

Vita
Cindy E. Hmelo-Silver

Business Address: Center for Research on Learning and Technology
Indiana University
201 N. Rose Street
Bloomington, IN 47405-1005

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Education:

Vanderbilt University, Nashville, Tennessee

Major: Cognitive Studies

Minor: Educational Technology	Ph.D.	1994
	M.S.	1991

State University of New York at Stony Brook, Stony Brook, New York

Major: Educational Computing	M.S.	1985
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State University of New York at Stony Brook, Stony Brook, New York

Major: Cardiorespiratory Sciences	B.S.	1978
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Experience:

<i>Research Catalyst Faculty Fellow</i>	2022- present
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<i>Distinguished Professor</i>	2021-present
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<i>Barbara B. Jacobs Chair in Education and Technology</i>	2015-present
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<i>Director, Center for Research on Learning and Technology</i>	2014- present
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Professor, Learning Sciences

School of Education, Indiana University

Affiliate Faculty: Cognitive Science, Luddy Artificial Intelligence Center

<i>Department Chair, Educational Psychology</i>	2012-2013
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<i>Professor</i>	2010-2013
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<i>Coordinator, Learning Sciences PhD specialization</i>	2011-2012
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<i>Coordinator, Learning, Cognition and Development Ed.M.</i>	2010-2012
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<i>Coordinator, PhD program in Educational Psychology</i>	2005-2008
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<i>Associate Professor</i>	2004-2010
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<i>Assistant Professor</i>	1998-2004
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Program in Learning Cognition, and Development, Department of

Educational Psychology, Graduate School of Education, Rutgers University

Research Associate, Learning Research and Development Center

University of Pittsburgh	1996-1998
<i>Project Manager</i> , Multiple Case-based Approach to Generative Environments for Learning Research Scientist, EduTech Institute, Georgia Institute of Technology	1995- 1996
<i>Postdoctoral Fellow</i> , EduTech Institute, Georgia Institute of Technology	1994-1995
<i>Research Assistant</i> , Learning Technology Center, Vanderbilt University	1990-1994
<i>Instructor</i> , Educational Psychology, Department of Psychology and Human Development, Peabody College, Vanderbilt University	1991
<i>Director of Clinical Education</i>	1988-1989
Clinical Assistant Professor of Health Sciences	1984-1989
Cardiorespiratory Sciences Department, State University of New York- Health Sciences Center, Stony Brook, NY	
<i>Respiratory Therapy Clinician</i> , University Hospital, Stony Brook, NY	1980-1984
<i>Respiratory Therapist</i> , St. Charles Hospital, Port Jefferson, NY	1978-1980

Professional Affiliations:

American Educational Research Association
European Association for Research on Learning and Instruction
International Society for the Learning Sciences
National Association for Research in Science Teaching
American Association for Advancement of Science

Grants:

External

Collaborative Research: Integrating Students' Interests, Identities and Ways of Knowing with Network Visualization Tools to Explore Data Literacy Concepts (DRL #2241705). Co-PI with Joshua Danish (PI), Kalani Craig, and Ben Loh. National Science Foundation. \$902,020. 5/01/2023- 4/30/2026.

Building Indiana Computing Capacity (IC2) for Preservice Computer Science Education. Co-PI with Anne Leftwich (PI), Krista Glazewski, Thomas Brush, and Kyungbin Kwon. Indiana Department of Education. \$312, 612. 2/2023- 12/2023.

Collaborative Research: Integrating AI Learning into Middle School Science through Natural Language Processing (DRL# 2147811). Co-PI with Krista Glazewski (PI), Thomas Brush, Asmalina Saleh. National Science Foundation. \$380,000. 5/1/2022- 4/30/2025.

NSF AI Institute for Engaged Learning (DRL# 2112635). Co-PI with PI James Lester, Co-PIs Gautam Biswas, Mohit Bonsal, Jeremy Roschelle. National Science Foundation \$19,996,290. 10/1/2021-9/30/2026.

Collaborative Research: PrimaryAI: Integrating Artificial Intelligence into Upper Elementary Science with Immersive Problem-Based Learning (DRL# 1934128). Co-PI with PI Krista Glazewski, Co-PIs Anne Ottenbreit-Leftwich, Adam Scribner. National Science Foundation \$670,000.00. 9/1/2019-8/31/2022.

FW-HTF: Augmented Cognition for Teaching: Transforming Teacher Work with Intelligent Cognitive Assistants (IIS# 1839966). Co-PI with PI Krista Glazewski and Thomas Brush (co-PI). National Science Foundation. \$1,499,985.00. 10/1/18-9/30/22.

Net.Create: Using Network Analysis to Support Digital Humanities in Large History Classrooms (DRL# 1848655). Co-PI with PI Kalani Craig, Co-PI's Joshua Danish, Ben Loh. National Science Foundation. \$299, 661. 8/15/2018-7/31/2020.

Collaborative Research: Scaffolding Explanations and Epistemic Development for Systems (DRL# 1761019) Co-PI with PI Joshua Danish. \$638,595. 7/1/2018- 7/30/2022.

Teacher Cognition and Learning about Incorporating Science Representations in Elementary Classrooms. McDonnell Foundation. Co-PI with PI Joshua Danish, Co-PI's Dionne Cross Francis, Meredith Park Rogers, David Landy, Robert Goldstone, Noel Enyedy, Jose Felipe Martinez. \$ 2,499,999. 01/01/18 -12/31/23.

DAT-CROSS: Developing Assessments and Tools to Support the Teaching and Learning of Science Crosscutting Concepts. (R305A170634). PI. Institute for Education Sciences. \$1,395,722. 07/01/17 – 6/30/21.

Collaborative Research: Big Data from Small Groups: Learning Analytics and Adaptive Support in Game-based Collaborative Learning (DRL#1561486), PI. National Science Foundation. \$1,234,535. 10/1/2016-9/30/2022.

Collaborative Research: Theoretical and Methodological tools for studying group productive disciplinary engagement (DGE#1661234). PI. National Science Foundation. \$350, 928. 7/15/2017-6/30/2022.

Building Interdisciplinary Capacity for Understanding and Supporting Computer Supported Collaborative Learning. (DGE #1547731). PI. National Science Foundation, \$110, 122. 6/2015-8/2017.

Collaborative Research: ITEST-Strategies: Human-Centered Robotics Experiences for Exploring Engineering, Computer Science, and Society (DRL #1433414). Co-PI with Selma Šabanović. National Science Foundation. \$371,163. 9/14-8/19.

Effects of Computer Support for Collaborative Learning in STEM Education: A Research Synthesis (DRL # 1439227). PI with Heisawn Jeong, Co-PI. National Science Foundation. \$346,892, 7/13-12/17.

EXP: Constructing Multimedia Artifacts Using a Video Repository (IIS # 121707). PI, with Carolyn Maher, Susan Golbeck, and Grace Agnew, Co-PI's. National Science Foundation. \$549,917. 9/12-8/16.

DIP: Sustaining ecological communities through citizen science and online collaboration (IIS# 1227550). Co-PI with Rebecca Jordan (PI) and Steven Gray, Alycia Crall, and Gregory Newman (Co-PI's). National Science Foundation. \$1,206,384. 9/12- 8/16.

