

ADAM V. MALTESE

School of Education
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EDUCATION

UNIVERSITY OF VIRGINIA
Ph.D. in Science Education
Charlottesville, VA
May 2008

Dissertation Title: Persistence in Science, Technology, Engineering & Mathematics (STEM):
An Investigation of the Relationship between High School Experiences in Science and
Mathematics and College Degree Completion in STEM Fields

UNIVERSITY OF CONNECTICUT
M.S. in Geology
Storrs, CT
May 2003

HAMILTON COLLEGE
B.A. in Geology, Minor in Anthropology
Clinton, NY
May 1997

EMPLOYMENT EXPERIENCE

INDIANA UNIVERSITY
Professor of Science Education
Martha Lea and Bill Armstrong Chair for Teacher Education
Director, Make Innovate Learn Lab Makerspace
Adjunct Faculty in Geological Sciences
Bloomington, IN
July 2020-Present
July 2020-Present
August 2016-Present

Teaching Experience

- Exploring Secondary Science Teaching (Undergraduate/Graduate)
- Making for Learning (Undergraduate/Graduate)
- Demonstration and Field Strategies in Science (Graduate; online)
- University Science Teaching (Doctoral Seminar)
- Science Education Research Seminar – International STEM Education (Doctoral Seminar)
- Our Habitable Planet (Undergraduate – Geological Sciences)
- Introduction to Environmental Field Methods (*planned*; Undergraduate – Geological Sciences)
- Informal STEM Education (*planned*; Undergraduate)

Associate Professor of Science Education
2014-2020

Assistant Professor of Science Education
2008-2014

UNIVERSITY OF VIRGINIA
Research Assistant for Robert H. Tai
Charlottesville, VA
Fall 2005-Spring 2008

- *Project Crossover* (NSF REC 0440002)
- *Accelerated Longitudinal Study for Learning & Youth Evaluation Center* (NSF DRL 0748041)

Teaching Experience

- Field Projects: Science/Math Spring 2007 & 2008
- Teaching of Elementary Science Fall 2005 & 2007

CAMP DRESSER & MCKEE

Cambridge, MA

Geologist

2003 - 2005

- Led numerous multi-day field assignments including drilling observation and well installation, groundwater and surface water sampling, and excavation oversight
- Worked with senior staff on development of remediation strategies for soil and water

BRUNSWICK SCHOOL

Greenwich, CT

Middle School Science Teacher

1999 - 2003

- Developed and taught 6th Grade earth science curriculum
- Updated and taught 8th Grade physical science curriculum
- Incorporated technology in teaching using SMART Board™, data probes, and online chat
- Co-leader in creation of Middle School Science Fair

PUBLICATIONS**JOURNAL PUBLICATIONS (PEER REVIEWED)**

[**R** USED TO DESIGNATE PAPERS AS RESEARCH, **T** AS TEACHING, *STUDENT CO-AUTHORS*]

36) Paul, K. M., **Maltese, A. V.**, & Valdivia, D. S. (2020). Development and validation of the role identity surveys in engineering (RIS-E) and STEM (RIS-STEM) for elementary students. *International Journal of STEM Education*, 7(1), 1-17. [**R**]

35) Simpson, A., *Morales Collazo, J.*, Zilvinskis, J. & **Maltese, A. V.** (In Revision). A landscape of how professionals identify themselves in STEM fields. *Journal of Career Development*. [**R**]

34) Anderson, A., Simpson, A. & **Maltese A. V.** (2019). Mosaic Youth Mindset. *Connected Science Learning* <http://csl.nsta.org/2019/11/where-should-learners-struggle/> [**R**]

33) Limeri, L., Asif, M., Bridges, B., Esparza, D., Tuma, T., Sanders, D., Morrison, A., Rao, P., Harsh, J., **Maltese, A. V.**, & Dolan, E. (2019). Where's my mentor?! A taxonomy of negative mentoring in undergraduate life science research. *CBE-Life Sciences Education*. <https://www.lifescied.org/doi/10.1187/cbe.19-02-0036> [**R**]

32) Harsh, J., Campillo, M., Murray, C., Myers, C., Nguyen, J., **Maltese, A. V.** (2019). "Seeing" Data like an Expert: An Eye Tracking Study Using Graphical Data Representations. *CBE-Life Sciences Education*. <https://doi.org/10.1187/cbe.18-06-0102> [**R**]

31) Simpson, A. & **Maltese, A. V.** (2019). Lessons Learned and Moving Forward: Development of Low-Cost MAKEngineering Kits. *Teacher Librarian* 46(5) 14-17. [**R/T**]

30) Simpson, A., Anderson, A. & **Maltese, A. V.** (2019). Caught on camera: Youth and educators' noticing of and responding to failure within making contexts. *Journal of Science Education and Technology*. <https://doi.org/10.1007/s10956-019-09780-0> [**R**]

29) Schwab, D. B., Cole, L., Desai, K., Hemann, J., Hummels, K. R., & **Maltese, A. V.** (2018). A summer stem outreach program run by graduate students: successes, challenges, and

recommendations for implementation. *Journal of Research in STEM Education* 4(2) 117-129. [R/T]

28) Lamichhane, R., Reck, C. & **Maltese, A. V.** (2018). Undergraduate chemistry students' misconceptions about bond strength and energy diagrams. *Chemistry Education Research & Practice* 19, 834-845. [R]

27) **Maltese, A. V.**, Simpson, A. & Anderson, A. (2018). Failing to learn: The impact of failures during making activities. *Thinking Skills & Creativity*. <https://doi.org/10.1016/j.tsc.2018.01.003> [R]

26) **Maltese, A. V.**, Harsh, J. & Jung, E. (2017). Evaluating Undergraduate Research Experiences - Development of a Self-Report Tool. *Education Sciences* 7(4): 87. [R]

25) Andrade, A., Danish, J. A. & **Maltese, A. V.** (2017) Analysis of Hands Data from an Embodied Learning Design: Accounting for Temporal Dependencies. *Journal of Learning Analytics* 4(3) 18-45. [R]

24) Simpson, A., Burris, A. & **Maltese, A. V.** (2017). Youth's engagement as scientists and engineers in an afterschool making program. *Research in Science Education*. [R]

