



Network for Information and Digital Access

The impact of Science Literacy delivery methods - what works?

Bibliography

Makerspaces | Group 4. Activities and services

Ver. 2.00

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Introduction

This thematic bibliography is the result of research to survey existing literature available on Science Literacy delivery methods.

The search was carried out by retrieving documents and articles from a wide range of sources, including research databases, Google Scholar, ResearchGate, subject databases, open access repositories etc. using keyword combinations.

The results of the resource discovery are divided into two groups: one containing impact assessments using qualitative, quantitative or mixed method (both qualitative and quantitative) approaches to data collection and a second including descriptive resources, which encompass, for example, reviews, guides, handbooks, reports and project reports.

This bibliography is work in progress and is not designed to be fully exhaustive or complete. We will be pleased to receive suggestions and recommendations for additions that can contribute to the understanding of science, its applications and, to the promotion of science literacy.

Groups and methods list

During the first part of the Desk Research phase of this project (i.e. Task 1), the team identified 42 single-mechanism approaches, 2 composite approaches and 1 related approach that were relevant to the delivery and dissemination of scientific information. The list of single mechanisms was further organised into 7 thematic groups, as presented in the following Table.

Single mechanism approach	Group
Exhibitions, Expo, Festivals, Movies, Picnics, Science fairs, Seminars, Talks, TED Talks, Theatre, Workshops	1. Events, meetings, performances
Colloquia, Courses, Curricula, E-learning, Webinars	2. Education and training – including online
Animations, Books, Brochures, Cartoons, Comics, Games, Graphics, Posters, Publications, Radio, Reports, TV, Videos	3. Traditional publishing and journalism – print and broadcast
Competitions, Experiments, Makerspaces, Mobile classrooms, Mobile laboratories	4. Activities and services
Blogs, E-books, E-zines, Mobile Apps, Podcasts, Social media, Websites, Wikis	5. Online interactions
Composite approaches	
Multiliteracies	
Multimodalities	
Related approach	
Citizen Science	