Learning Across the Disciplines: Supporting Technology Rich Learning Across Disciplines. Co Applicant with Principle Investigator Susanne Lajoie, With Co-Applicants: Roger Azevedo, Kevin Lachapelle, Krista Muis, Jeffrey Wiseman (McGill), Jacqueline Leighton (University of Alberta), Val Shute (Florida State), Reinhold Pekrun (Ludwig-Maximilians Universitat Munchen), Claude Frasson (University of Montreal), Rafael Calvos (University of Sydney) James Lester (North Carolina State), Eunice Jang (University of Toronto), Robert Stupnisky (University of North Dakota), Peter Molenaar (Pennsylvania State University), Kevin Kee (Brock University), Ricki Goldman (NYU); Collaborators: Alan Lesgold (University of Pittsburgh), Gerhard Fischer (University of Colorado, Boulder), Kellogg Booth (University of British Columbia), Francoys Labonte (Computer Research Institute of Montreal); Nathan Hall (McGill); Partners: Arnold and Blema Steinberg Medical Simulation Centre; Commission Scolaire de la Pointe de l'Ile; Commission Scolaire de Montréal, Commission Scolaire Marguerite Bourgeoys, English Montreal School Board, Groupe de Recherche Inter-universitaire en Tutoriels Intelligents, LearnLab Pittsburgh Science of Learning Center, Lester B Pearson School Board, Ministère de l'Éducation, du Loisir et du Sport, University of Alberta Office of Surgical Education, Consortium for Research and Evaluation of Advanced Technologies in Education @NYU Steinhardt School of Culture, Education and Human Development, Rocky View Schools Alberta, The University of Alberta's Health Sciences Education and Research Commons (HSERC), Réseau Reussite Montreal, The McGill Centre for Medical Education, Group on Education Medialogy (GEM) Aalborg University, Denmark; Graphics, Animation and New Media (GRAND) NCE; Computer Research Institute of Montreal; Institute of Medical and Health Sciences-The University of Hong Kong. Social Sciences and Humanities Research Council Partnership Grant. C\$2.5M, 2012-2019

An international collaboration in medical education: Teaching medical students to think and care using computers. Co-PI with PI Susanne Lajoie (McGill University), Co-PIs Jeffrey Wiseman, (McGill University), Jingyan Lu, (University of Hong Kong) Lap Ki Chan, (University of Hong Kong), Social Sciences and Humanities Research Council (Canada) C\$75,000. 3/10- 2/12.

Systems and Cycles: Using Structure-Behavior-Function Thinking as a Conceptual Tool for Understanding Complex Natural Systems in Middle School Science. Institute for Education Sciences (R305A090210). PI with Co-PI Rebecca Jordan, \$1,630,450. 6/09- 5/13.

Cyber-Enabled Design Research to Enhance Teachers' Critical Thinking Using a Major Video Collection on Children's Mathematical Reasoning (DRL # 0822204). National Science Foundation. Co-PI with Carolyn Maher, PI, Grace Agnew, Marjory Palius, Sharon Derry. \$2,132,621. 9/08- 8/13.

Using the Science of Learning in the Teaching of Science, Phase II. Johnson and Johnson Foundation. PI with Co-PI's Richard Duschl, Clark Chinn. \$20, 000 9/07-12/08

Collaborative Research: Learning About Complex Systems in Middle School by Constructing Structure-Behavior-Function Models (DRL # 0632546). National Science Foundation ALT program, PI Ashok Goel, co-PI with Rebecca Jordan, Spencer Rugaber, \$304, 232. 9/06 - 8/10.

Transfer of Scientific Abilities. National Science Foundation ROLE program (DRL # 0529065). Co-PI with Eugenia Etkina, PI, Rebecca Jordan, Alan Van Heuvelen, 9/01/05 – 8/31/08. \$512, 806.

Using the Science of Learning in the Teaching of Science. Johnson and Johnson Foundation. PI with Co-PI's Richard Duschl, Clark Chinn, and Jeff Smith. 4/05-12/06. \$20, 000

Learning about causal systems in complex domains: A multidisciplinary synthesis of the state-of-the-art and research challenges. National Science Foundation Science of Learning Center catalyst grant. Co-PI with Hari Narayanan, PI, Ashok Goel, Sadhana Puntambekar, Teresa Hubscher-Younger. 10/1/2003- 3/31/2007. \$193, 916.

Representational Tools to Support Understanding of Complex Biological Systems (ROLE # 0133533). National Science Foundation Early CAREER grant. 5/1/2002 – 4/30/2009. \$677,017

Using activity theory to analyze collaborative interactions. National Academy of Education Collaborative Projects Initiative. 2002-2003 \$4600

Video Cases Online: Cognitive Studies of Preservice Teacher Learning (ROLE # 0107032), National Science Foundation. Co-PI with Sharon Derry. 06/01/2001- 05/31/2005 \$1,384,000

Collaborative ways of knowing: Knowledge as a tool for thinking, National Academy of Education/ Spencer Postdoctoral Fellowship, 1999-2001. Principal Investigator. \$45,000

Evaluation of Educational Resource for Tumor Heterogeneity. Subcontract to University of Pittsburgh National Cancer Institute Grant, 1998-1999. Principal Investigator. \$40,604

Collaborative Learning Based on Real-World, Engineering-Related Tasks ARPA/CAETI, 1995-1998, Co-investigator (Janet Kolodner, Principle Investigator).

Coordinator for Allied Health Science and Technology Entry Program grant to increase representation of women and minorities in science and technology careers, 1986-1988 (T. Liao, Principle investigator).

Internal

Assessing Collaborative Inquiry in Middle-School Game-Based Learning Environments. Kempf Research Fund. PI. \$18,000. 8/2021-5/2022.

Net.Create: Using Network Analysis to Support Digital Humanities Learning in Large History Classrooms. Indiana University, Faculty Research Seed Grant Program. 12/2017-11/2018. Co-PI with Kalani Craig, PI and Joshua Danish, Co-PI. \$53,987.

Teacher Professional Development for Using PMC2E: A Conceptual Representation to Support Learning About Ecosystems. Indiana University, Faculty Research Seed Grant Program. 7/2015-6/2016. \$39,681.

Problem-Based Learning Virtual Case Laboratory. Indiana University Faculty Research Seed Grant Program. Co-PI with Krista Glazewski, PI and Thomas Brush, Co-PI. 8/2014- 5/2015. \$21,250.

Problem- and Inquiry-Based Learning Through Guided Discovery-Based Game Design. Rutgers Faculty Research Grant Program, co-PI with Rebecca Reynolds, PI. 1/1/2012- 12/31/2012. \$47,006.

Synthesizing Research on Computer Supported Collaborative Learning. Rutgers University Research Council Grant. 2008-2009, Principal Investigator. \$1500.

Understanding Complex Systems Rutgers University Research Council Grant. 2001-2002, Principal Investigator. \$1500.

Creating Problem-based Learning Communities. Rutgers University Research Council Grant. 1999-2000, Principal Investigator. \$2000.

Project Director. SUNY SCAP grant to enhance instructional computing, 1988, Principal Investigator. \$2000.