23) **Maltese, A. V.** & Cooper (Melki), C. S. (2017). STEM Pathways: Do men and women differ in why they enter and exit? *AERA Open* 3(3) 1-16. DOI: 10.1177/2332858417727276 [R]

22) Harsh, J., Esteb, J. J., & **Maltese, A. V.** (2017). Evaluating the Development of Chemistry Undergraduate Researchers' Scientific Thinking Skills Using Performance-Data: First Findings from the Performance assessment of Undergraduate Research (PURE) Instrument. *Chemistry Education Research and Practice*. [R]

21) Simpson, A. & **Maltese, A.** (2017). "Failure is a major component of learning anything": The Role of Failure in the Development of STEM Professionals. *Journal of Science Education and Technology* 26(2) 223-237. [R]

20) **Maltese, A. V.**, Harsh, J., & Svetina, D. (2015). Interpretation of graphical representations along the novice – expert continuum. *Journal of College Science Teaching* 45(1) 84-90. [R]

19) Börner, K., **Maltese, A. V.**, Balliet, R., & Heimlich, J. (2015). Data Visualization Literacy: Can 273 Science Museum Visitors Read 20 Information Visualizations? *Information Visualization*. DOI: 10.1177/1473871615594652 [R]

18) **Maltese, A. V.**, Danish, J., Bouldin, R., Harsh, J. & Bryan, B. (2015). What are students doing during lecture? Evidence from new technologies to capture student activity. *International Journal of Research and Method in Education*. DOI: 10.1080/1743727X.2015.1041492 [R]

17) Balliet, R., Riggs, E. M. & **Maltese, A. V.** (2015). Students' problem solving approaches for developing geologic models in the field. *Journal of Research in Science Teaching*. DOI: 10.1002/tea.2123 [R]

16) **Maltese, A. V.**, Melki, C. S., & Wiebke, H. (2014). The nature of experiences responsible for the generation and maintenance of interest in STEM. *Science Education*, 98(6), 937–962. [R]

- 15) **Maltese, A. V.**, Ross, H. A., Wang, L. & Wang, Y. (2014). Assessing Multinational Interest in STEM: Implementing a comparative survey research study in China. *International Journal of Chinese Education*, 3(2014) 109-131. DOI 10.1163/22125868-12340032 [R]
- 14) Timme, N., Baird, M., Bennett, J., Fry, J., Garrison, L., & **Maltese, A. V.** (2013, May). A Summer Math and Physics Program for High School Students. *The Physics Teacher*, 51(5) 280-285. [R/T]
- 13) **Maltese, A. V.**, Balliet, R., & Riggs, E. M. (2013). Through their eyes: Tracking the gaze of students in a geology field course. *Journal of Geoscience Education*, 61(1) 81-88. [R]
- 12) **Maltese, A. V.**, Tai, R.H., & Fan, X. (2012). When is homework worth the time? Evaluating the association between homework and achievement in high school science and math. *The High School Journal*, 96(1) 52-72. [R]
- 11) Harsh, J., **Maltese, A. V.**, & Tai, R. H. (2012). A perspective of gender differences in chemistry and physics undergraduate research experiences. *Journal of Chemical Education*, 89, 1364-1370. dx.doi.org/10.1021/ed200581m [R]
- 10) **Maltese, A. V.** & Hochbein, C. (2012). The consequences of school improvement: Examination of the association between school improvement and student science achievement. *Journal of Research in Science Teaching*, 49(6) 804-830. [R]
- 9) Bennett, J., Fry, J. Timme, N., & **Maltese, A. V.** (2012, March/April). Lessons learned from a summer preparatory program on foundations in physics and calculus. *Journal of College Science Teaching*, 41(4), 52-56. [T]
- 8) **Maltese, A. V.** & Tai, R.H. (2011). Pipeline Persistence: The effects of school experiences on earning degrees in STEM. *Science Education*, 95(5) 877-907. [R]
- 7) Harsh, J., **Maltese, A. V.**, & Tai, R. H. (2011). Undergraduate Research Experiences from a longitudinal perspective. *Journal of College Science Teaching*, 41(1) 84-91. [R]
- 6) **Maltese, A. V.**, Tai, R. H., & Sadler, P. M. (2010). The effect of high school physics laboratories on performance in introductory college physics. *The Physics Teacher*, 48(5) 333-337. [R]
- 5) **Maltese, A. V.** & Tai, R. H. (2010). Eyeballs in the fridge: Sources of early interest in science. *International Journal of Science Education*, 32(5) 669-685. [R]
- 4) **Maltese, A. V.** (2009, April/May). Shake, rattle and hopefully not fall. *Science and Children*, 46(8), 40-43. [T]
- 3) **Maltese, A. V.**, Dexter, K. M., Tai, R. H., & Sadler, P. M. (2007). Breaking from tradition: Unfulfilled promises of block scheduling in science. *Science Educator*, 16(1), 1-7. [R]
- 2) Tai, R. H., Sadler, P. M., & **Maltese, A. V.** (2007). A study of the association of autonomy and achievement on performance. *Science Educator*, 16(1), 22-28. [R]
- 1) Tai, R. H., Liu, C. Q., **Maltese, A. V.**, & Fan, X. T. (2006, May 26). Planning early for careers in science. *Science*, 312 (5777), 1143-1144. [R]

BOOK CHAPTERS OR MODULES (PEER REVIEWED)

