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TI **What Works Clearinghouse Quick Review: "Conceptualizing Astronomical Scale: Virtual Simulations on Handheld Tablet Computers Reverse Misconceptions"**

PUB **What Works Clearinghouse.** 2 What Works Clearinghouse. P.O. Box 2393, February 2014.

AB **Abstract (summary)** [Translate](#)

This study examined how using two different ways of displaying the solar system--a true-to-scale mode vs. an orrery mode--affected students' knowledge of astronomical concepts. Solar system displays were presented in a software application on a handheld tablet computer. In the true-to-scale mode, users navigated a simulated three-dimensional solar system environment using a tablet's pinch-to-zoom touchscreen interface; this provided an accurate representation of sizes and distances of planetary bodies. The orrery mode, which is the more common way of displaying the solar system, exaggerated the size of planetary bodies relative to their orbits so surface features could be displayed. The study included 152 students from science classes in a high school in eastern Massachusetts. The study authors reported that student gains in learning astronomical concepts, measured as the differences between pretest and posttest scores, were significantly larger when using the true-to-scale mode than when using an orrery mode. This study was a randomized control trial, but additional information related to the random assignment process and study attrition is needed from the authors to determine whether this study meets What Works Clearinghouse (WWC) evidence standards without reservations. A more thorough review (forthcoming) will determine the rating for the study and report more fully on its results. [The following study is the focus of this "Quick Review": Schneps, M. H., Ruel, J., Sonnert, G., Dussault, M., Griffin, M., & Sadler, P. M. (2014). "Conceptualizing astronomical scale: Virtual simulations on handheld tablet computers reverse misconceptions." "Computers & Education," 70, 269-280.]

Indexing (details) [Cite](#)

| | | |
|-------------|---------------------------------------|---|
| SU | Subject | Astronomy; Scientific Concepts; Science Instruction; Visual Aids; Handheld Devices; Computer Uses in Education; Computer Simulation; Secondary School Science; High School Students; Science Achievement; Achievement Gains; Instructional Effectiveness; Pretests Posttests; Educational Research |
| IF | Identifier / keyword | High Schools, Secondary Education, Massachusetts |
| | Education level | High Schools, Secondary Education |
| TI | URL | http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED544753 |
| TI | Title | What Works Clearinghouse Quick Review: "Conceptualizing Astronomical Scale: Virtual Simulations on Handheld Tablet Computers Reverse Misconceptions" |
| CA | Corporate/institutional author | What Works Clearinghouse (ED) |
| PG | Pages | 2 |
| PCT | Number of pages | 2 |
| PD | Publication year | 2014 |
| YR | Year | 2014 |
| PB | Publisher | What Works Clearinghouse. P.O. Box 2393; Princeton, NJ 08543-2393. |
| | Publisher e-mail | info@whatworks.ed.gov |
| PT | Source type | Reports |
| PEER | Peer reviewed | Yes |
| LA | Language of publication | English |

| | | |
|---|-----------------------------|---|
| DTYPE SFL AN | Document type | 142 Reports - Evaluative |
| | Subfile | ERIC, Resources in Education (RIE) |
| | Accession number | ED544753 |
| | ProQuest document ID | 1509087337 |
| | Document URL | http://search.proquest.com/professional/docview/1509087337?accountid=137296 |
| | Last updated | 2014-03-21 |
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|--------------------------------|------|--|--|
| Pagination | PG | pg(2) pg(7-15) | |
| Start page | PAGE | page(7) | First page |
| Publication date | PD | pd(<20101014) pd(2014) | Date range searching is supported. |
| Publication title ¹ | PUB | pub(computing) | You can also use JN for searching journal title. |
| Publication year | YR | yr(2014) yr(2009-2012) yr(<2008) | |
| Publisher | PB | pb("what works clearinghouse") pb("new york") | Publisher name, address, and sometimes URLs or availability information |
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| Subfile | SFL | sfl("resources in education") sfl(rie) sfl(cije) | |
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