Honors:

- 2023 Elected as Member, American Academy of Arts and Sciences
2022 Indiana University School of Education Outstanding Research Award
2021 Indiana University Distinguished Professor
2020 AECT Outstanding Development Award (with Krista Glazewski, Asmalina Saleh, Yuxin Chen, Indiana University; James Lester, Bradford Mott, Jonathan Rowe, North Carolina State University)
2017 Inaugural Fellow, International Society of the Learning Sciences
2016 Fellow, American Educational Research Association
2015 Fellow, International Society for Design and Development in Education
2014 Ben Gurion University Distinguished Visitor
2002 Rutgers Graduate School of Education Alumni Association Outstanding Faculty Research Award
2000 Co-recipient Center for Interactive Learning Technology Community Spotlight Award with Suthers, D., Schank, P., Jackiw, N., Sandoval, W., Gray, J.
1999 Fellow, National Institute for Science Education, University of Wisconsin, Madison, Wisconsin
1998 Distinguished Alumni Award, School of Health Technology and Management, State University of New York at Stony Brook
1995 Best Paper by a New Investigator, American Educational Research Association, Division I
1994 American Psychological Association Dissertation Award
1994 Vanderbilt University Dissertation Enhancement Award

Publications:

Peer-reviewed Journal Articles:

- Ryan, Z., Danish, J., Zhou, J., Stiso, C., Murphy, D., Duncan, R., Chinn, C. A., & Hmelo-Silver, C. E. (2023). Investigating students' development of mechanistic reasoning in modeling complex aquatic ecosystems. *Frontiers in Education, 8*, 1159558. [doi: 10.3389/feduc.2023.1159558](https://doi.org/10.3389/feduc.2023.1159558)
- de Jong, T., Lazonder, A. W., Chinn, C. A., Fischer, F., Gobert, J., Hmelo-Silver, C. E., Koedinger, K. R., Krajcik, J. S., Kyza, E. A., Linn, M. C., Pedaste, M., Scheiter, K., & Zacharia, Z. C. (2023, 2023/05/01). Let's talk evidence – The case for combining inquiry-based and direct instruction. *Educational Research Review, 39*, 100536. <https://doi.org/https://doi.org/10.1016/j.edurev.2023.100536>
- Park Rogers, M., Hmelo-Silver, C. E., Nicholas, C., Cross Francis, D., & Danish, J. (2023). Learning to Teach with Science Representations: Meaningfully Connecting the Three Dimensions of Science. *Science and Children, 60*, 60-67.
- Park, K., Mott, B., Lee, S., Gupta, A., Jantaraweragul, K., Glazewski, K., Scribner, J. A., Ottenbreit-Leftwich, A., Hmelo-Silver, C. E., & Lester, J. (2022). Investigating a visual

- interface for elementary students to formulate AI planning tasks. *Journal of Computer Languages*, 73, 101157. <https://doi.org/https://doi.org/10.1016/j.cola.2022.101157>
- Ottenbreit-Leftwich, A., Glazewski, K., Jeon, M., Jantaraweragul, K., Hmelo-Silver, C. E., Scribner, A., Lee, S., Mott, B., & Lester, J. (2022). Lessons Learned for AI Education with Elementary Students and Teachers. *International Journal of Artificial Intelligence in Education*. <https://doi.org/10.1007/s40593-022-00304-3>
- Rogat, T. K., Hmelo-Silver, C. E., Cheng, B., Traynor, A., Adeoye, T., Gomoll, A., & Downing, B. (2022). A Multidimensional Framework of Groups' Productive Disciplinary Engagement. *Frontline Learning Research*, 10(2), 1-21.
- Saleh, A., Phillips, T. M., Hmelo-Silver, C. E., Glazewski, K.D., Mott., B. W., & Lester, J.C. (2022). A learning analytics approach towards understanding collaborative inquiry in a problem-based learning environment. *British Journal of Educational Technology*, 53, 1321-1342. <https://doi.org/10.1111/bjet.13198>.
- Goldman, S. R., Hmelo-Silver, C. E., & Kyza, E. A. (2022). Collaborative Design as a Context for Teacher and Researcher Learning: Introduction to the Special Issue. *Cognition and Instruction*, 40(1), 1-6. <https://doi.org/10.1080/07370008.2021.2010215>
- Gomoll, A., Hmelo-Silver, C. E., & Šabanović, S. (2022). Co-constructing Professional Vision: Teacher and Researcher Learning in Co-Design. *Cognition and Instruction*, 40(1), 7-26. <https://doi.org/10.1080/07370008.2021.2010210>
- Bae, H., Craig, K., Xia, F., Chen, Y. & Hmelo-Silver, C.E. (2021). Developing historical thinking in large lecture classrooms through PBL inquiry supported with synergistic scaffolding. *Interdisciplinary Journal of Problem-based Learning*. 15, 2. <https://doi.org/10.14434/ijpbl.v15i2.28776>
- Chen, Y., Hmelo-Silver, C. E., Lajoie, S. P., Zheng, J., Huang, L., & Bodnar, S. (2021). Orchestration Technology in Online PBL: How PBL Teachers Use a Learning Analytics Dashboard to Assess Multiple Groups. *Interdisciplinary Journal of Problem-based Learning*, 15, 2. <https://doi.org/10.14434/ijpbl.v15i2.28792>
- Danish, J. A., Johnson, H., Nicholas, C., Cross Francis, D., Hmelo-Silver, C. E., Park Rogers, M., Askew, R., Gerber, A., & Enyedy, N. (2021). Situating video as context for teacher learning. *Learning, Culture and Social Interaction*, 30, 100542. <https://doi.org/https://doi.org/10.1016/j.lcsi.2021.100542>
- Craig, K., Danish, J., Humburg, M., Hmelo-Silver, C., Szostalo, M., & McCranie, A. (2021). Net.Create: Network Visualization to Support Collaborative Historical Knowledge Building. *International Journal of Computer-Supported Collaborative Learning*, 16, 185-223. <https://doi.org/10.1007/s11412-021-09343-9>

- Eberbach, C., Hmelo-Silver, C. E., Jordan, R., Taylor, J., & Hunter, R. (2021). Multidimensional Trajectories for understanding ecosystems. *Science Education*, *105*, 521–540 DOI: 10.1002/sce.21613
- Hmelo-Silver, C. E., & Jeong, H. (2021). Benefits and Challenges of Interdisciplinarity in CSCL Research: A View from the Literature. *Frontiers in psychology*, *11*(3754), 11. <https://doi.org/10.3389/fpsyg.2020.579986>
- Zheng, J., Huang, L., Li, S., Lajoie, S. P., Chen, Y., & Hmelo-Silver, C. E. (2021). Self-regulation and emotion matter: A case study of instructor interactions with a learning analytics dashboard. *Computers & Education*, *161*, 104061. <https://doi.org/https://doi.org/10.1016/j.compedu.2020.104061>
- Saleh, A., Chen, Y., Hmelo-Silver, C. E., Glazewski, K., Mott, B. W., Rowe, J. P., & Lester, J. C. (2020). Coordinating scaffolds for collaborative inquiry in a game-based learning environment. *Journal of Research in Science Teaching*, *57*, 1490-1518.
- Uttamchandani, S., Bhimdiwala, A., & Hmelo-Silver, C. E. (2020). Finding a Place for Equity in CSCL: Ambitious Learning Practices as a Lever for Sustained Educational Change. *International Journal of Computer-supported Collaborative Learning*, *15*, 373–382.
- Bridges, S. M., Hmelo-Silver, C. E., Chan, L. K., Green, J., & Saleh, A., (2020). Dialogic intervisualizing: Rethinking text-discourse-learning relations in multimodal problem-based learning. *International Journal of Computer-supported Collaborative Learning*, *15*, 283–318.
- Craig, K., Humburg, M., Danish, J., Szostalo, M., Hmelo-Silver, C. E., & McRanie, A. (2020). Increasing Students' Social Engagement During COVID-19 with Net.Create: Collaborative Social Network Analysis to Map Historical Pandemics During a Pandemic. *Information and Learning Sciences*, *121* (7/8), pp. 533-547. <https://doi.org/10.1108/ILS-04-2020-0105>
- Gomoll, A. S., Hillenburg, R., & Hmelo-Silver, C. E. (2020). “I have never had a pbl like this before”: On viewing, reviewing, and co-design. *Interdisciplinary Journal of Problem-based Learning*, *14*(1). <https://doi.org/10.14434/ijpbl.v14i1.28802>
- Danish, J., & Hmelo-Silver, C. E. (2020). On activities and affordances for mobile learning. *Contemporary Educational Psychology*, *60*, 101829. <https://doi.org/10.1016/j.cedpsych.2019.101829>
- Chen, Y., Andrews, C., Hmelo-Silver, C. E. & D'Angelo, C. (2020). Coding schemes as lenses on collaborative learning, *Information and Learning Sciences*, *121*, 1-18. <https://doi.org/10.1108/ILS-08-2019-0079>.
- Saleh, A., Hmelo-Silver, C. E., Glazewski, K. D., Mott, B., Chen, Y., Rowe, J. & Lester, J. (2019). Collaborative Inquiry Play: A Design Case to Frame Integration of Collaborative

