Conclusions

We developed a tool for measuring the adverse health effects of digital textbooks to identify the most common negative effects of using digital textbooks. In the item selection, we considered the subjective opinions of the students who used the digital textbooks as well as those of teachers and experts. The construct validity was examined through item and factor analyses, and reliability was determined using the split-half method and Cronbach's α. This tool has high validity and reliability, allowing it to be effectively used to assess the adverse health effects that can occur in students who use digital textbooks.

Because digital textbook learning can minimise the gap of time and space, if we can resolve concerns about the adverse health effects caused by digital textbooks, it can be more secure in expanding education. The adverse health effects measurement tool developed in this study can be used to reduce these concerns through the assessment of adverse health effects. In addition, we suggest conducting a study in the future on middle and high school students, in addition to elementary students, to evaluate potential grade and/or age effects of digital textbook use on student health. An intervention study would be helpful for developing ways to prevent and manage the adverse health effects that we observed in this study.

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