- 7) Simpson A., Maltese A.V., Anderson A., Sung E. (2020) Failures, Errors, and Mistakes: A Systematic Review of the Literature, pp 347-362. In: Vanderheiden E., Mayer CH. (eds) *Mistakes, Errors and Failures across Cultures*. Springer, Cham
- 6) Cross Francis, D., Wilkins-Yel, K. G., Paul, K., **Maltese, A. V.** (In Press). Underrepresentation of Women and Students of Color in STEM. n A. Sahin & M. Mohr-Schroeder (Eds.), *STEM Education 2.0. Myths and Truths: What has years of K-12 STEM education research taught us?* [R]
- 5) Simpson, A., Barnes, J., & **Maltese, A. V.** (In Press). A shared language: Two worlds speaking to one another through making and tinkering activities. In A. Sahin & M. Mohr-Schroeder (Eds.), *STEM Education 2.0. Myths and Truths: What has years of K-12 STEM education research taught us?* [R]
- 4) Zoss, A., **Maltese, A.**, Uzzo, S. & Borner, K. (2018). Network Visualization Literacy Novel Approaches to Measurement and Instruction. In C. Cramer and S. Uzzo (Eds.) *Network Visualization Literacy*. [R/T]
- 3) Graham, J., Rupp, J. & **Maltese, A. V.** (2016). Shale gas development - An educational module using three case studies and three scientific concepts. Prepared for the Committee on Preparing the Next Generation of Policy Makers for Science-Based Decisions Committee on Science, Technology, and Law. Washington, DC: The National Academies of Sciences - Engineering - Medicine. Available from: http://sites.nationalacademies.org/PGA/SciPol_Ed_Modules/PGA_173007 [T]
- 2) **Maltese, A. V.** & Harsh, J. A. (2015). Pathways of entry into STEM across K–16. In K. A. Renninger, M. Nieswandt, & S. Hidi (Eds.), *Interest and the Self in K-16 Mathematics and Science Learning*. Washington, DC: American Educational Research Association. [R]
- 1) **Maltese, A. V.**, Lung, F., Potvin, G. & Hochbein, C. D. (2014). STEM Education in the United States. In B. Freeman, S. Marginson, & R. Tytler (Eds.), *The Age of STEM: Educational policy and practice across the world in Science, Technology, Engineering and Mathematics* (pp. 102-133). New York: Routledge. [R]

CONFERENCE PROCEEDINGS (PEER REVIEWED)

- 6) Miel, K., Portsmouth, M. D., Fuller, E., Paul, K., Sung, E., & **Maltese, A. V.** (2019, June). "Maybe If I Put My Mind To It": 5th Graders' Receptivity to Pursuing Engineering Careers (Fundamental). In *2019 ASEE Annual Conference & Exposition* Tampa, FL. [R]
- 5) Paul, K., **Maltese, A. V.**, Miel, K. & Portsmouth, M. D., (2019, June). *Development of an Engineering Identity and Career Aspirations Survey for use with Elementary Students*. In *2019 ASEE Annual Conference & Exposition* Tampa, FL. [R]
- 4) Paul, K., **Maltese, A. V.**, Miel, K. & Portsmouth, M. D., (2019, June). *Development of a Create-a-Lego-Engineer Activity to Examine Students' Engineering Identity* (Work in Progress Paper). In *2019 ASEE Annual Conference & Exposition* Tampa, FL. [R]
- 3) Simpson, A., Anderson, A., **Maltese, A. V.**, & Goeke, M. (2018). "I'm going to fail": How youth interpret failure across contextual boundaries. In J. Kay & R. Luckin (Eds.), *Proceedings of the 13th International Conference of the Learning Science* (Vol. 2, pp. 981-984). London, United Kingdom: University College London. [R]

2) Abrahamson, D., Andrade, A., Bakker, A., Nathan, M. J., Walkington, C., Lindgren, R., ... & **Maltese, A. V.** (2018, June). Moving forward: In search of synergy across diverse views on the role of physical movement in design for stem education. In *Proceedings of International Conference of the Learning Sciences, ICLS* (Vol. 2, No. 2018-June, pp. 1243-1250). International Society of the Learning Sciences. [R]

1) Miel, K., Portsmore, M. D., **Maltese, A. V.**, & Paul, K. (2018, June). Board 126: Examining the Interactions Related to Role Modeling in an Elementary Outreach Program (Work in Progress Paper). In *2018 ASEE Annual Conference & Exposition* Salt Lake City, UT. [R]

Manuscripts Under Review or In Preparation

Simpson, A. & **Maltese, A. V.** (In Review). Pedagogical Progression of Maker Educators in a School Setting. *Teaching and Teacher Education*. [R]

Gao, Y. & **Maltese, A. V.** (In Review). Examining the understanding of STEM education in China: A co-word analysis and systematic review of the literature. [R]

Sang, W. & **Maltese, A. V.** (In Review). Latent class analysis of undergraduate students' motivation for science courses: A comparison between the United States and China. *International Journal of Science Education*. [R]

Humburg, M., Tan, V., **Maltese, A. V.**, Simpson, A. & Danish, J. (In Review). Making for Learning: A class designed for engaging educators in designing maker-focused activities. *Intl. Journal of Science and Mathematics Education*. [T/R]

Wilkins-Yel, K. G., Cross Francis, D., Paul, K., **Maltese, A. V.** (In Preparation). The (Under)Representation of Women in STEM. In C. Jones & J. Bainbridge (Eds.), *The Palgrave Handbook of Women and Science: History, Cultures and Practice since 1660*. [R]

Maltese, A. V. & Hochbein, C. (In Preparation). STEM Factories – A study of high school and community factors associated with producing STEM degrees. [R]

REPORTS & REVIEWS

3) Pepler, K., **Maltese, A. V.**, Keune, A., Chang, S., Regalla, L. (2015). Survey of Makerspaces, Part II. Maker Education Initiative. Available online: <http://makered.org/open-portfolios-survey-of-makerspaces-part-ii/> [R]

2) **Maltese, A. V.**, Lung, F., Potvin, G., & Hochbein, C. (2013). STEM Education in the United States. Australian Council of Learned Academies for Securing Australia's Future. Available from: <http://www.acolasecretariat.org.au/ACOLA/PDF/SAF02Consultants/Consultant Report - US.pdf> [R]

1) **Maltese, A. V.** (2013). Book review of Is American Science in Decline? *Science Education*, 97(3), 494-496. [R]

