RECENT RESEARCH STUDIES

STEM Semantic Survey and/or Career Interest Questionnaire (CIQ)

Journals

Christensen, R., & Knezek, G. (2017). Relationship of middle school student STEM interest to career intent. *Journal of Education in Science, Environment and Health (JESEH), 3*(1), 1-13.

Peterman, K., Kermish-Allen, R., Knezek, G., Christensen, R., & Tyler-Wood, T. (2016). Measuring student career interest within the context of technology-enhanced STEM projects: A cross-project comparison study based on the Career Interest Questionnaire. *Journal of Science Education and Technology*, *25*(4), 833-845. DOI:10.1007/s10956-016-9617-5.

Christensen, R., Knezek, G., & Tyler-Wood, T. (2015). Alignment of hands-on STEM engagement activities with positive STEM dispositions in secondary school students. *Journal of Science Education and Technology 24*(6), 898- 909. Available: *http://dx.doi.org/10.1007/s10956-015-9572-6*

Christensen, R., Knezek, G., & Tyler-Wood, T. (2014). Student perceptions of Science, Technology, Engineering and Mathematics (STEM) content and careers. *Computers in Human Behavior, 34*, 173-186. http://dx.doi.org/10.1016/j.chb.2014.01.046

Knezek, G., Christensen, R., Tyler-Wood, T., & Gibson, D. (2015). Gender differences in conceptualizations of STEM career interest: Complimentary perspectives from data mining, multivariate data analysis and multidimensional scaling. *Journal of STEM Education, 16(4), 40-46.*

Christensen, R., Knezek, G., & Tyler-Wood, T. (2015). A retrospective analysis of STEM career interest among mathematics and science academy students. *International Journal of Learning, Teaching and Educational Research, 10*(1), 45-58.

Christensen, R., Knezek, G., & Tyler-Wood, T. (2015). Gender differences in high school dispositions toward science, technology, engineering and mathematics careers. *Journal of Computers in Mathematics and Science Teaching, 34*(4), 395-408.

Knezek, G., Christensen, R., Tyler-Wood, T., & Periathiruvadi, S. (2013). Impact of environmental power monitoring activities on middle school student perceptions of STEM. *Science Education International*. *24*(1), 98-123.

Knezek, G., Christensen, R., & Tyler-Wood, T. (2011). Contrasting perceptions of STEM content and careers. *Contemporary Issues in Technology and Teacher Education*, *11*(1). Retrieved from http://www.citejournal.org/vol11/iss1/general/article1.cfm

Tyler-Wood, T., Knezek, G., & Christensen, R**.** (2010). Instruments for assessing interest in STEM content and careers. *Journal of Technology and Teacher Education, 18(*2), 341-363.

Presentations

Christensen, R., & Knezek, G. (2016). Relationship of middle school student STEM interest to career intent. In M. Shelley, S. Alan & I. Celik (Eds.) *Proceedings of the International Conference on Education in Mathematics, Science and Technology (ICEMST)*, Bodrum, Turkey. ISBN 978-605-66950-3-2

Christensen, R., Knezek, G., & Tyler-Wood, T. (2016). Ethnic group differences in middle school STEM dispositions. Paper presented to the World Educational Research Association (WERA) conference, Washington, DC.

Knezek, G., Christensen, R., & Tyler-Wood, T. (2016). Replication of impact of energy monitoring activities on middle school STEM dispositions. Paper presented to the American Educational Research Association, Washington, DC.

Knezek, G., Christensen, R., & Tyler-Wood, T. (2015). Changes in STEM dispositions and content knowledge for middle school science students. Paper presented to the School Science and Mathematics Association Convention, Oklahoma City, OK.

Knezek, G., Christensen, R., & Tyler-Wood, T. (2015). Teacher dispositions toward science, technology, engineering and mathematics (STEM). In D. Slykhuis & G. Marks (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2015* (pp. 1362-1368). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

Christensen, R., Knezek, G., & Tyler-Wood, T. (2014). *Gender differences for mathematics and science academy students' attitudes toward a STEM career.* Research paper presented to the International Society for Technology in Education Annual Conference, Atlanta, GA, June 30, 2014.