- Problem Solving with Story-Centric Games. *Information and Learning Sciences*. 120, 547-566.
- Jeong, H., Hmelo-Silver, C. E., & Jo, K. (2019). Ten years of computer-supported collaborative learning: A meta-analysis of CSCL in STEM education during 2005-2014). *Educational Research Review*. 28.100284. doi 10.1016.
- Glazewski, K. D. & Hmelo-Silver, C. E. (2019). Scaffolding and Supporting Use of Information for Ambitious Learning Practices. *Information and Learning Sciences*, 120 (1/2), 39-58.
- Gomoll, A. S., Tolar, E., Hmelo-Silver, C. E., (2018). Helping students fail: Constructing productive failure in a middle school human centered robotics experience. *Journal of Thinking Skills and Creativity*, 30, 90-102.
- Jordan, R., Crall, A., Hmelo-Silver, C. E., Gray, S., Newman, M. (2018). Developing model-building as a scientific practice in collaborative citizen science. *Natural Sciences Education*. 47, (1).
- Gomoll, A. S., Šabanović, S., Tolar, E., Hmelo-Silver, C. E., Francisco, M., Lawlor, O. (2018). Between the Social and the Technical: Negotiation of Human-Centered Robotics Design in a Middle School Classroom. *International Journal of Social Robotics*, 10, 309-324.
- Huang, J., Hmelo-Silver, C. E., Jordan, R., Gray, S., Frensley, T., Newman, G., Stern, M. (2018). Scientific discourse of citizen scientists: Objects for collaborative problem solving. *Computers in Human Behavior*, 87, 480-492.
- Gomoll, A. S., Hmelo-Silver, C. E., Tolar, E., Šabanović, S., Francisco, M. (2017). Moving apart and coming together: Discourse, engagement, and deep learning. *Educational Technology and Society*, 20, 219-232.
- Snapir, Z., Eberbach, C., Ben-Zvi Assaraf, O., Hmelo-Silver, C., & Tripto, J. (2017). Characterizing the Development of the Understanding of Human Body Systems in High School Biology Students – A Longitudinal Study. *International Journal of Science Education*. 15, 2092-2127. Doi.org/ 10.1080/09500693.2017.1364445.
- Frensley, T., Crall, A. W., Stern, M., Jordan, R., Gray, S., Prysby, G., Newman, G., Hmelo-Silver, C. E., Mellor, D., Huang, J. (2017). Bridging the benefits of online and community supported citizen science: A case study on motivation and retention with conservation-oriented volunteers. *Citizen Science: Theory and Practice*, 2, (1), 1-14.
- Jordan, R. C., Gray, S., Sorensen, A. E., Pasewark, S., Sinha, S., & Hmelo-Silver, C. E. (2017). Modeling with a conceptual representation: is it necessary? does it work?. *Frontiers in ICT*, 4, 7. doi.org/10.3389/fict.2017.00007
- Yoon, S. A. & Hmelo-Silver, C. E. (2017). What do learning scientists do. *Journal of the Learning Sciences*, 26, 167-183. doi.org/10.1080/10508406.2017.1279546

- Gray, S., Jordan, R., Crall, A., Newman, G., Hmelo-Silver, C., Huang, J., Novak, W., Mellor, D., Frensley, T., Prysby, M., & Singer, A. (2017). Combining participatory modelling and citizen science to support volunteer conservation action. *Biological Conservation*, 208, 76-86. doi.org/10.1016/j.biocon.2016.07.037
- Hmelo-Silver, C. E., Jordan, R., Eberbach, C., & Sinha, S. (2017). Systems learning with a conceptual representation: A quasi-experimental study. *Instructional Science*. 45, 53-72.
- Gomoll, A., Hmelo-Silver, C. E., Šabanović, S., & Francisco, M. (2016). Dragons, Ladybugs, and Softballs: Girls' STEM Engagement with Human-Centered Robotics. *Journal of Science Education and Technology*, 25, 899-914. DOI 10.1007/s10956-016-9647-z
- Hogaboam, P. T., Chen, Y., Hmelo-Silver, C. E., Lajoie, S. P., Bodnar, S., Kazemitabar, M., Wiseman, J., Chan, L. K. (2016), Data Dashboards to Support Facilitating Online Problem-based Learning. *Quarterly Review of Distance Education*.17(3), 75-91.
- Yu, Y., Hmelo-Silver, C.E., Jordan, R., Eberbach, C. & Sinha, S. (2016). Promoting Transfer of Ecosystems Concepts. *International Journal of Environmental and Science Education*, 11, 11127-11048.
- Jeong, H. & Hmelo-Silver, C. E. (2016). Seven affordances of CSCL Technology: How can technology support collaborative learning. *Educational Psychologist*. 51, 247-265.
- Jordan, R., Gray, S., Sorenson, A., Newman, G., Mellor, D., Hmelo-Silver, C., LeDeau, S., Biehler, D., & Crall, A. (2016). Studying Citizen Science, Adaptive Management, and Learning Feedback as a Mechanism for Improving Conservation. *Conservation Biology*, 30, 487-495.
- Sinha, S., Rogat, T., Adams-Wiggins, K. R., & Hmelo-Silver, C. E. (2015). Collaborative group engagement in a computer-supported inquiry learning environment. *International Journal of Computer-Supported Collaborative Learning*, 10, 273-307.
- Lajoie, S. P., Poitras, E., Bassiri, M., Kazemitabar, M., Cruz-Panesso, I., Hmelo-Silver, C., Wiseman, J., Chan, L-K., & Lu, J. (2015). The role of regulation in medical student learning in small groups: Regulating oneself and others' learning and emotion. *Computers and Human Behavior*. 52, 601-616.
- Hmelo-Silver, C. E., Liu, L., Gray, S., & Jordan, R. (2015). Using representational tools to learn about complex systems: A tale of two classrooms. *Journal of Research in Science Teaching*, 52, 6-35.
- Jordan, R., Sorensen, A., & Hmelo-Silver, C. (2014) A conceptual representation to support ecological systems learning. *Natural Sciences Education*. 43, 141-146.

