Making Digital Learning more Adaptive and Effective

Sarayu Yenumula

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

Results

We were able to successfully figure out the best way for the training program to be tailored to a student's prior knowledge. In order to accomplish this, I had to study the information that the training videos were trying to teach the student, so that I understood how to design my pre-test questions. For instance, if a video talked about the concept of self-testing, I made sure to create both a definition question and a concept question about self-testing. If a student gets both these questions correct, then they don't need to watch the training video and complete those practice questions. If they get just one question incorrect, then they should go through the training videos. This will allow for some students to have a shorter completion time of the training.

Designed pretest question:

Let's check the knowledge you already have about thinking and planning your goals.
Please read and respond to the following question(s):

Which of the following best defines what mental contrasting helps you do?

- Helps combine concepts of indulging and dwelling into your goals so that you can pursue the goals you set
- It helps you turn the behaviors you want to use to reach your goals into habits
- It helps you think too much about how good it would feel to achieve that goal
- It helps you you think about all the obstacles that will prevent you from reaching your goal

Purpose

Learning how to be effective at self-regulated learning is extremely important, especially to a typical college student, as they become more independent in their upper-level STEM studies. As digital learning becomes more common and complex, it's important to try improving the platforms to make them more navigable for the common student (Eddy & Hogan, 2014). Many STEM students have to drop out early because they haven't established proper study skills. For instance, less than half of undergraduates who study STEM subjects, end up completing their degrees. (Bernacki et al. 2020).

By figuring out how we can tailor a student's prior knowledge to the digital training program, we can cut down the time students spend on the program dramatically. It does not make much sense for a student to learn information that they already know. Because of this, we tried to figure out the most effective way to test a student's prior knowledge.

References

Eddy, S. L., & Hogan, K. A. (2014). Getting under the hood: How and for whom does increasing
course structure work? CBE Life Sciences Education, 13(3), 453–468. https://doi.org/10.1187/cbe.14-03-0050
Bernacki, M. L., Vosicka, L., Utz, J. C., & Warren, C. B. (2020, July 6). Effects of Digital
Learning Skill Training on the Academic Performance of Undergraduates in Science and
Mathematics. Journal of Educational Psychology. Advance online publication.
http://dx.doi.org/10.1037/edu0000485

Next Steps

The next step of our research, is to evaluate whether a shorter completion time is just as effective as completing the entire survey. This is important to the educational research community as it will allow us to get further insights into the effectiveness of measuring prior knowledge. Learning effectively helps everyone. Therefore, the findings we gather on how to improve learning is important to everyone. This is why, I'm excited to continue research on this topic so that everyone can have a better understanding on "how to learn."