Christensen, R., Knezek, G., Tyler-Wood, T., & Gibson, D. (2013). Persistence of cognitive constructs fostered by hands-on science activities in middle school students. In *Proceedings of the IADIS International Conference on Cognition and Exploratory Learning in Digital Age (CELDA 2013).* International Assn for Development of the Information Society (IADIS). Curran Associates, Inc.

Christensen, R., & Knezek, G. (2013). Contrasts in student perceptions of STEM content and careers. In *Proceedings of Society for Information Technology & Teacher Education International Conference 2013* (pp. 2048-2053). Chesapeake, VA: AACE.

Knezek, G., Christensen, R., Tyler-Wood, T., Periathiruvaldi, S., Alexander, C., Mayes, G., Owens, C. & Magoun, D. (2012). Measurement of STEM Dispositions in Elementary School Students. In P. Resta (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2012* (pp. 1052-1059). Chesapeake, VA: AACE. Retrieved from http://www.editlib.org/p/39715.

Knezek, G., Christensen, R., Tyler-Wood, T., & Periathiruvadi, S. (2012). STEM Learning to STEM Careers: Middle Schoolers Out to Save the World. Paper presented to the American Educational Research Association Annual Meeting.

Knezek, G., Christensen, R., & Tyler-Wood, T. (2012). Contrasts in teacher and student perceptions of STEM content and careers. Presentation to the Hawaii International Conference on Education, Honolulu, Hawaii, January 8, 2012.

Knezek, G., Christensen, R., & Tyler-Wood, T. (2011). Measuring STEM Dispositions: Science, Technology, Engineering, Math. Presentation to the Hawaii Pacific Evaluation Association Conference, Honolulu, HI, September 9, 2011.

Computer Attitude Questionnaire (CAQ)

Journals

Christensen, R., & Knezek, G. (2014). Comparative measures of grit, tenacity and perseverance. *International Journal of Learning, Teaching and Educational Research,8*(1), 16-30.

Mills, L., Wakefield, J., Najmi, A., Surface, D., Christensen, R., & Knezek, G. (2009). Validating the Computer Attitude Questionnaire NSF ITEST (CAQ N/I). In M. Bhattacharya & P. Kommers (Eds.). 2009. *The Connected Learning Space.* AACE.

Christensen, R., Knezek, G., & Overall, T. (2005). Transition points for the gender gap in computer enjoyment. *Journal of Research on Technology in Education, 38*(1), 23- 37.

Presentations

Christensen, R., & Knezek, G. (2014). Motivation, persistence, and grit: A higher-order analysis of three related concepts. Paper presented to the World Educational Research Association, Edinburgh, Scotland.

Knezek, G., & Christensen, R. (1996). Validating the Computer Attitude Questionnaire. Paper presented to the Southwest Educational Research Association Annual Conference, New Orleans, Louisiana, January, 1996.

Climate Change Attitude Survey

Journals

Christensen, R., & Knezek, G. (2018). Impact of middle school student project-based energy monitoring activities on climate change beliefs and intentions. *School Science and Mathematics Journal, 118*(1)

Christensen, R., & Knezek, G. (2015). The climate change attitude survey: Measuring middle school student beliefs and intentions to enact positive environmental change. *International Journal of Environmental and Science Education,10*(5), 773-788.

Presentations

Knezek, G., & Christensen, R. (2017). Contrasts in climate change attitudes and STEM dispositions among children versus adults attending a science and technology exposition. In *iConference 2017 Proceedings* (pp. 764-768). Doi.org/10.9776/17336. Wuhan, China.

Christensen, R., & Knezek, G. (2017). Transforming climate change attitudes for middle school students participating in energy monitoring activities. Presented to the Hawaii *International Conference on Education (HICE*). Honolulu, Hawaii.

Christensen, R., & Knezek, G. (2016). Effect of energy monitoring activities on climate change beliefs and intentions: Replication of findings at multiple project locations. Paper presentation to the IEEE International Conference on Advanced Learning Technologies (ICALT), Austin, TX.

Christensen, R., Knezek, G., & Tyler-Wood, T. (2015). Measuring middle school attitudes toward climate change. In *Proceedings of the School Science and Mathematics Association Convention*.