- Hmelo-Silver, C. E., Eberbach, C. & Jordan, R. (2014). Systems and Cycles: Learning about Aquatic Ecosystems. *Eurasia Journal of Math, Science, and Technology Education*, 10, 405-413. DOI: 10.12973/eurasia.2014.1170a.
- Jeong, H., Hmelo-Silver, C. E., Yu, Y. (2014). An examination of CSCL methodological practices and the influence of theoretical frameworks 2005–2009. *iJCSCL*, 9, 305-344.
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Hmelo-Silver, C. E. (2015). Naomi Miyake: Scholar, leader, and inspiration. *COGNITIVE SCIENCE: Bulletin of the Japanese Cognitive Science Society*. 22(4), 32-34.

Hmelo-Silver, C. E. (2011). In memoriam: Remembering Howard S. Barrows. *Interdisciplinary Journal of Problem-based Learning*, 5(2), 6-8.

Jordan, R., Gray, S., Demeter, M., Liu, L., & Hmelo-Silver, C. E. (2008). Adding behavior to thinking about structures and functions. *American Biology Teacher*, 70, 329-330.

Hmelo-Silver, C. E. (2003). Teaching problems and the problems of teaching [Review of the book *Teaching problems and the problems of teaching*]. *Teachers College Record*, 105, 176-182.

Hmelo-Silver, C. E. (2001). *Facilitating collaborative ways of knowing: Final report to the National Academy of Education*.

Hmelo, C. E. (1993). Learning in School and Learning in Life: An Exploration of Issues. (Tech. Rep. No. 93-1). Nashville TN: Vanderbilt University Learning Technology Center.

Hmelo, C. (1989). Selecting CAI for the RC educational program. *AARCTimes*, 13(5), 46-53.

Hmelo, C. (1989) CAI in the respiratory care educational program. *AARCTimes*, 13(4), 58-63.

Hmelo, C., Abel, E., McPeck M., & Axton K., (1987). Smoking survey: The Long Island experience. *AARCTimes* 11(11), 26-27.

Submitted:

Danish, J. A., Nicholas, C., Stiso, C., Hmelo-Silver, C. E., Park Rogers, M., Cross Francis, D. (2021). Teachers' Evolving Ideas About Using Representations to Support Science Learning. Under Revision. *Science Education*.

Danish, J. A., Saleh, A., Gomoll, A. S., Sigley, R., & Hmelo-Silver, C. E. Transfer in School: Doing the Work of Producing, Recognizing, and Ratifying Transferable Actions. Under revision. *Journal of the Learning Sciences*.

Presentations:

Lester, J., Hmelo-Silver, C. E., Biswas, G., Roschelle, J. (2022, December). *The AI Institute for Engaged Learning Panel*. Invited Panel. Empowering Learners in AI 2022 Conference. Online.

Hmelo-Silver, C. E. (2022, November). *Affordances of Technologies for Ambitious Learning Practices*. Presented at Augmented Intelligence Workshop, Indiana University. Bloomington IN.

Hmelo-Silver, C. E. (2022, October). *Scaffolding Engagement in Ambitious Learning Practices: An Ecojourney towards AI*. Invited keynote, presented at LSGS conference, Bloomington, IN.

Zhou, J., Hmelo-Silver, C.E., Danish, J., Ryan, Z., Stiso, C., Duncan, R. G., Chinn, C. A. & Murphy, D. (2022, April). Mediating scientific argumentation when students engage in modeling in small groups. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.

- Hussain-Abdi, H., Smithen, B. Stiso, C., Winchester, E, Murphy, D., Chinn, C. A., Duncan, R. G., Danish, J. A., Hmelo-Silver, C. E., Ryan, Z. D., Zhou, J. (2022). Coordinating empirical and simulation evidence during model-building in elementary science. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.
- Hmelo-Silver, C. E. & Glazewski, K. D. (2021, December). *Artificial Intelligence for Scaffolding Collaborative Engagement in Ambitious Learning Practices*. ELOE2021 Conference: E-learning international conference and open education forum. Invited keynote, presented online.
- Hmelo-Silver, C.E. (2021, April). *AI and Learning Environments* (invited panelist). Educators, Artificial Intelligence, and the Future of Learning Webinar Series. Online hosted by Digital Promise.
- Phillips, T. M., Saleh, A., Lee, S., Mott, B., Glazewski K. D., Hmelo-Silver, C. E., Lester, J. (2021, April). *Understanding User Profiles and Group Dynamics in an Online Collaborative Learning Environment Using Trace Data*. AERA Annual Meeting (held virtually).
- Chen, Y., Saleh, A. Bae, H., Hmelo-Silver, C. E., Glazewski, K. D., Mott, B. Lester, J. (2021, April). *Building Group Accountability in a Collaborative Learning Environment*. AERA Annual Meeting (held virtually).
- Glazewski, K. D., Ertmer, P. A., Hmelo-Silver, C. E. (2021, April). Contexts and Approaches That Foster Complex Problem-Solving for a Wide Range of Diverse Learners: Origins and Conceptual Foundations. AERA Annual Meeting (held virtually).
- Danish, J. A., Vickery, M., Duncan, R. G., Ryan, Z. D., Stiso, C., Moreland, M. , Murphy, D., Hmelo-Silver, C. E., Chinn, C. A. (2021, April). *Scientific Model Evaluation During a Gallery Walk*. AERA Annual Meeting (held virtually).
- Bae, H., Chen, Y., Saleh, A., Glazewski, K.D. , Hmelo-Silver, C.E., Brush, T., Lee, S., Mott, B., Lester, J. (2021, April). *"How Big Is a Tilapia?" Negotiating Collaborative Inquiry in a Game-Based Learning Environment*. AERA Annual Meeting (held virtually).
- Gomoll, A. S., Hmelo-Silver, C. E., Šabanović, S. (2021, April). Unpacking the Design of a Locally Situated Problem-Based Robotics Experience. AERA Annual Meeting (held virtually).
- Adeoye, T. F., Rogat, T. K., Bhimdiwala, A., Cheng, B. H., Scribner, A., Downing, B. K., Fujii, R. Traynor, A., Hmelo-Silver, C. E., Lundh, P. (2021, April). *Role of Teacher Practices in Promoting Collaborative Group Productive Disciplinary Engagement*. AERA Annual Meeting (held virtually).