FUNDING**RESEARCH**

National Science Foundation (DRL 2005860)	2021-2024
Collaborative Research: The Notion of Failure and Maker Programming for Youth: Supporting the Professional Development, Reflection, and Learning of Informal Educators	\$1,600,00
National Science Foundation (DRL 2037983)	2020-2023
Online Practice Suite: Practice Spaces, Simulations and Virtual Reality Environments for Preservice Teachers to Learn to Facilitate Argumentation Discussions in Math and Science	\$3,200,000
National Science Foundation (DRL 2027368)	2020-2021
RAPID: Rapidly building a collaborative network of informal educators to address extended school closures related to the 2020 COVID-19 pandemic	\$200,000
National Science Foundation (DRL 1759259)	2018-2021
Collaborative Research: Engineering a Community-Family Partnership: Developing a Program Aimed at Making and Design Practices in Home Environments. [PI]	\$1,200,000
Advanced Innovation Center for Future Education (Beijing Normal University)	2018-2020
Does innovative teaching lead to teaching innovation? Collaboration with Victoria University (AUS) to investigate teaching practices in China and exchange ideas related to best practices in STEM education.	¥52,400
National Science Foundation (DRL 1657519)	2017-2020
Collaborative Research: Role Models in Elementary Engineering Education. [IU PI]	\$1,200,000
Institute for Museum and Library Services (LG-99-17-0025-17)	2017-2018
MAKEngineering Bags: A library program to engage families in making activities. [PI]	\$24,999
Google Sponsorship	2016-2019
MAKEval - Developing tools to measure key outcomes of making [PI]	\$100,000
Maris M. Proffitt and Mary Higgins Proffitt Endowment Grant (IU Internal)	2015-2016
Examining Early Elementary Modeling of Complexity with High-Resolution Multimodal Learning Analytic Techniques. [Co-PI]	\$19000
National Science Foundation (DRL 1623452)	2016-2018
EAGER: MAKER: Studying the Role of Failure in Design and Making [PI]	\$301,000
National Science Foundation (NCSE 1538763)	2015-2017
Measuring and Visualizing STEM Pathways [PI]	\$149,000
Google Sponsorship	2015-2019
“Making” STEM pathways [PI]	\$150,000

National Science Foundation (DUE 1140445, with supplement) US-MORE – research to investigate the variation in experiences and outcomes in undergraduate research in the fields of chemistry and physics. [PI]	2012-2016 \$238,000
National Science Foundation (DRL 223698) Informal Science Education Pathways: Sense-Making of Big Data – research to investigate how children and adults interact with visual representations of large data sets within various informal education setting. [Co-PI]	2012-2014 \$250,000
S. D. Bechtel Jr. Foundation Spark to Flame – research study to investigate student engagement in STEM longitudinally across grades 3 through 12. [Co-PI]	2011-2015 \$600,000
Faculty Research Support Program (IU Internal) Assessing Multinational Interest in STEM – funding to survey international sample of students regarding the development and maintenance of their interest in STEM. [PI]	2013 \$70,000
Maris M. Proffitt and Mary Higgins Proffitt Endowment Grant (IU Internal) Funding for research on student entry and persistence in STEM using multiple federal data sets. [PI]	2012-2013 \$19,000
U.S. Department of Education Chicago Public Schools - Science and Math Engagement Initiative. [Evaluator]	2010-2012 \$134,000
National Aeronautics and Space Administration Chicago Public Schools - Capstone Course for Space Science. [Evaluator]	2009-2012 \$107,000
Faculty Research Support Program (IU Internal) Getting to the CoRe of It! Transforming Preservice Teachers' Learning of Science – funding to investigate impact of synthesis strategies on content learning in geology. [Co-PI]	2010-2011 \$34,000
Indiana Education Database Grant Program (IU Internal) Funding for research to investigate the progression of students from high school to college and from college to graduate school in STEM disciplines. [PI]	2010-2011 \$15,000
Maris M. Proffitt and Mary Higgins Proffitt Endowment Grant (IU Internal) Funding for research investigating the understanding and creation of graphs and tables used to represent data in the Geosciences. [PI]	2009-2011 \$38,000

TEACHING

Tilaar Faculty Support Fund <i>From Maker Space to Open Space: Designing a Low-Cost E-Textile Workshop for Migrant Girls in China</i> - Funding to work with graduate students to develop an outreach program with the goal of educating and empowering young women in China.	2019 \$10000
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Learning and Teaching with Technology Challenge Development Grant	2017
Development and evaluation of Making for Learning class	\$4000
Faculty Learning Community – Learning Analytics	2014-2016 \$4000
Faculty Learning Community – Transforming Undergraduate STEM Education	2013-2014 \$750
Faculty Learning Community – Second Life	2011-2012
Award from Learning Technologies group within University Information Technology Services to develop Second Life as part of online course for educators	\$750
Summer Instructional Development Fellowships	2011
Award from Center for Innovative Teaching & Learning to develop online Archaeology/geology course for educators	\$8000
Innovative Pedagogies Initiative – School of Education	2011
Award for exploring use of blogs, wikis and social media tools in classes	\$500
SmartBoards for Science and Art Education	2010
Award for the purchase and installation of SmartBoards to be used with pre-service teachers	\$5000
New IDEA Grant	2009
Award from School of Education to develop online course for teaching biology/geology/ecology outdoors	\$5000

SERVICE

TIDES Foundation – Making Spaces Grant	2018
Funding for development and support of network of maker educators in rural IN	\$15000

AWARDS

ASEE Best Paper Award – Pre-College Engineering Education Division	2020
ASEE Best Paper Award – Pre-College Engineering Education Division	2019
American Educational Research Association Dissertation Grant	2007-2008
Funding for dissertation research using NELS:88 data set to investigate student persistence in STEM	\$13,790

INVITED TALKS / WORKSHOPS / CONFERENCES

<i>Making in Education</i>	November 2018
Global Leaders Forum 2018 [Invited Speaker] – ChosunTV, Seoul, Korea	
<i>Infosys Crossroads 2018</i> [Invited Attendee]	May 2018
Invitation-only conference hosted by Infosys Foundation USA, Scotts Valley, CA	
<i>How do youth start on pathways toward Engineering?</i>	March 2018
Engineering Education Research Seminar at Purdue University - West Lafayette, IN	