Technology Proficiency Self Assessment

Journals

Christensen, R., & Knezek, G. (2017). Validating the technology proficiency self-assessment for 21st century learning (TPSA C21) Instrument. *Journal of Digital Learning in Teacher Education, 33(1), 20-31.* DOI:10.1080/21532974.2016.1242391

Presentations

Christensen, R., & Knezek, G. (2014). The technology proficiency self-assessment questionnaire (TPSA): Evolution of a self-efficacy measure for technology integration. In T. Brinda, N. Reynolds & R. Romeike (Eds.) *Proceedings of KEYCIT 2014 – Key Competencies in Informatics and ICT*, 2014, pp. 190-196.

Mayes, G., Mills, L., Christensen, R., & Knezek, G. (2012). Evolution of Technology Proficiency Perceptions: Construct Validity for the Technology Proficiency Self-Assessment (TPSA) Questionnaire from a Longitudinal Perspective. In P. Resta (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2012* (pp. 1988-1993). Chesapeake, VA: AACE. Retrieved from http://www.editlib.org/p/39881.

Teacher Attitudes Toward Computers (TAC)

Journals

Christensen, R.W., & Knezek, G.A. (2009). Construct validity for the teachers' attitudes toward computers questionnaire. *Journal of Computing in Teacher Education, 25*(4), 143-155.

Christensen, R. (2002). Impact of technology integration education on the attitudes of teachers and students. *Journal of Research on Technology in Education, 34* (4), 411-434.

Christensen, R., & Knezek, G. (2000). Internal consistency reliabilities for 14 computer attitude scales. *Journal of Technology and Teacher Education. 8*(4), 327-336.

Presentations

Christensen, R., & Knezek, G. (1999). Preservice vs. inservice educators' attitudes toward information technology. In Jerry Price, Jerry Willis, Dee Anna Willis, Muktha Jost, & Stephanie Boger-Mehall (Eds.) Technology and Teacher Education Annual 1999 - Vol. 2. Charlottesville: Association for the Advancement of Computing in Education, 1319-1322.

Christensen, R., & Knezek, G. (1998). Parallel forms for measuring teachers' attitudes toward computers. In Teacher and Teacher Education Annual 1998. Charlottesville: Association for the Advancement of Computing in Education.

Christensen, R., & Knezek, G. (1997). Internal consistency reliabilities for 14 computer attitude scales. In Teacher and Teacher Education Annual, J. Willis, J. Price, S. McNeil, B. Robin, & D. Willis (Eds) Teacher and Teacher Education Annual 1997. Charlottesville: Association for the Advancement of Computing in Education.

Christensen, R., & Knezek, G. Constructing the Teachers' Attitudes Toward Computers (TAC) Questionnaire. Paper presented to the Southwest Educational Research Association Annual Conference, New Orleans, Louisiana, January, 1996.

Teachers' Attitudes Toward Information Technology (TAIT)

Journals

Shattuck, D., Corbell, K. A., Osborne, J., Knezek, G., Christensen, R., & Grable, L. L. (2011). Measuring teacher attitudes toward instructional technology: A confirmatory factor analysis of the TAT and TAC. *Computers in the Schools, 28*(4), 291-315.

Presentations

Knezek, G., & Christensen, R. (1998). Internal consistency reliability for the teachers' attitudes toward information technology questionnaire. In Teacher and Teacher Education Annual 1998. Charlottesville: Association for the Advancement of Computing in Education.

Mobile Learning Readiness Survey (MLRS)

Journals

Christensen, R., & Knezek, G. (2017). Validating a mobile learning readiness survey: Assessing teachers' dispositions toward adoption. *Journal of Digital Learning in Teacher Education, 33*(4). DOI:10.1080/21532974.2017.1347536

Christensen, R., & Knezek, G. (2017). Readiness for integrating mobile learning in the classroom: Challenges, preferences and possibilities. *Computers in Human Behavior 76*, 112-121. doi.org/10.1016/j.chb.2017.07.014

Presentations

Christensen, R., & Knezek, G. (2017). Contrasts in openness toward mobile learning in the classroom: A study of elementary, middle and high school teachers. Proceedings of the International Conference on Cognition and Exploratory Learning in the Digital Age, Vilamoura, Algarve, Portugal, October 29, 2017.