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Impact Assessment

- Blackley, Susan, Yuli Rahmawati, Ella Fitriani, Rachel Sheffield, and Rekha Koul. 2018. "Using a 'Makerspace' Approach to Engage Indonesian Primary Students with STEM." *Issues in Educational Research* 28 (1): 18–42. <http://www.iier.org.au/iier28/blackley.pdf>.
- Blackley, Susan, Rachel Sheffield, Nicoleta Maynard, Rekha Koul, and Rebecca Walker. 2017. "Makerspace and Reflective Practice: Advancing Pre-Service Teachers in STEM Education." *Australian Journal of Teacher Education* 42 (3): 22–37. <https://eric.ed.gov/?id=EJ1137882>.
- Blikstein, Paulo, Zaza Kabayadondo, Andrew Martin, and Deborah Fields. 2017. "An Assessment Instrument of Technological Literacies in Makerspaces and FabLabs: Assessment of Technological Literacies in Makerspaces and FabLabs." *Journal of Engineering Education* 106 (1): 149–75. <https://doi.org/10.1002/jee.20156>.
- Forest, Craig R., Roxanne A. Moore, Jariwala Amit S., Barbara Burks Fasse, Julie Linsey, Wendy Newstetter, Peter Ngo, and Christopher Quintero. 2014. "The Invention Studio: A University Maker Space and Culture." *Advances in Engineering Education* 4 (2): 32. <http://advances.asee.org/wp-content/uploads/vol04/issue02/papers/AEE-14-1-Forest.pdf>.
- Foth, Marcus, Ally Lankester, and Hilary E. Hughes. 2016. "Digital Fabrication and Local Participation: A Community Maker Space Dissolving Boundaries." In *Workshop Proceedings of Digital Participation: Engaging Diverse and Marginalised Communities*, edited by Hilary Davis and Jane Farmer, 9. Launceston, Tas. <https://digitalparticipationhci.wordpress.com/>.
- Gahagan, Pia Margaret. 2016. "Evaluating Makerspaces: Exploring Methods Used to Assess the Outcomes of Public Library Makerspaces." Master's thesis, Wellington, Australia: Victoria University of Wellington. <https://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/5193/report.pdf?sequence=1>.
- Galaleldin, Mohamed, Francois Bouchard, Hanan Anis, and Claude Lague. 2017. "The Impact of Makerspaces on Engineering Education." *Proceedings of the Canadian Engineering Education Association (CEEA)*, January, 6. <https://doi.org/10.24908/pceea.v0i0.6481>.
- Lagoudas, Magdalini, Jeffrey Froyd, James Wilson, Peter Hamilton, Rodney Boehm, and Prasad Enjeti. 2016. "Assessing Impact of Maker Space on Student Learning." In *2016 ASEE Annual Conference & Exposition Proceedings*, 13. New Orleans, Louisiana: ASEE Conferences. <https://doi.org/10.18260/p.26298>.
- Lille, Maria. 2016. "Evaluating the Success of Makerspace in a Public Library: The Case of Narva City Library MakerLab in Estonia." *New Library World* 117 (9/10): 587–95. <https://doi.org/10.1108/NLW-04-2016-0030>.
- Litts, Breanne K. 2015. "Making Learning : Makerspaces as Learning Environments." PhD thesis, Madison, Wis.: University of Wisconsin--Madison. <https://search.library.wisc.edu/catalog/9910215086302121>.
- Ludwig, Patrice M., Jacquelyn K. Nagel, and Erica J. Lewis. 2017. "Student Learning Outcomes from a Pilot Medical Innovations Course with Nursing, Engineering, and Biology Undergraduate Students." *International Journal of STEM Education* 4 (1): 14. <https://doi.org/10.1186/s40594-017-0095-y>.
- Marshall, Tracie. 2016. "Makerspaces and the Iowa Core: Connections in a High School Library." Master's thesis, Iowa, USA: University of Northern Iowa. <https://scholarworks.uni.edu/grp/98>.
- McCubbins, Sara. 2016. "Using A Visitor Based Framework To Observe Engagement In A Children's Museum Makerspace." PhD thesis, Illinois: Illinois State University. <https://ir.library.illinoisstate.edu/etd/526>.

- Miller, Jennifer Renea. 2016. "Effect of Makerspace Professional Development Activities on Elementary and Middle School Educator Perceptions of Integrating Technologies with STEM (Science, Technology, Engineering, Mathematics)." PhD thesis, Texas, USA: University of North Texas. <https://eric.ed.gov/?id=ED575854>.
- Morocz, R. J., B. Levy, C. Forest, R. L. Nagel, W. C. Newstetter, K. G. Talley, and J. S. Linsey. 2016. "Relating Student Participation in University Maker Spaces to Their Engineering Design Self-Efficacy." In *American Society for Engineering Education Annual Conference Proceedings*, 13. New Orleans, USA. <https://www.asee.org/public/conferences/64/papers/16125/view>.
- Sheffield, Rachel, Rekha Koul, Susan Blackley, and Nicoleta Maynard. 2017. "Makerspace in STEM for Girls: A Physical Space to Develop Twenty-First-Century Skills." *Educational Media International* 54 (2): 148–64. <https://doi.org/10.1080/09523987.2017.1362812>.
- Sheridan, Kimberly, Erica Rosenfeld Halverson, Breanne Litts, Lisa Brahms, Lynette Jacobs-Priebe, and Trevor Owens. 2014. "Learning in the Making: A Comparative Case Study of Three Makerspaces." *Harvard Educational Review* 84 (4): 505–31. <https://doi.org/10.17763/haer.84.4.brr34733723j648u>.
- Sinha, Swapnil, Kelsey Rieger, Aaron D. Knochel, and Nicholas A. Meisel. 2017. "Design and Preliminary Evaluation of a Deployable Mobile Makerspace for Informal Additive Manufacturing Education." In , 15. Austin, Texas. <http://sffsymposium.engr.utexas.edu/sites/default/files/2017/Manuscripts/DesignandPreliminaryEvaluationofaDeployable.pdf>.
- Tillman, Daniel A., Song A. An, Jonathan D. Cohen, William Kjellstrom, and Rachel L. Boren. 2014. "Exploring Wind Power: Improving Mathematical Thinking through Digital Fabrication." *Journal of Educational Multimedia and Hypermedia* 23 (4): 401–21. <https://www.learnlib.org/primary/p/42079/>.
- Tomko, Megan, Robert L. Nagel, Melissa Wood Aleman, Wendy C. Newstetter, and Julie S. Linsey. 2017. "Toward Understanding the Design Self-Efficacy Impact of Makerspaces and Access Limitations." In , 14. Columbus. Ohio. <https://peer.asee.org/27761>.