- The Promise of Making to Engage all learners in STEM* November 2017
Keynote speaker for 250 educators at STEAM Forum in Qingdao, China
- Indiana Maker Educator Workshop* September 28-29, 2017
Coordinated workshop for 45 educators in Indianapolis, IN
- Using networks to analyze the academic persistence of undergraduates* June 2017
Invited talk for NetSciEd6 Satellite Symposium, Indianapolis, IN
- Infosys Crossroads 2017* [Invited Attendee] May 2017
Invitation-only conference hosted by Infosys Foundation USA, San Francisco, CA
- EdFoo* [Invited Attendee] April 2017
Invitation-only conference hosted by Google, Sesame Street Workshop and O'Reilly Media, Sunnyvale, CA
- EdFoo* [Invited Attendee] February 2016
Invitation-only conference hosted by US Department of Education, Google, Sesame Street Workshop and O'Reilly Media, Sunnyvale, CA
- The pathways towards STEM..... and the role of failure along the way* October 2015
Tufts University Center for Engineering Education and Outreach
- Symposium on STEM Education in Asia and the United States* [Organizer] October 2014
Beijing, China
- Big Data: What's In It For High School Students?* December 2013
Invited panelist for online conference for NSF's CS10K initiative
Session archived here: http://bit.ly/big_data_event
- Using Research Findings on Interest Generation to Help Us Provide Equal Access to Quality STEM Experiences* – NSF STEM Smart Conference, Baltimore, MD March 2013
- Assessing Data Interpretation Skills Using Multiple Methods* June 2012
Invited talk at NetSciEd Satellite Symposium, Northwestern University
- AERA Conference on Interest and Self-Concept of Ability in K-16 Mathematics and Science Learning* - Swarthmore College May 2012
- Before Proposing to 'Change the Equation' We Should Know All the Variables* March 2012
Oak Ridge Associated Universities
- The Paths Most Traveled: What transcript and survey data tell us about students entering and leaving the STEM pipeline* – Clemson University November 2011
- Methods for teaching content integrating mathematics and science* July 2010
Presentation to Korean teachers visiting Indiana University
- Riding the Geoscience Cyberinfrastructure Wave of Data: Real Time Data Use in Education* – 4th IEEE International Conference on e-Science, Indianapolis, IN December 2008

PRESENTATIONS

Maltese, A. V., Simpson, A. & Anderson, A. (2019). Learning While Failing During Maker Activities. Annual Meeting of American Educational Research Association; Toronto, CAN.

Maltese, A. V., Simpson, A. & Anderson, A., Ryoo, J., Qian, M., & Paul, K. (2019). MakEval: Mixed methods approaches to evaluating making in schools. Annual Meeting of American Educational Research Association; Toronto, CAN.

Anderson, A., **Maltese, A. V.** & Simpson, A. (2019). Are students emotional when they fail during making? Evidence from various settings. Annual Meeting of American Educational Research Association; Toronto, CAN.

Paul, K., **Maltese, A. V.**, *Miel, K.* & Portsmore, M. (2019). Development of a survey intended to measure engineering identity components in elementary students. Annual Meeting of American Educational Research Association; Toronto, CAN.

Morales, J., Simpson, A., Zilvinskis, J. & **Maltese, A. V.** (2019). A landscape of how professionals identify themselves in STEM fields. Annual Meeting of American Educational Research Association; Toronto, CAN.

Maltese, A. V., Paul, K., Portsmore, M. & *Miel, K.* (2019). Development of a Survey to Measure Engineering Identity and Career Aspirations in Elementary Students. Annual Meeting of National Association of Research in Science Teaching; Baltimore, MD.

Simpson, A., & **Maltese A. V.** (2018). How to develop a low-cost MAKEngineering kit. Presentation presented at the How-to Festival of the annual meeting of the Public Library Association, Philadelphia, PA.

Simpson, A., *Burris, A.*, & **Maltese, A. V.** (2018). Youth's engagement as mathematicians in an afterschool making program. Poster presentation to be presented at the 40th annual meeting of PME-NA: Greenville, SC.

Simpson, A., Anderson, A., **Maltese, A. V.**, & Goeke, M. (2018). "I'm going to fail": How youth interpret failure across contextual boundaries. Short paper to be presented at the 13th annual meeting of the International Conference of the Learning Sciences: London, UK.

Maltese, A. V., & Simpson, A. (2018). Ending the search for triggers of STEM interest. Poster presented at the annual research meeting of the American Educational Research Association, New York City, NY.

Simpson, A., Anderson, A., & **Maltese, A. V.** (2018). Caught on camera: Adolescent and educator's noticing of and response to failure within making contexts. Paper to be presented at the annual research meeting of the American Educational Research Association, New York City, NY.

Maltese, A. V., Simpson, A., Ryoo, J., Anderson, A., & Qian, M. (2018). MakEval: Developing a set of tools to evaluate the benefits of making. In structured poster presentation entitled "Measuring Making: Methods, Tools, and Strategies for Capturing Learning, Participation, and Engagement in Maker Activities" at the annual research meeting of the American Educational Research Association, New York City, NY.

Harsh, J., Miller, K., Hartley, F., Jones, E. & **Maltese, A. V.** (2018). Between Pre and Post: Using Weekly Prompts to Better Understand Student Outcomes from Undergraduate Research. Annual Meeting of National Association of Research in Science Teaching; Atlanta, GA.

Andrade, A., Danish, J. & Maltese, A. V. (2017). Why Are You Gesturing? Elicited Gestures and Learning Gains in an Embodied Learning Environment. Annual Meeting of American Educational Research Association; San Antonio, TX.

Maltese, A. V. & Zych, A. (2017). Using Twitter data to understand participation in a science outreach campaign. Poster presented at the European Association for Research on Learning and Instruction; Tampere, Finland.

Maltese, A. V. & Simpson, A. (2017). The existence of Science and Engineering Practices in Making Activities. Paper presented at the European Association for Research on Learning and Instruction; Tampere, Finland.

Maltese, A. V., Zych, A. & *Hong, K.* (2017). #CephalopodWeek - Tracking a social media campaign related to science. NetSciEd6 Satellite Symposium, Indianapolis, IN.

Simpson, A. & **Maltese, A. V.** (2017). STEM Identity: How Professionals in STEM Position Their Work. Annual Meeting of American Educational Research Association; San Antonio, TX.

Maltese, A. V., Wohlwend, K., Simpson, A. & *McKeown, J.* (2017). Examining Portrayals of STEM in Early Childhood Television Programming. Annual Meeting of American Educational Research Association; San Antonio, TX.