- Hmelo-Silver, C. E. (2020, November). *Ambitious Learning Practices Across Contexts*. Invited Keynote Address. Association for Educational Communications and Technology Virtual International Convention.
- Rodgers, K., Feng, C., Bhimdiwala, A., Gok, S., Glazewski, K., Hmelo-Silver, C., Brush, T., Lee, S., Mott, B., Lester, J.(2020, November). *Supporting teacher orchestration of collaborative inquiry in game-based learning with intelligent assistants*. Association for Educational Communications and Technology Virtual International Convention.
- Housh, K., Rehmat, A. P., Cisterna, D., Hmelo-Silver, C. E., & Liu, L.(2020, April). *Learning Progressions in Science Assessments*. Annual Meeting of National Association of Research in Science Teaching (Conference Canceled)
- Liu, L., Cisterna, D., Hmelo-Silver, C, Rehmat, A. P., & Housh, K. (2020). Designing crosscutting concepts assessments to support NGSS teaching and learning. Annual Meeting of National Association of Research in Science Teaching (Conference Canceled)
- Craig, K. L., Danish, J. A., Bae, H., Szostalo, M., Humburg, M. A., Hmelo-Silver, C. E. & McCranie, A. (2020, Apr 17 - 21) *Net.Create: Network Analysis in Collaborative Co-Construction of Historical Context in a Large Undergraduate Classroom* [Paper Session]. AERA Annual Meeting San Francisco, CA <http://tinyurl.com/wmcosea> (Conference Canceled)
- Danish, J. A., Moreland, M., Ryan, Z. D., Hmelo-Silver, C. E., Chinn, C. A., Duncan, R. G. & Av-Shalom, N. Y. (2020, Apr 17 - 21) *Designing to Support Iterative Model Revision From Simulation and Research Evidence* [Poster Session]. AERA Annual Meeting San Francisco, CA <http://tinyurl.com/qrggmrg> (Conference Canceled)
- Danish, J. A., Nicholas, C., Hmelo-Silver, C. E., Park Rogers, M. A., Cross Francis, D. I., Enyedy, N. D., Keifert, D. & Stiso, C. (2020, Apr 17 - 21) *What, How, and Why Do Elementary Teachers Think About Using Representations in Their Science Teaching?* [Paper Session]. AERA Annual Meeting San Francisco, CA <http://tinyurl.com/uey6p37> (Conference Canceled)
- Hmelo-Silver, C. E. (2019, December). *Problem-based learning for understanding the why and how*. AI in K-12 Education Workshop. Los Angeles, CA.
- Hmelo-Silver, C. E., Danish, J., Duncan, R. G., Chinn, C. A., Moreland, M., Av'Shalom, N. (2019, August). *Scaffolding Explanations and Epistemic Development for Systems*. Paper presented at European Association for Research on Learning and Instruction. Aachen, Germany.
- Rehmat, A., Saleh, A., Liu, L., Hmelo-Silver, C. E., Weiser, G., Housh, K., & Cisterna-Albuquerque, D. (2019, August). *Computer-Based Science Assessment For Crosscutting Concepts*. Demonstration presented at European Association for Research on Learning and Instruction. Aachen, Germany.

- Hmelo-Silver, C. E. (2019, May). *CSCL for All: Technology Support for Inquiry Learning*. Invited Keynote Presentation at Knowledge Management and E-learning Conference. Beijing Normal University. Beijing, China.
- Gomoll, A. S., Hmelo-Silver, C. E., Šabanović, S., & Li, P.-J. (2019, April). *"I Have Never Had a PBL Like This": Teacher Identity and Co-Designing Empowering Problem-Based Learning Experiences*. Presented at AERA Annual Meeting. Toronto, CA.
- Rogat, T. K., Cheng, B. H., Hmelo-Silver, C. E., Adeoye, T., Gomoll, A., Traynor, A., & Lundh, P. (2019, March). *Extending Frameworks to Measure Collaborative Group Productive Disciplinary Engagement in STEM Classrooms*. Presented at AERA Annual Meeting. Toronto, CA.
- Chen, Y., Phonethisavads, A., Hmelo-Silver, C. E., Zheng, J., Huang, L., & Lajoie, S. P. (2019, April). *Using Learning Analytics to Support Problem-Based Learning Facilitation*. Presented at AERA Annual Meeting. Toronto, CA.
- Zheng, J., Huang, L., Lajoie, S. P., Chen, Y., & Hmelo-Silver, C. E. (2019, April). *Exploring Instructors' Emotions and Metacognition: A Case Study of Instructor Interactions with a Learning Analytics Dashboard*. Presented at AERA Annual Meeting. Toronto, CA.
- Saleh, A., Weiser, G., Housh, K., Hmelo-Silver, C. E., Liu, L., & Lloret, K. (2019, March). *Developing a Hypothetical Learning Progression for NGSS Crosscutting Concepts: Structure-Function and Systems & System Models*. Presented at NARST 2019, Baltimore, MD.
- Weiser, G., Liu, L., Hmelo-Silver, C. E., Saleh, A., & Housh, K. (2019, March). *Design Principles for Amending the Next Generation Science Standards for Research and Practice*. Presented at NARST 2019, Baltimore, MD.
- Park Rogers, M., Danish, J., Nicholas, C., Cross Francis, D., Hmelo-Silver, C. (2019). *Supporting teacher cognition and instruction of science representations in elementary classrooms: A peek into the first year of a multi-year program*. Poster presented at the Association for Science Teacher Education International Conference. Savannah, GA.
- Hmelo-Silver, C. E. (2018, October). *From Robots to Sparrows: Technology-supported Inquiry Learning Across Time and Space*. Invited Keynote Address. Presented at EARLI SIG 20-26 Conference. Jerusalem, Israel.
- Hmelo-Silver, C. E., Jeong, H., & McKeown, J. (2018, October). *Distinguishing the forest from the trees: Using cluster analysis to guide meaningful CSCL meta-synthesis*. Presented at EARLI SIG 20-26 Conference. Jerusalem, Israel.

- Hmelo-Silver, C. E., Šabanović, S., Gomoll, A., & Francisco, M. (2018, May). *What can robots do for us? Learning outcomes from a human-centered robotics curriculum*. First Annual Joint Symposium on Educational Research, University of Warsaw, Poland.
- Hmelo-Silver, C. E. (2018, April). *Facilitating Problem-based Learning*. Invited Keynote. Problem-based Education SIG, American Educational Research Association Annual Meeting. New York, NY.
- McKeown, J. M., Hmelo-Silver, C. E., Jeong, H., Hartley, K. A., Faulkner, R. (2018, April). *A Synthesis of Research on Computer-Supported Collaborative Learning: Narrowing in on Asynchronous STEM Education*. Poster presented at American Educational Research Association Annual Meeting. New York, NY.
- Saleh, A., Shanahan, K., Georgen, C., Hmelo-Silver, C. E., Glazewski, K., & Lester, J. (2018, April). *Scaffolding Middle Schoolers Construction of Scientific Models*. Poster presented at American Educational Research Association Annual Meeting. New York, NY.
- Hmelo-Silver, C. E. (2018, February). *What can Robots do for us? Promoting STEM Engagement through Human-Centered Robotics*. Invited Keynote. First Workshop of the International Society of the Learning Sciences in Africa. Johannesburg, South Africa.
- Hmelo-Silver, C. E. (2017, October). *Computer-supported collaborative learning: Technology support for learning and life*. Invited Keynote Presentation. Conference on Design Tradeoffs and Quality of Life. Hanover, Germany.
- Gomoll, A., Hmelo-Silver, C. E., Šabanović, S. (2017, August). *Reconceptualizing engagement: How embodied interaction can support collaborative inquiry*. European Association for Research on Learning and Instruction. Tampere, Finland.
- Hmelo-Silver, C. E., Šabanović, S., Gomoll, A., & Francisco, M. (2017, August). *What can robots do for us? Learning outcomes from a human-centered robotics curriculum*. European Science Education Research Association. Dublin, Ireland.
- Hmelo-Silver, C. E. (2017, August). *Being Sophisticated About Science Learning in Citizen Science*. Invited Presentation, National Academies of Science/Engineering/ Medicine Committee on Designing Citizen Science to Support Science Learning. Washington DC.
- Huang, J., Hmelo-Silver, C. E., Jordan, R., Gray, S., Frensley, T., Stern, M., Newman, G. (2017, April). *Exploring Citizen Science Engagement in Collaborative Scientific Practices*. Annual Meeting, American Educational Research Association. San Antonio, Texas.
- McKeown, J., Hartley, K. A., Faulkner, R., Hmelo-Silver, C. E., Jeong, H., & Emmanuel, N. (2017, April). *Synthesizing Research on Computer-Supported Collaborative Learning: Preliminary Findings*. Annual Meeting, American Educational Research Association. San Antonio, Texas.