Descriptive Resources

- Ali, P.Z., M. Cooke, M.L. Culpepper, C.R. Forest, B. Hartmann, M. Kohn, and V. Wilczynski. 2016. "The Value of Campus Collaboration for Higher Education Makerspaces. In." In , 225–39. Cambridge, Massachusetts: ISAM. http://fab.physics.harvard.edu/Makerspaces/Zach_Ali_on_Collaborations.pdf.
- Bar-El, David, and Oren Zuckerman. 2016. "Maketec: A Makerspace as a Third Place for Children." In *Proceedings of the TEI '16: Tenth International Conference on Tangible, Embedded, and Embodied Interaction - TEI '16*, 380–85. Eindhoven, Netherlands: ACM Press. <https://doi.org/10.1145/2839462.2856556>.
- Barton, Angela Calabrese, Edna Tan, and Day Greenberg. 2016. "The Makerspace Movement: Sites of Possibilities for Equitable Opportunities to Engage Underrepresented Youth in STEM." *Teachers College Record* 119 (6): 11–44. <http://invincibility.us/wp-content/uploads/2017/11/The-Makerspace-Movement-Sites-of-Possibilities-for-Equitable-Opportunities-to-Engage-Underrepresented-Youth-in-STEM.pdf>.
- Becker, Sandra, Liz O'Connell, and Liz Wuitschik. 2016. "Professional Learning in the Makerspace: Embodiment of the Teaching Effectiveness Framework." University of Calgary. <https://doi.org/10.11575/PRISM/5267>.