Simpson, A., **Maltese, A. V.** & *Burris, A.* (2017). Youth Engagement as Scientists and Engineers within a Making-related After-school Program. Annual Meeting of National Association of Research in Science Teaching; San Antonio, TX.

Simpson, A. & **Maltese, A. V.** (2017). The Role of Failure in the Development of STEM Professionals. Annual Meeting of National Association of Research in Science Teaching; San Antonio, TX.

Simpson, A., Ratliff, C. & **Maltese, A. V.** (2017). Maker Educators: Encouraging Active, Creative, and Self-Directed Students through Making in School Settings. Annual Meeting of National Association of Research in Science Teaching; San Antonio, TX.

Simpson, A. & **Maltese, A. V.** (2017). Youth and Educators' Response to FAILURES within STEM Activities. Purdue STEM Conference 2017; West Lafayette, IN.

Maltese, A. V. & Jung, E. (2016). Factors Related to Student Choice of Academic Major and Persistence in STEM. National Association for Research in Science Teaching, Baltimore, MD.

Allen, J., Park Rogers, M. & Maltese, A. V. (2016) Factors Influencing Secondary Science Teachers Orientations for Teaching about STEM Careers National Association for Research in Science Teaching, Baltimore, MD.

Ryoo, J., Tai, R., Mitchell, C., Shi, D., Almarode, J. & **Maltese, A. V.** (2016). Examination of Measurement Invariance on a Framework for Observing and Categorizing Instructional Strategies. Annual Meeting of American Educational Research Association, Washington, DC.

Maltese, A. V. & Jung, E. (2016). Measuring and Visualizing STEM Pathways. Annual Meeting of American Educational Research Association, Washington, DC.

Maltese, A. V. & Harsh, J. (2015). Students' Pathways of Entry into STEM. Annual Meeting of American Educational Research Association, Chicago, IL.

de Leeuw, J., Motz, B., Eastwood, J., **Maltese, A. V.**, Goldstone, R. & Danish, J. (2015). Needle in the Neural Haystack: Electroencephalograph Signatures of Concept Learning While Viewing Naturalistic Educational Materials. Annual Meeting of American Educational Research Association, Chicago, IL.

Dabney, K., **Maltese, A. V.**, Tai, R. & Almarode, J. (2015). Gender and Early Career Choice in STEM. Annual Meeting of American Educational Research Association, Chicago, IL.

Börner, K., **Maltese, A. V.**, Balliet, R., & Uzzo, S. (2015). Data Visualization Literacy of Youth and Adult Science Museum Visitors. Annual Meeting of American Educational Research Association, Chicago, IL.

Maltese, A. V., Ross, H. A. & *Dai, S.* (2015). Assessing Multinational Interest in STEM: Triggers of Interest. Annual Meeting of the National Association for Research in Science Teaching, Chicago, IL.

Melki, C. S., Balliet, R., **Maltese, A. V.**, Tai, R. & Almarode, J. (2015). Spark to Flame: Factors Influencing Students' Interest in Science. Annual Meeting of the National Association for Research in Science Teaching, Chicago, IL.

McCormack, S. & **Maltese, A. V.** (2015). Lack of Opportunity, Achievement, and Choice? A Comparison of Math and Science Opportunity, Achievement, and Course Choice in Hispanic Males and Females. Annual Meeting of the National Association for Research in Science Teaching, Chicago, IL.

Harsh, J. A., Balliet, R., **Maltese, A. V.** & Tai, R. (2015). Essential Features and Benefits of Undergraduate Research Experiences: Perspectives of Student Researchers and Practicing Scientists. Annual Meeting of the National Association for Research in Science Teaching, Chicago, IL.

Burris, A. & **Maltese, A. V.** (2015). A Kids'-Eye View of Interest in the Zoo. Annual Meeting of the National Association for Research in Science Teaching, Chicago, IL.

Harsh, J. A., **Maltese, A. V.**, Esteb, J. & Schmitt-Harsh, M. (2015). Development of a Performance-Based Measure to Assess the Scientific Thinking Skills of Undergraduate Researchers. Annual Meeting of the National Association for Research in Science Teaching, Chicago, IL.

Maltese, A. V., Ross, H. A. & *Dai, S.* (2014). A comparison of STEM experiences in Australia, China and the United States. Panel at the Midwest Conference of the Comparative and International Education Society, Bloomington, IN.

Maltese, A. V. (2014). Using Multiple Measures to Identify the Experiences That Initiate and Maintain Interest in STEM. Annual Meeting of American Educational Research Association, Philadelphia, PA.

Melki, C. S., Maltese, A. V. & Wiebke, H. (2014). From Initial Interest to Persistence in STEM. Annual Meeting of American Educational Research Association, Philadelphia, PA.

Harsh, J. A., Balliet, R. & **Maltese, A. V.** (2014). Watching scientific expertise develop: Analysis of student practices in an authentic research setting using point-of-view video data. Annual Meeting of American Educational Research Association, Philadelphia, PA.

Maltese, A. V. (2014). Assessing Multinational Interest in STEM - First Findings. Annual Meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

Melki, C. S., Maltese, A. V. & Wiebke, H. (2014). The nature of experiences responsible for the generation and maintenance of interest in STEM. Annual Meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

Harsh, J. A., Esteb, J., Schmitt-Harsh, M. & **Maltese, A. V.** (2014). Assessing the development of undergraduate researchers' scientific thinking skills using performance data. Annual Meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

Harsh, J. A., Balliet, R. & **Maltese, A. V.** (2014). Using point-of-view video data to analyze the development of scientific expertise in undergraduate research. Annual Meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

Harsh, J. A., Balliet, R. & **Maltese, A. V.** (2014). Researching the development of scientific expertise: Analysis of student practices in the research setting using point-of-view data. American Association for the Advancement of Science National Meeting, Chicago, IL.

Balliet, R., Harsh, J. A. & **Maltese, A. V.** (2014). Preferred mentorship practices as reported by students in undergraduate research experiences. American Association for the Advancement of Science National Meeting, Chicago, IL.