- Danish, J., Saleh, A., Gomoll, A., Sigley, R., Hmelo-Silver, C. E. (2017, April). *Transfer in School: Doing the Work of Producing, Recognizing, and Ratifying Transferable Actions*. Annual Meeting, American Educational Research Association. San Antonio, Texas.
- Gomoll, A., Hmelo-Silver, C. E., Šabanović, S. (2017, April). *Embodiment and Framing: Key Pieces of Deep Learning in One Student Interview*. Annual Meeting, American Educational Research Association. San Antonio, Texas.
- Glazewski, K., Gomoll, A., Hmelo-Silver, C. E., Brush, T., Jung, J. (2017, April). “*We are a Nonlinear, Dynamic system*”: *Problem-Based Design in Engineering at a Hispanic-Serving Institution*. Annual Meeting, American Educational Research Association. San Antonio, Texas.
- Gomoll, A., Rehak, A., Hmelo-Silver, C. E., Danish, J., Jiang, M., Chen, Y. (2017, April). *Supporting Preservice Teachers’ Development of Professional Vision: Performance Assessments and Beyond*. Annual Meeting, American Educational Research Association. San Antonio, Texas.
- Chen, Y., Hogaboam, P., Kazemitabar, M., Bodnar, S., Sarmiento, J. P., Sherman, R. K., Hmelo-Silver, C. E., Lajoie, S., & Goldman, R. (2017, April). *Analysis of an Instructor Dashboard to Support Learning and Facilitation in an Online PBL Environment*. Annual Meeting, American Educational Research Association. San Antonio, Texas.
- Hmelo-Silver, C. E. (2017, March). *What can robots do for us?: Human Centered Robotics for Promoting STEM Engagement*. Invited presentation. Learning Sciences Research Institute. University of Illinois- Chicago.
- Hmelo-Silver, C. E. (2017, February). *From Understanding to Design and Back Again: A Research Journey*. Invited presentation. Northern Illinois University.
- Hmelo-Silver, C. E. (2016, November). *Systems learning with a conceptual representation*. Invited presentation, CREATE Speaker Series, Michigan State University, Lansing, MI.
- Hmelo-Silver, C. E. (2016, August). Inquiry and Argumentation Panel (Invited panelist). EARLI SIG 20/ 26 Biennial Meeting. University of Ghent. Ghent, Belgium.
- Hmelo-Silver, C. E. & Jeong, H. (2016, June). *Coming of age: Synthesizing CSCL research*. Invited presentation. International Conference of the Learning Sciences. Singapore.
- Andrade, A., Saleh, A., Rehak, A. M., Gomoll, A. S., Danish, J. A., & Hmelo-Silver, C. E. (2016, April). *Exploring a text-mining approach for the analysis of computer collaborative data from a design-based research project*. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C.
- Faulkner, R., Hartley, K., Hmelo-Silver, C. E., Jeong, H., Andrade, A. (2016, April). *Computer-Supported Collaborative Learning in STEM Domains: An Exploratory Synthesis*. Poster

presented at the Annual Meeting of the American Educational Research Association, Washington, D.C.

Gomoll, A. S., Rehak, A. M., Novak, W., Andrade, A., Saleh, A., Hmelo-Silver, C. E. Danish, J. A. (2016, April). *"It could be so many learning theories": Multimedia artifacts and professional vision in preservice teachers*. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C.

Hmelo-Silver, C. E., Gomoll, A. S., Francisco, M., Šabanović, S., Novak, W. (2016). *Human-centered robotics experiences for exploring engineering, computer science, and society*. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C.

Hmelo-Silver, C. E., Jordan, R., Eberbach, C., Sinha, S. (2016, April). *Systems learning with a conceptual representation: A quasi-experimental study*. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C.

Hmelo-Silver, C. E., Danish, J. A., Gomoll, A., Novak, W., Saleh, A., Andrade-Lotero, A. (2016, January). *Using Video to Identify the Work of Transfer*. Hawaii International Conference on Education. Honolulu, HI.

Hogaboam, P., Hmelo-Silver, C., Lajoie, S., Golman, R., Bodnar, S., Kazemi, M. Chen, Y., (2015, November). HOWARD (helping others with argumentation and reasoning): supporting multiple group facilitation. Poster presented at the Annual Meeting of the Association for Education Communications and Technology, Indianapolis, Indiana.

Jung, J., & Hmelo-Silver, C. E. (November, 2015). Cultural overlays for the Community of Inquiry (CoI) framework. Presented Annual Meeting of the Association for Education Communications and Technology, Indianapolis, Indiana.

Hmelo-Silver, C. E. (2015, October). *PBL Masterclass: Revisiting goals and strategies of PBL Facilitators*. Invited Workshop. Hong Kong University

Hmelo-Silver, C. E. (2015, September). *Scaffolding and Achievement in Problem-based, Project-based, and Inquiry Learning*. Invited Keynote for International Conference on Teaching and Learning, Singapore.

Hmelo-Silver, C. E. (2015, September). *Conceptual representations for transfer: Helping students apply their learning to new contexts*. Invited Workshop for International Conference on Teaching and Learning, Singapore.

Hmelo-Silver, C. E. (2015, September). *Goals and strategies of a PBL facilitator*. Invited Workshop for International Conference on Teaching and Learning, Singapore.

- Hmelo-Silver, C. E. (2015, August). *Computer-supported Collaborative Learning and the Learning Sciences: Synergies and Challenges*. Presented at European Association for Learning and Instruction Biennial Conference. Limassol, Cyprus.
- Ben Zvi-Assaraf, O., Snapir, Z., Eberbach, C., Hmelo-Silver, C., Tripto, J., & Amit, M. (2015, August). *Characterizing the development of understanding human body systems in high school biology students*. Presented at European Association for Learning and Instruction Biennial Conference. Limassol, Cyprus.
- Hmelo-Silver, C. E., Eberbach, C., Jordan, J., Sinha, S., Rogat, T. K. (2015, August). *Trajectories for Engaged Learning about Complex Systems*. Presented at European Association for Learning and Instruction Biennial Conference. Limassol, Cyprus.
- Jordan, R. Sorenson, A., Hmelo-Silver, C. (2015, August). *A conceptual representation and modeling to support ecosystem learning*. Presented at Annual meeting of Ecological Society of America.
- Hmelo-Silver, C. E. (2015, May). *Supporting the Learning in Problem-based Learning*. Vanderbilt University School of Medicine Grand Rounds (Invited). Nashville, TN.
- Hmelo-Silver, C. E. (2015, March). *Affordances of technology for collaborative learning in engineering education*. Invited Engineering Education Graduate Student Association Distinguished Lecturer. Purdue University, West Lafayette, IN.
- Hmelo-Silver, C. E., Jordan, R. C., Mellor, D., Crall, A., Gray, S. A., Novak, W., Huang, J. (2014, February). *Engaging Citizen Scientists in Collaborative Modeling*. First Citizen Science Association Annual Meeting. San José, CA.
- Hmelo-Silver, C. E. & Glazewski, K. D. (2015, February). *Improving Your Chances of Getting Published*. GIST/ LSGSA Student Workshop. Indiana University.
- Hmelo-Silver, C. E. (2014, April). *Fostering learning and engagement about ecosystems through PMC*. Invited Distinguished Visitor presentation, Ben Gurion University, Israel.
- Hmelo-Silver, C. E. (2014, April). *Classroom Microgenetic Analysis of Ecosystems Drawings*. Invited Distinguished Visitor workshop presentation, Ben Gurion University, Israel.
- Hmelo-Silver, C. E. (2014, April). *Facilitating collaborative knowledge construction in problem-based learning*. Invited Distinguished Visitor presentation, Ben Gurion University, Israel.
- Sinha, S., Yu, Y. Hmelo-Silver, C. E., & Jordan, R. (2014, April). *Exploring Transfer of Complex Systems Understanding: A Tale of Two Lenses*. Presented at Annual Meeting, American Educational Research Association. Philadelphia PA.