- Benjes-Small, Candice, Liz McGlynn Bellamy, Jennifer Resor-Whicker, and Lisa Vassady. 2017. "Makerspace or Waste of Space: Charting a Course for Successful Academic Library Makerspaces." In , 9. Baltimore, Maryland, USA: Association of College & Reserach Libraries.
<http://www.ala.org/acrl/sites/ala.org.acrl/files/content/conferences/confsandpreconfs/2017/MakerspaceorWasteofSpace.pdf>.
- Bevan, Bronwyn. 2017. "The Promise and the Promises of Making in Science Education." *Studies in Science Education* 53 (1): 75–103. <https://doi.org/10.1080/03057267.2016.1275380>.
- Branigan-Pipe, Zoe. 2017. *Making a Makerspace: The Tools, The Spaces and the Theories A Holistic Approach Design Project*. Ontario, Canada.
<https://dr.library.brocku.ca/bitstream/handle/10464/12972/Makerspace%20Resource.pdf?sequence=2&isAllowed=y>.
- Burke, John. 2014. *Makerspaces: A Practical Guide for Librarians*. Lanham: RI.
<https://www.amazon.co.uk/Makerspaces-Practical-Guide-Librarians-Guides/dp/1442229675>.
- . 2015. "Making Sense: Can Makerspaces Work in Academic Libraries?" In , 8.
<http://www.ala.org/acrl/sites/ala.org.acrl/files/content/conferences/confsandpreconfs/2015/Burke.pdf>.
- Busch, Laura. 2017. "How Should We Measure the Impact of Makerspaces? - EdSurge News." EdSurge. January 9, 2017. <https://www.edsurge.com/news/2017-01-09-how-should-we-measure-the-impact-of-makerspaces>.
- Calvo, Pablo. 2017. "Library Makerspaces: Evaluating the Value of Digital Making in a UK Public Library Setting." Master's thesis, City, University of London: Humanities Commons.
<https://doi.org/10.17613/M6SR30>.
- Cohen, Jonathan, W. Monty Jones, Shaunna Smith, and Brendan Calandra. 2017. "Makification: Towards a Framework for Leveraging the Maker Movement in Formal Education." *Journal of Educational Multimedia and Hypermedia* 26 (3): 217–29. <https://www.learntechlib.org/primary/p/174191/>.
- Craddock, IdaMae Louise. 2015. "Makers on the Move: A Mobile Makerspace at a Comprehensive Public High School." *Library Hi Tech* 33 (4): 497–504. <https://doi.org/10.1108/LHT-05-2015-0056>.
- Crichton, Susan, and Nicolas Wachira. 2017. *Taking Making Into Classrooms in Challenging Contexts: A Toolkit Fostering Curiosity, Imagination and Active Learning*. UBC Innovative Learning Centre.
https://issuu.com/ubcedo/docs/toolkitccresources_english_issuu.
- Cross, Ashley. 2017. "Tinkering in K-12: An Exploratory Mixed Methods Study of Makerspaces in Schools as an Application of Constructivist Learning - ProQuest." PhD thesis, Malibu, California, USA: Pepperdine University. <https://search.proquest.com/openview/3bbd21285208e2ab029e51f5d850d61d/1?pq-origsite=gscholar&cbl=18750&diss=y>.
- Cullin, Kim Bolan, and Marisa Amara. 2015. "Creative Spaces Support Lifelong Learning." <http://www.demcointeriors.com/> (blog). September 9, 2015.
<http://www.demcointeriors.com/blog/how-creative-spaces-support-lifelong-learning/>.
- Davee, Steve, Lisa Regalla, and Stephanie Chang. 2015. "Makerspaces. Highlights of Selected Literature." Maker Ed. <https://makered.org/wp-content/uploads/2015/08/Makerspace-Lit-Review-5B.pdf>.
- Deloitte Center for the Edge and Maker Media. 2013. "Impact of the Maker Movement." From the Maker Impact Summit December 2013. <https://makermedia.com/wp-content/uploads/2014/10/impact-of-the-maker-movement.pdf>.
- Dousay, Tonia A. 2017. "An Evolving Makerspace for Teacher Education." *International Journal of Designs for Learning* 8 (1). <https://doi.org/10.14434/ijdl.v8i1.22672>.