Maltese, A. V. & Ross, H. A. (2013). Lessons from the Indiana University STEM survey: creating spaces for cross-cultural research. Paper presented at the International Conference on Higher Education Student Learning and Development in a Globalizing Time, Tsinghua University - Beijing, CHINA.

Maltese, A. V. (2013). Gaining access: The challenges of collecting survey data. Paper presented at the International Conference on Higher Education Student Learning and Development in a Globalizing Time, Tsinghua University - Beijing, CHINA.

Maltese, A. V. & Harsh, J. (2013). A Tale of Two Summers: Programs Designed to Improve Attitudes and Achievement of Underrepresented Students in Science and Math. Poster presented at the American Educational Research Association Annual Meeting, San Francisco, CA.

Maltese, A. V. & Harsh, J. (2013). Using Eye Tracking to Assess the Cognitive Processes of Graph Readers along the Expert-Novice Science Continuum. Paper presented at the American Educational Research Association Annual Meeting, San Francisco, CA.

Harsh, J., Maltese, A. V., & Danish, J. A. (2013). Learning from the Learner's Point of View: Using Cameras to Assess Undergraduate Science Educational Practices. Paper presented at the

American Educational Research Association Annual Meeting, San Francisco, CA.

Harsh, J. & Maltese, A. V. (2013). Eye Tracking Assessment of the Cognitive Processes of Experts and Novice in Graph Reading. Paper presented at the National Association for Research in Science Teaching Annual Meeting, Puerto Rico.

Harsh, J., Maltese, A. V. & Danish, J. (2013). From Their Point of View: Assessing Undergraduate Educational Practices Using Point-of-View Cameras. Paper presented at the National Association for Research in Science Teaching Annual Meeting, Puerto Rico.

Maltese, A. V., Kuchment, A., *Wiebke, H. & Melki, C. S.* (2013). Triggering and Maintenance of Interest in Pursuing STEM Degrees and Careers. Poster presented at AAAS Annual Meeting, Boston, MA.

Bryan, B., Maltese, A. V., Danish, J., Liao, W., Bouldin, R. & Harsh, J. (2013). What Are Students Doing While You Are Trying to Teach? Poster presented at AAAS Annual Meeting, Boston, MA.

Harsh, J. & Maltese, A. V. (2013). Silver Bullet or Sampling Bias: The Effect of Undergraduate Research Experiences on Students' Career Intentions in Chemistry and Physics. Poster presented at AAAS Annual Meeting, Boston, MA.

Harsh, J., Maltese, A. V. & Warner, J. (2013). The Development of Expertise in Data Analysis Skills: An Exploration of the Cognitive and Metacognitive Processes by which Scientists and Students Construct Graphs. Poster presented at AAAS Annual Meeting, Boston, MA.

Maltese, A. V., Balliet, R. & Riggs, E. M. (2012). Using video to analyze how students make observations while in the field. Digital poster presented at the Geological Society of America Annual Meeting, Charlotte, NC.

Brown, C., **Maltese, A. V. & Harsh, J. A.** (2012). Undergraduate Research Experiences: Coming Up With a Universal Definition of Success and Assessment Instrument. Paper presented at meeting of the American Educational Research Association Annual Meeting, Vancouver, BC.

Park Rogers, M. A. & **Maltese, A. V.** (2012). Getting to the CoRe of It! Exploring Content Representations in the Context of Undergraduate Science. Paper presented at meeting of the American Educational Research Association Annual Meeting, Vancouver, BC.

Maltese, A. V. & Hochbein, C. (2012). Consequences of School Improvement: Examination of the Association between School Improvement and Student Science Achievement. Paper presented at the National Association for Research in Science Teaching Annual Meeting, Indianapolis, IN.

Harsh, J. A. & Maltese, A. V. (2012). Data Interpretation along the Novice-Expert Continuum. Paper presented at the National Association for Research in Science Teaching Annual Meeting, Indianapolis, IN.

Park Rogers, M. A., *Wiebke, H. L., Maltese, A. V., Harsh, J. A., Weiland, I. S., Melki, C. S.* (2012). Getting to the CoRe of It! Scaffolding Undergraduates Understanding of Geology Using Content Representation Matrices. Paper presented at the National Association for Research in Science Teaching Annual Meeting, Indianapolis, IN.

Maltese, A. V., Balliet, R. & Riggs, E. M. (2011). Field learning: Are your students doing what you think they are while out mapping? Paper presented at the Geological Society of America Annual Meeting, Minneapolis, MN.

Maltese, A. V. & Harsh, J. (2011). Interpretation of graphical representations along the novice – expert continuum. Poster presented at the Geological Society of America Annual Meeting, Minneapolis, MN.

Maltese, A. V. & Tai, R.H. (2011). Stemming the dropping tide: Looking at decline in student interest in science during middle school. Paper presented at meeting of the American Educational Research Association Annual Meeting, New Orleans, LA.

Harsh, J., Maltese, A. V. & Tai, R. H. (2011). Gender Differences in the Participation of Undergraduate Research Experiences in Science, Technology, Engineering, and Mathematics (STEM). Poster presented at meeting of the American Educational Research Association Annual Meeting, New Orleans, LA.

Hochbein, C. & **Maltese, A. V.** (2011). Is there an opportunity cost associated with school improvement efforts? Poster presented at meeting of the American Educational Research Association Annual Meeting, New Orleans, LA.

Maltese, A. V. (2011). Triangulating America's science literacy. Poster presented at the National Association for Research in Science Teaching Annual Meeting, Orlando, FL.

Harsh, J., Maltese, A. V. & Tai, R. H. (2011). A longitudinal perspective of gender differences in STEM undergraduate research experiences. Poster presented at the National Association for Research in Science Teaching Annual Meeting, Orlando, FL.

Potvin, G., **Maltese, A. V., Harsh, J. & Tai, R. H.** (2011). What students and graduate programs can do to reduce doctoral completion times. Paper presented at the National Association for Research in Science Teaching Annual Meeting, Orlando, FL.

Maltese, A. V. & Riggs, E. M. (2010). Through Their Eyes: Tracking the Gaze of Students in a Geology Field Course. Paper presented at the National Association for Research in Science Teaching Annual Meeting, Philadelphia, PA.

