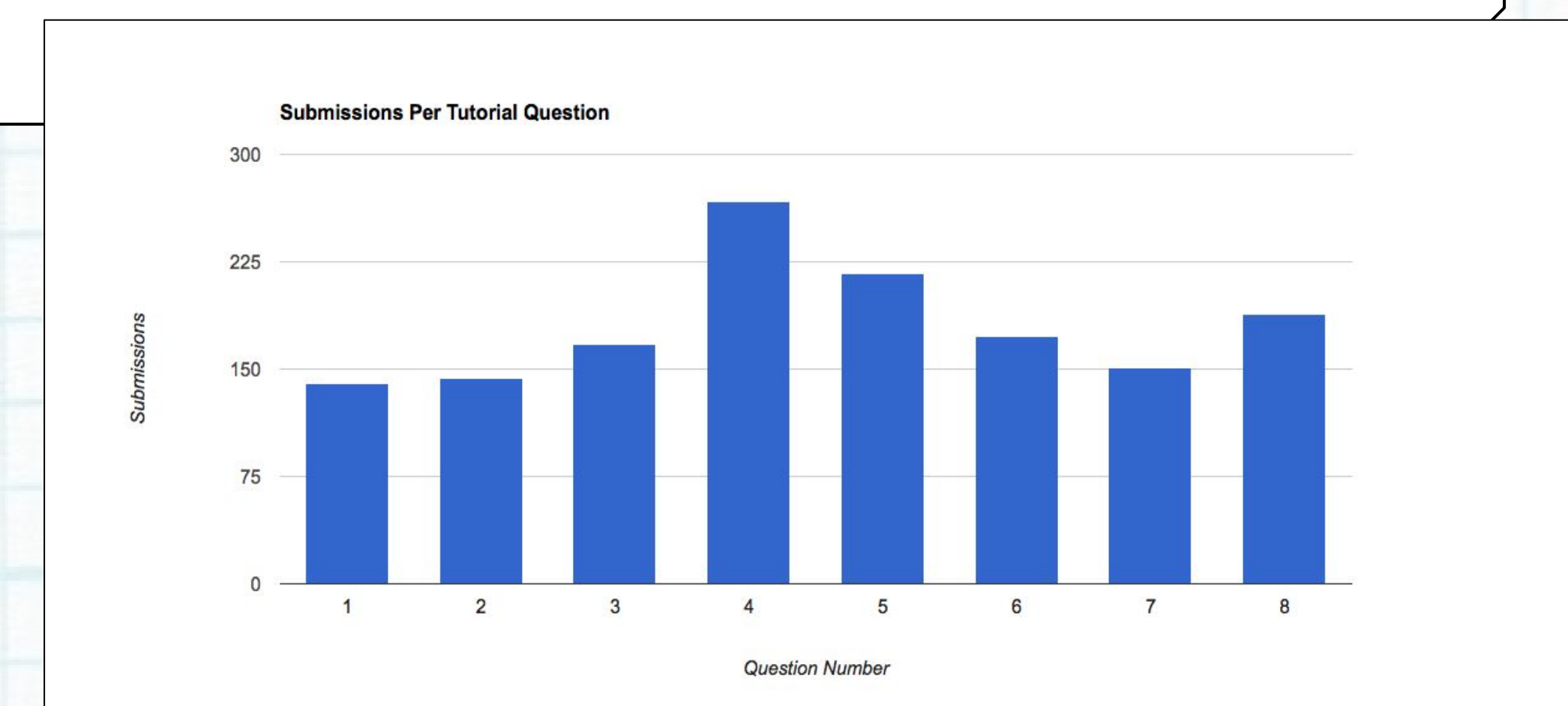
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References

- 1 Hiltz, S. R., and Turoff, M. Education goes digital: The evolution of online learning and the revolution in higher education. *Commun. ACM* 48, 10 (Oct. 2005), 59–64.
- 2 Valentine, S., Vides, F., Lucchese, G., Turner, D., Kim, H.-h., Li, W., Linsey, J., and Hammond, T. Mechanix: A sketch-based tutoring and grading system for free-body diagrams. *AI Magazine* 34, 1 (2012), 55.

Tutorial Difficulty

Tutorials should be designed to progress smoothly. Students stop tutorials if they become too difficult but then may struggle with the concept later.



Time Between Feedback Requests

Students who checked their answers very frequently, especially repeatedly in under a minute, were more likely to stop assignments mid-way.