- EAGER: MAKER: 2017. "EAGER: MAKER: Collaborative: Beyond Rubrics: Moving Towards Embedded Assessment in Maker Education." Project. Cambridge, MA.
https://www.nsf.gov/awardsearch/showAward?AWD_ID=1723459&.
- Europeana Pro. 2016. "Europeana Network Task Force on Public Libraries Final Consolidated Report." Final Consolidated Report.
https://pro.europeana.eu/files/Europeana_Professional/Europeana_Network/europeana-task-force-on-public-libraries-consolidated-final-report-v1.pdf.
- Feeney, Claire. 2016. "Makerspaces: An Introduction to Innovation Learning Spaces."
https://issuu.com/mkthink/docs/makerbook_final_aw.
- Feinstein, Laura, M. Daniel DeCillis, and Laurie Harris. 2016. "Promoting Engagement of the California Community Colleges with the Maker Movement." California, USA: California Council on Science and Technology. <https://ccst.us/reports/promoting-engagement-of-the-california-community-colleges-with-the-maker-movement/>.
- Fleming, Laura. 2016a. "A Maker Culture." *Principal*, no. March/April 2016: 16–19.
https://www.naesp.org/sites/default/files/Fleming_MA16.PDF.
- . 2016b. "Flipping Assessment in a Makerspace on Its Head." *Worlds of Learning* (blog). May 31, 2016. <https://worlds-of-learning.com/2016/05/31/flipping-assessment-in-a-makerspace-on-its-head/>.
- Fourie, Ina, and Anika Meyer. 2015. "What to Make of Makerspaces: Tools and DIY Only or Is There an Interconnected Information Resources Space?" *Library Hi Tech* 33 (4): 519–25.
<https://doi.org/10.1108/LHT-09-2015-0092>.
- Gierdowski, Dana, and Daniel Reis. 2015. "The MobileMaker: An Experiment with a Mobile Makerspace." *Library Hi Tech* 33 (4): 480–96. <https://doi.org/10.1108/LHT-06-2015-0067>.
- Han, Sang-Yeal, Jaeheung Yoo, Hangjung Zo, and Andrew P. Ciganeck. 2017. "Understanding Makerspace Continuance: A Self-Determination Perspective." *Telematics and Informatics* 34 (4): 184–95.
<https://doi.org/10.1016/j.tele.2017.02.003>.
- Hartmann, Björn. 2016. "A Research Agenda for Academic Makerspaces." In , 4. Cambridge, Massachusetts: ISAM. <https://people.eecs.berkeley.edu/~bjoern/papers/hartmann-makerspaces-isam2016.pdf>.
- Higher Education Maker Initiative (MIT). 2016. "First International Symposium on Academic Makerspaces." *ISAM 2016 Proceedings*, 264. https://www.dropbox.com/s/8315ag2c2ywud8j/ISAM_2016-Proceedings-I.pdf?dl=0.
- Hira, Avneet, Cole H. Joslyn, and Morgan M. Hynes. 2014. "Classroom Makerspaces: Identifying the Opportunities and Challenges." In *2014 IEEE Frontiers in Education Conference (FIE) Proceedings*, 1–5. Madrid, Spain: IEEE. <https://doi.org/10.1109/FIE.2014.7044263>.
- Holbert, Nathan. 2016. "Bots for Tots: Building Inclusive Makerspaces by Leveraging 'Ways of Knowing.'" In *Proceedings of the The 15th International Conference on Interaction Design and Children - IDC '16*, 79–88. Manchester, United Kingdom: ACM Press. <https://doi.org/10.1145/2930674.2930718>.
- Hsu, Yu-Chang, Sally Baldwin, and Yu-Hui Ching. 2017. "Learning through Making and Maker Education." *TechTrends* 61 (6): 589–94. <https://doi.org/10.1007/s11528-017-0172-6>.
- ict4kids.ca. 2016. "What Does Assessment Look like in Makerspaces?" *Ict4kids.Ca* (blog). April 5, 2016.
<https://ict4kids.ca/2016/04/04/what-does-assessment-look-like-in-makerspaces/>.
- Innovative Learning Centre. 2017. "Taking Making into the Classroom."
https://mytrainingbc.ca/maker/downloads/Taking_Making_into_Classrooms.pdf.