Harsh, J., Maltese, A. V. & Tai, R. (2010) Undergraduate Research Experiences from a Longitudinal Perspective. Paper presented at the National Association for Research in Science Teaching Annual Meeting, Philadelphia, PA.

Maltese, A. V. & Riggs, E. M. (2009). *Seeing the field through the eyes of students.* Paper presented at the Geological Society of America Annual Meeting, Portland, OR.

Maltese, A. V. (2009). *Student persistence in science and mathematics from high school through college.* Paper presented at the National Association for Research in Science Teaching Annual Meeting, Garden Grove, CA.

Baker, P., Brown, C. & **Maltese, A. V.** (2008). An Educator's perspective on Cyberinfrastructure. Forum presented at the Fourth IEEE International Conference on eScience, Indianapolis, IN.

Maltese, A. V. (2008). *Persistence in STEM: An Investigation of the Relationship between High School Experiences in Science and Mathematics and College Degree Completion in STEM*

Fields. Poster presented at meeting of the American Educational Research Association Annual Meeting, New York, NY.

Maltese, A. V. (2008, March). *Eyeballs in the Fridge: Sources of Early Interest in Science*. Paper presented at meeting of the American Educational Research Association Annual Meeting, New York, NY.

Maltese, A. V., & Tai, R. H. (2007, August) *Project Crossover: Early interest in chemistry*. Paper presented at the American Chemical Society National Meeting, Boston, MA.

Maltese, A. V., & Tai, R. H. (2007, April). *The role of high school laboratories in student performance in introductory college science*. Paper presented at the National Association for Research in Science Teaching Annual Meeting, New Orleans, LA.

Tai, R. H., Liu, C. Q., **Maltese, A. V.**, & Fan, X. T. (2006, April). *Planning early for careers in science*. Paper presented at meeting of the American Educational Research Association Annual Meeting, San Francisco, CA.

Tai, R. H., Sadler, P., Fan, X. T., Ward, B., & **Maltese, A. V.** (2006, April). *Instructional technology use in science education: Evidence of a findings gap between large-scale and small-scale studies*. Paper presented at the National Association for Research in Science Teaching Annual Meeting, San Francisco, CA.

SERVICE

LEADERSHIP

Center for Research on Learning and Technology – Acting Director	Spring 2018 & 2019
School of Education MILL Makerspace – Director	2016-Present

MENTORING

Postdoctoral Researchers

SUNG Euisuk	September 2018-Present
Kelli Paul	December 2017-Present
Amber Simpson	August 2015-July 2017
JUNG Eunju	December 2015-February 2017
Russell Balliet	May 2013-December 2014

Graduate Students

	COMPLETION DATE
YANG Jing (Program of Studies Committee Director)	2020
Branden Bryan (Dissertation Committee)	2020
Roshan Lamichhane (Dissertation Chair)	2019
Nandhini Ashok (Dissertation Committee, Biology)	2019
Katie Halpin (MS, Science Education)	2018
Benjamin Braude (MS, Science Education)	2018
Alexandra Burris (Dissertation Chair)	2017
Jessica Chamberlain (Dissertation Committee)	2017
Jared Allen (Dissertation Committee)	2017
Christina Cooper (Melki) (Dissertation Committee)	2015
Cindy Elbaz (Dissertation Committee, Geological Sciences)	2014
Joseph Harsh (Dissertation Director)	2014
Russell Balliet (Dissertation Committee, Purdue University - Geoscience Education)	2012

Polly Root (MS, Science Education) 2012

Visiting Scholars

XU Chang (Beijing Normal University, CHINA) 2019-2020
 HAN Yunxia (Beijing Normal University, CHINA) 2017-2018
 SUN Yanxia (Ocean University of China, CHINA) 2017

COMMITTEES

Professional

Tenure Review for Scholars from other universities 2018
 External dissertation review for Mohi-ud-Din Islamic University 2018
 Research Advisory Committee – National Summer Learning Association 2015-Present
 Advisory Panel Member – Various NSF grants 2014-Present
 NARST Outstanding Paper Award 2009-2012
 Review of Indiana Developmental & Content Standards for Educators 2010
 Revision of Indiana's Academic Standards for Science (Earth Science) 2008-2009

University

Limited Submission Grant Reviewer 2018
 General Education Committee – Natural & Mathematical Sciences 2016-Present
 Advocates & Allies Program – CEWiT 2017-Present
 Faculty Alliance – CEWiT 2017-Present
 Scholarship of Teaching and Learning Advisory Board 2017-Present

School of Education

Jacobs Educator Faculty Mentor 2018-Present
 Learning and Teaching with Technology Committee 2012-2015; 2017-Present
 Science Education – MS Program Coordinator 2016-Present
 SOE Policy Council 2016-Present
 Fulbright Teacher Mentor 2014-2017
 Afghan Junior Faculty Development Program 2016
 Faculty Development Committee 2010-2016
 South Sudan Higher Educ Init. for Equity & Leadership Development Mentor 2015
 C & I Annual Review Committee 2015
 Secondary Education Council (Chair) 2014-2015
 MILL Makerspace Planning Committee 2015
 CRLT Steering Committee 2015
 Armstrong Teacher Educator Award Selection Panel 2009-2010

Community

Indiana Maker Educator Network – Founder/Director 2017-Present
 Ready Schools Advisory Team (MCCSC) 2018-Present

REVIEWER

GRANTS

National Science Foundation Grant Review (Panel & Ad Hoc)
 Institute of Museum & Library Services (US)
 Natural Sciences and Engineering Research Council of Canada
 US-Israel Binational Science Foundation Grant Review

JOURNALS

PLOS One; American Educational Research Journal; Educational Researcher; Journal of Research in Science Teaching; CBE – Life Sciences Education; International Journal of Science Education; Journal of Chemical Education; Journal of College Science Teaching; Science Education; Learning and Individual Differences; Learning and Instruction; Journal of Engineering Education; Child Development; The Review of Higher Education; Instructional Science; The Elementary School Journal; Research in Science & Technological Education; Education Sciences; Equality, diversity and inclusion; The Physics Teacher; Journal for STEM Education Research; Connected Science Learning; AERA Open; Journal of Pre-College Engineering Education Research; Visitor Studies