Stages of Adoption of Technology

Journals

Knezek, G., & Christensen, R. (2016). Extending the Will, Skill, Tool Model of technology integration: Adding pedagogy as a new model construct. *Journal of Computing in Higher Education, 28*(3), 307-325. doi:10.1007/s12528-016-9120-2

Christensen, R., Knezek, G., Tyler-Wood, T., & Gibson, D. (2014). Longitudinal analysis of cognitive constructs fostered by STEM activities in middle school students. *Knowledge Management and ELearning, 6*(2), 103-122.

Morales, C., Knezek, G., & Christensen, R. (2008). Self-efficacy ratings of technology proficiency among teachers in Mexico and Texas. *Computers in the Schools, 25*(1/2), 126-144.

Christensen, R., & Knezek, G. (2007). Pathway for preparing tomorrow's teachers to use technology. *Computers in the Schools. 23*(3/4), 1-21.

Hancock, R., Knezek, G., & Christensen, R. (2007). Cross-Validating Measures of Technology Integration: A First Step Toward Examining Potential Relationships Between Technology Integration and Student Achievement. *Journal of Computing in Teacher Education, 24*(1), 15-21.

Christensen, R. (2002). Impact of technology integration education on the attitudes of teachers and students. *Journal of Research on Technology in Education, 34* (4), 411-434.

Christensen, R., & Knezek, G. (2001). Profiling teacher stages of adoption for technology integration. *Computers in New Zealand Schools, 13*(3), 25-29.

Presentations

Christensen, R., & Knezek, G. (2017). Perceptions of early, mid or late career teachers regarding technology integration, technology proficiency and access to tools and resources. In P. Resta & S. Smith (Eds.), *Proceedings of Society for Information Technology & Teacher Education*

International Conference 2017 (pp. 946-953). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

Miller, J., Christensen, R., & Knezek, G. (2017). Effect of a makerspace training series on elementary and middle school educator confidence levels toward integrating technology. In P. Resta & S. Smith (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2017* (pp. 1015-1020). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

Christensen, R., & Knezek, G. (2017). Longitudinal impact of a STEM professional enrichment program on middle school teachers. In *Proceedings of the Hawaii International Conference on Education (HICE*). Honolulu, Hawaii.

Christensen, R., Griffin, D., & Knezek, G. (2001). Measures of teacher stages of technology integration and their correlates with student achievement. Paper presented to the American Association of Colleges for Teacher Education 53rd Annual Meeting and Exhibit, Dallas, Texas.

Other

Journals

Alexander, C., Knezek, G., Christensen, R., Tyler-Wood, T. & Bull, G. (2014). The impact project-based learning on pre-service teachers' attitudes and skills. *Journal of Computers in Mathematics and Science Teaching*, *33*(3), 257-282.

Knezek, G., & Christensen, R. (2002). Impact of new information technologies on teachers and students. *Education and Information Technologies, 7*(4), 369-376.

Christensen, R., & Knezek, G. (2001). Instruments for assessing the impact of technology in education. *Computers in the Schools, 18*(2/3/4), 5-25.

Knezek, G., & Christensen, R. (2000). Attitudinal differences among integrated computing and traditional computer literacy students in the USA. *Education Y Nuevas Technologias,* Mexico.

Presentations

Knezek, G., Christensen, R., & DenLepcha, S. (2017). Innovative Technologies for Motivating Interest in Space Science. Poster presented to the Hawaii *International Conference on Education (HICE*). Honolulu, Hawaii.

Knezek, G., & Christensen, R. (2001). Teacher and student attitudes toward computers, 1999-2000: Findings from a suburban Texas school district. In Jerry Price, Jerry Willis, Dee Anna Willis, & Niki Davis (Eds.) Technology and Teacher Education Annual 2001, pp. 1284-1285. Charlottesville: Association for the Advancement of Computing in Education.

Knezek, G., Christensen, R., Gilmore, E., Kim, H., Magoun, A., Owens, C., Morales, C., Moonen, B., & Voogt, J. (1999). Teacher and student attitudes toward information technology in four nations. In J. Price, J. Willis, D. Willis, M. Jost, & S. Boger-Mehall, (Eds.), Technology and Teacher Education Annual 1999 (pp. 916-918). Charlottesville, VA: Association for the Advancement of Computing in Education.