- Johnson, L., S. Adam Becker, V. Estrada, and A. Freeman. 2015. "NMC Horizon Report: 2015 K-12 Edition." Austin, Texas: The New Media Consortium. <http://cdn.nmc.org/media/2015-nmc-horizon-report-k12-EN.pdf>.
- Julian, Kristi DeRoncy, and Deborah Johns Parrott. 2017. "Makerspaces in the Library: Science in a Student's Hands." *Journal of Learning Spaces* 6 (2): 13–21. <http://libjournal.uncg.edu/jls/article/view/1429>.
- Koh, Kyungwon, and June Abbas. 2015. "Competencies for Information Professionals in Learning Labs and Makerspaces." *Journal of Education for Library and Information Science* 56 (2): 114–29. <https://eric.ed.gov/?id=EJ1073572>.
- Kurti, Steven R., Debby L. Kurti, and Laura Fleming. 2014. "The Philosophy of Educational Makerspaces." *Teacher Librarian* 41 (5): 8–11. <http://dtl-region-four.ncdpi.wikispaces.net/file/view/The+Philosophy+of+Educational+Makerspaces.pdf>.
- Lahana, Lewis. 2016. "The Tech Café, A Social Action Makerspace: Middle School Students as Change Agents." PhD thesis, Columbia: Teachers College, Columbia University. <https://academiccommons.columbia.edu/doi/10.7916/D8NS0TZB>.
- Lawson, Jennifer, and Susan Atcheson. 2015. "Hands-On Science and Technology." Ontario, Canada: Portage and Main Press. <https://www.portageandmainpress.com/product/hands-on-science-and-technology-grade-2/>.
- Lewis, Jennifer. 2019. "Barriers to Women's Involvement in Hackspaces and Makerspaces." In *Access Space*, 21. <https://access-space.org/portfolio/barriers-to-womens-involvement-in-hackspaces-and-makerspaces/>.
- "Makerspaces: The Benefits." 2015. *Curiositycommons* (blog). December 10, 2015. <https://curiositycommons.wordpress.com/makerspaces-the-benefits/>.
- Marsh, Jackie, Kristiina Kumpulainen, Bobby Nisha, Anka Velicu, Alicia Blum-Ross, David Hyatt, Svanborg R. Jónsdóttir, et al. 2017. "Makerspaces in the Early Years. A Literature Review." University of Sheffield: MakeY. http://makeyproject.eu/wp-content/uploads/2017/02/Makey_Literature_Review.pdf.
- Miller, Jennifer. 2017. "Mapping Elementary and Middle School Makerspace Environments to Curriculum Content through STEAM (Science, Technology, Engineering the Arts, and Mathematics) Challenge Cards." In , 1357–64. Austin, Texas: Association for the Advancement of Computing in Education (AACE). <https://www.learntechlib.org/primary/p/177419/>.
- Miller, Jennifer, Rhonda Christensen, and Gerald Knezek. 2017. "Effect of a Makerspace Training Series on Elementary and Middle School Educator Confidence Levels Toward Integrating Technology." In , 1015–20. Association for the Advancement of Computing in Education (AACE). <https://www.learntechlib.org/primary/p/177380/>.
- Moorefield-Lang, Heather Michele. 2015. "When Makerspaces Go Mobile: Case Studies of Transportable Maker Locations." *Library Hi Tech* 33 (4): 462–71. <https://doi.org/10.1108/LHT-06-2015-0061>.
- Morocz, Ricardo, Bryan D. Levy, Craig R. Forest, Robert L. Nagel, Wendy C. Newstetter, Kimberly G. Talley, and Julie S. Linsey. 2015. "University Maker Spaces: Discovery, Optimization and Measurement of Impacts." In , 10. Seattle, WA: Georgia Institute of Technology. <http://hdl.handle.net/1853/53812>.
- O'Connell, Brian. 2015. "Going from Curious to Maker: New User Experiences in a University Makerspace." *VentureWell*, 8. <https://venturewell.org/open2015/wp-content/uploads/2013/10/OCONNELL.pdf>.
- . 2016. "Implementation of a Mobile Makerspace in a K-8 School (Work in Progress)." In *2016 ASEE Annual Conference & Exposition Proceedings*, 10. New Orleans, Louisiana: ASEE Conferences. <https://doi.org/10.18260/p.25577>.

