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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
	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

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Last updated 2014-03-21
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SEARCH FIELDS

Field name	Field Code	Example	Description and Notes
Abstract	AB	ab("what works clearinghouse")	Use adjacency and/or Boolean operators to narrow search results.
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First author	FAU	fau(de la rosa, mario)	First name listed in Author field.
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Document title	TI	ti("conceptualizing astronomical scale")	Conference details can be present in Document title.
Document type	DTYPE	dtype(reports evaluative)	
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Identifier (Keyword)	IF	if("higher education") if(asia)	Geographic regions, keywords
ISBN	ISBN	isbn(1845724542)	
ISSN	ISSN	issn(0022-0965) issn(00220965)	
Issue	ISS	iss(12)	
Journal title	JN	jn("journal of computing in higher education")	Look Up list available under Publication title (you can also use PUB for searching)
Language	LA	la(french)	
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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
Report number	RP	rp(ed-ous-00-17)	
Source type	PT	pt(reports)	
Subfile	SFL	sfl("resources in education") sfl(rie) sfl(cije)	
Subjects ¹	SU	su("science instruction") su("united kingdom")	Searches terms indexed in Subject, Identifiers, and Educational Levels. Limit available for Educational Level.
Target audience	TA	ta(parents) ta("media staff")	
Title	TI	ti("virtual simulations" PRE/3 handheld)	Conference details can be present in Document title
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