- Okpala, Helen Nneka. 2016. "Making a Makerspace Case for Academic Libraries in Nigeria." *New Library World* 117 (9/10): 568–86. <https://doi.org/10.1108/NLW-05-2016-0038>.
- Ortega, Veronica Inez. 2017. "Increasing STEM Exposure in K–5 Schools Through MakerSpace Use: A Multi-Site Early Success Case Study." PhD thesis, Los Angeles, USA: UCLA. <https://escholarship.org/uc/item/5j3859cf>.
- Parks, Jennifer B. 2016. "Learning in Middle School Library Makerspaces: A Makerspace Collaboration Guide for School Librarians." Master's thesis, North Carolina, USA: University of North Carolina. <https://cdr.lib.unc.edu/indexablecontent/uuid:a2deb87a-6b3a-4361-b225-8b8b658721c8>.
- Penney, Meredith Frances, James Deverell Watkins, Bryan Levy, Julie S. Linsey, Robert L. Nagel, Wendy C. Newstetter, Kimberly Grau Talley P.e, and Shaunna Fultz Smith. 2016. "'Making' an Impact: An Ethnographic Approach to University Maker Spaces." In , 12. New Orleans, Louisiana. <https://doi.org/10.18260/p.26226>.
- Peppler, Kylie, Anna Keune, Fangli Xia, and Stephanie Chang. 2017. "Surveying Maker Education Demographics & Assessments." Research Brief 17. San Francisco, USA: MakerED. https://makered.org/wp-content/uploads/2018/02/MakerEdOPP_RB17_Survey-of-Assessments-in-Makerspaces.pdf.
- Peppler, Kylie, Adam Maltese, Anna Keune, Stephanie Chang, and Lisa Regella. 2015a. "The Maker Ed Open Portfolio Project Survey of Makerspaces, Part I." Survey. San Francisco, USA: MakerED. https://makered.org/wp-content/uploads/2015/02/OPP_ResearchBrief6_SurveyofMakerspacesPart1_final.pdf.
- . 2015b. "The Maker Ed Open Portfolio Project Survey of Makerspaces, Part II." Survey. San Francisco, USA: MakerED. https://makered.org/wp-content/uploads/2015/02/OPP_ResearchBrief7_SurveyofMakerspacesPart2_final.pdf.
- Petrich, Mike, Karen Wilkenson, and Bronwyn Bevan. 2013. "It Looks like Fun, but Are They Learning?" In *Design, Make, Play: Growing the next Generation of STEM Innovators*, 50–70. New York, NY: Routledge. <https://www.exploratorium.edu/sites/default/files/pdfs/PetrichWilkinsonBevan-2013-ItLooksLikeFun.pdf>.
- Rees, Paula, Christine Olson, Charles Schweik, and Steven Brewer. 2015. "Work in Progress: Exploring the Role of Makerspaces and Flipped Learning in a Town-Gown Effort to Engage K12 Students in STEAM." In *2015 ASEE Annual Conference and Exposition Proceedings*, 15. Seattle, Washington: ASEE Conferences. <https://doi.org/10.18260/p.25087>.
- Ricardo, Morocz, Levy Bryan, Nagel Robert, and Linsey Julie. 2016. "Analyzing Usage in Creative Spaces in a Non-Obtrusive Manner." In *Proceedings of The Fourth International Conference on Design Creativity, Georgia Institute of Technology, Atlanta, GA, USA*. Atlanta, USA. <https://www.designsociety.org/publication/39956/Analyzing+Usage+in+Creative+Spaces+in+a+Non-obtrusive+Manner>.
- Rosenbaum, Leah R., and Björn Hartmann. 2017. "https://Drive.Google.Com/Drive/Folders/0B4ZlatyugWjJNXlxVW9iR0ZFVjQ." In , 6. Cleveland, OH: ISAM. <https://drive.google.com/drive/folders/0B4ZlatyugWjJNXlxVW9iR0ZFVjQ>.
- Sandvik, Kjetil, and Klaus Thestrup. 2017. "Challenging Makerspaces." In , 14. University of Tampere, Finland. https://www.researchgate.net/publication/318114209_Challenging_Makerspaces.
- Saunders, Tom, and Jeremy Kingsley. 2016. "Made in China: Makerspaces and the Search for Mass Innovation." London, UK: Nesta. <https://www.nesta.org.uk/report/made-in-china-makerspaces-and-the-search-for-mass-innovation/>.

- Shehzad, Hafiz Muhammad Umar, and Quswar Mahmood Abid. 2016. "Best Practices for A Newly Established Academic Makerspace in a Nascent Maker Ecosystem." In , 3. Cambridge, Massachusetts: ISAM.
<http://www.idin.org/sites/default/files/resources/Best%20Practices%20for%20a%20Newly%20Established%20Academic%20Makerspace%20in%20a%20Nascent%20Maker%20Ecosystem.pdf>.
- Slatter, Diane, and Zaana Howard. 2013. "A Place to Make, Hack, and Learn: Makerspaces in Australian Public Libraries." *The Australian Library Journal* 62 (4): 272–84.
<https://doi.org/10.1080/00049670.2013.853335>.
- STEM Resources Task Force. 2013. "STEAM Toolkit." <http://www.ala.org/yalsa/steam-toolkit>.
- Tanenbaum, Courtney. 2016. "STEM 2026: A Vision for Innovation in STEM Education." STEM Report. USA: Report from the USA Department of Education. <http://hdl.voced.edu.au/10707/422006>.
- Taylor, N., U. K. Hurley, and P. Connolly. 2016. "Making Community: The Wider Role of Makerspaces in Public Life." In *Proceedings of CHI 2016 (Human-Computer Interaction Conference)*, 1415–25. SIGCHI (Special Interest Group on Human Computer Interaction).
<https://doi.org/10.1145/2858036.2858073>.
- Tucker-Raymond, E., B. Gravel, K. Kohberger, and K. Browne. 2015. "What STEM Literacy Practices Are Used in Makerspaces? How Can They Inform the Design of Makerspace Pedagogies for Youth?" Poster presented at the annual meeting of the Literacy Research Association, Carlsbad, CA; <https://external-wiki.terc.edu/download/attachments/36897358/STEMLiMS2015-V5.pdf?version=1&modificationDate=1449058444147&api=v2>.
- Van Holm, Eric Joseph. 2015. "Makerspaces and Contributions to Entrepreneurship." *Procedia - Social and Behavioral Sciences* 195 (July): 24–31. <https://doi.org/10.1016/j.sbspro.2015.06.167>.
- Vossoughi, Shirin, and Bronwyn Bevan. 2014. "Making and Tinkering: A Review of the Literature." *National Research Council Committee on out of School Time STEM*, 55.
http://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_089888.pdf.
- Wallace, Martin K., Gretchen Trkay, Katie Musick Peery, Morgan Chivers, and Tara Radniecki. 2018. "Maker Competencies and the Undergraduate Curriculum." In , 6. Stanford, CA. <https://rc.library.uta.edu/uta-ir/handle/10106/27518>.
- Weinmann, Julian. 2014. "Makerspaces in the University Community." Master's thesis, munich, Germany: Technical University of Munich.
https://web.stanford.edu/group/design_education/wikiupload/0/0a/Weinmann_Masters_Thesis.pdf.
- Whitmer, Susan. 2016a. "Makerspaces That Set the Stage for Lifelong Learning." *VentureWell*, 9.
<https://venturewell.org/open2016/wp-content/uploads/2016/03/whitmer.pdf>.
- — —. 2016b. "Makerspaces That Set the Stage for Lifelong Learning." *Innovate@UMass* (blog). March 2016. <https://innovate.umass.edu/makerspaces-that-set-the-stage-for-lifelong-learning/>.
- Wilczynski, Vincent. 2015. "Academic Maker Spaces and Engineering Design." In *2015 ASEE Annual Conference and Exposition Proceedings*, 26.138.1-26.138.19. Seattle, Washington: ASEE Conferences.
<https://doi.org/10.18260/p.23477>.
- Wilczynski, Vincent, Aubrey Wigner, Micah Lande, and Shawn Jordan. 2017. "The Value of Higher Education Academic Makerspaces for Accreditation and Beyond." *Planning for Higher Education* 46 (1): 32–40.
https://www.researchgate.net/profile/Vince_Wilczynski/publication/323781794_The_Value_of_Higher_Education_Academic_Makerspaces_for_Accreditation_and_Beyond/links/5aaaa1b3aca272d39cd79f69/The-Value-of-Higher-Education-Academic-Makerspaces-for-Accreditation-and-Beyond.pdf.
- Wong, Anne, and Helen Partridge. 2016. "Making as Learning: Makerspaces in Universities." *Australian Academic & Research Libraries* 47 (3): 143–59. <https://doi.org/10.1080/00048623.2016.1228163>.