- Eberbach, C., Hmelo-Silver, C. E., & Jordan, R. (2014, April). *Analyzing Trajectories for Learning About Ecosystems*. Presented at Annual Meeting, American Educational Research Association. Philadelphia PA.
- Maher, C. A., Maher, J. A., Palius, M. F., Sigley, R. & Hmelo-Silver, C. E. (2014, April). *Validating an Evolving Video Mosaic Collaborative Design by Seeking Evidence of Teachers' Growth in Reasoning and Related Shifts in Beliefs*. Presented at the 2014 Annual Meeting of the American Educational Research Association, Philadelphia, PA.
- Hmelo-Silver, C.E., Maher, C. A., Palius, M. F., Sigley, R. Alston A. (2014, April). *Making thinking visible through multimedia artifacts*. Presented at Annual Meeting, American Educational Research Association. Philadelphia PA.
- Hmelo-Silver, C. E. (2014, March). *Learning from video: Design research using the video mosaic collaborative*. Invited Presentation. Knowledge Media Research Center. Tubingen, Germany.
- Hmelo-Silver, C. E. (2014, February). *Facilitating Productive Collaboration in Problem-based Learning*. Invited Presentation, Qatar University, Doha, Qatar.
- Hmelo-Silver, C. E. (2014, February). *Learning from Video: A Tale of Two Technology-enhanced Learning Environments*. First Fridays lecture series, Indiana University School of Education.
- Hmelo-Silver, C. E. (2014, February). *Problem-based Learning: An Overview*. ISLS NAPLES webinar.
- Hmelo-Silver, C. E., Maher, C. A., Palius, M. F., Sigley, R. Alston, A. (2013, July). *Constructing Objects For Teacher Reflection On Learning Mathematics*. Poster presented at Psychology of Mathematics Education 37, Kiel Germany.
- Hmelo-Silver, C., Lajoie, S. P., Khurana, C., Lu, J., Wiseman, J., Chan, L.K., Cruz-Panesso, I. (2013, August). *Supporting international Problem-based learning using CSCL tools*. Presented at the European Association for Research in Learning and Instruction. Munich.
- Lajoie, S. P., Cruz-Panesso, I., Summerside, C., Poitras, E., Hmelo-Silver, C., Wiseman, J., Lu, J., & Chan, L., Kazemitabar, M., (2013, August). *The role of interpersonal interactions in emotional regulation in medical student learning*. Presented at the European Association for Research in Learning and Instruction. Munich.
- Lajoie, S.P. (2013, June). *Designing for Distributed Regulatory Processes*. Presented at the 10th International Conference on Computer Supported Collaborative Learning, Madison.
- Reynolds, R., Hmelo-Silver, C. E. (2013). *Understanding Student Resourcefulness in Knowledge Communities Through an Investigation of the Globaloria Game Design Initiative*.

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

Liu, L. & Hmelo-Silver, C. E. (2013, April). *Conceptual Representations to Foster Cognitive and Metacognitive Skills*. Presented at Annual Meeting American Educational Research Association. San Francisco, CA.

Lajoie, S. P., Cruz-Panesso, I., Summerside, C., Kazemitabar, M., Poitras, E. G., Wiseman, J., Hmelo-Silver, C. E., Lu, J., Chan, L-K. (2013, April). *Technology-Rich Learning Environments to Support Emotional Regulation: A Case Study of the Relationship Between Physician Regulation and Patient Coping*. Presented at Annual Meeting American Educational Research Association. San Francisco, CA.

Eberbach, C., Hmelo-Silver, C. E., Sinha, S., Jordan, R. (2013, April). *Tracing Learning Trajectories for Understanding Ecosystems*. Presented at National Association for Research Science Teaching Annual Meeting. San Juan, Puerto Rico.

Sinha, S., Hmelo-Silver, C. E., Eberbach, C., Jordan, R., Brooks, W., Yu, Y., Damsa, C. (2013, April). *Charting Mechanistic Reasoning Across Aquatic Ecosystems*. Presented at National Association for Research Science Teaching Annual Meeting. San Juan, Puerto Rico.

Yu, Y., Hmelo-Silver, C. E., Sinha, S., Eberbach, C., Jordan, R. (2013, April). *Fostering Transfer of Ecosystem Concepts*. Poster presented at National Association for Research Science Teaching Annual Meeting. San Juan, Puerto Rico.

Hmelo-Silver, C. E. (2012, November). *Using design-based research to understand complex learning*. Invited Presentation, Teachers College, Columbia University, New York, NY.

Hmelo-Silver, C. E. (2012, November). *Facilitating collaborative knowledge building in PBL*. Invited Presentation, McGill University, Montreal, CA.

Hmelo-Silver, C. E. (2012, September). *Collaboration, technology, and learning about complex systems: STEM learning for the future*. Invited Panel at Business-University-Foundation International Symposium on Fostering the Young for the Future. Tokyo, Japan.

Hmelo-Silver, C. E. (2012, September). *Seeing the elephant: Using mixed methods to understand complex learning*. Invited Keynote Presentation EARLI SIG17 Qualitative and Quantitative Approaches to Learning and Instruction biennial meeting. Deventer, Netherlands.

Lajoie S.P., Cruz-Panesso I., Poitras E., Kazemitabar M., Wiseman J., Chan L.K., Hmelo-Silver C. (2012). *Can technology foster emotional regulation in medical students? An international case study approach*. The 5th biennial meeting of EARLI SIG 16. Milano, Italy.

- Lu J., Chan L.K., Lajoie S.P., Wiseman J., Hmelo-Silver C. E. (2012, June). *Helping medical students deal with emotions in patient communication: Challenges and opportunities of e-learning in multicultural learning communities*. Centre for Information Technology in Education (CITE) Research Symposium 2012, Hong Kong.
- Eberbach, C. Hmelo-Silver, C. E., Sinha, S. & Jordan, R. (2012, April). *Learning about aquatic ecosystems in middle school classrooms*. Annual Meeting of the American Educational Research Association. Vancouver, Canada.
- Lajoie, S. P., Lu, J., Hmelo-Silver, C. E., Cruz-Panesso, I., Ranellucci, J., Wiseman, J., Chan, L. K. (2012). *Technology triggers for caring: Examining affect while learning to communicate bad news to patients*. Annual Meeting of the American Educational Research Association. Vancouver, Canada.
- Hmelo-Silver, C. E. (2012, March). *Une Approche de Recherche Basée sur la Conception afin de Comprendre l'apprentissage Complexe : A Design-Based Research Approach to understanding Complex Learning*. Invited presentation. Seminaire sciences de la'apprendre. Institute Français de L'Education. Lyon, France.
- Hmelo-Silver, C. E. (2012, March). *Understanding learning about complex systems: A design-based approach*. Invited Presentation, Indiana University, Learning Sciences Seminar. Bloomington, Indiana.
- Hmelo-Silver, C. E. (2011, December). *Understanding complex learning - A design-based research approach*. Invited Keynote presented at Munich Center for the Learning Sciences Doctoral Training Program Research Colloquium. Kloster Seeon, Germany.
- Hmelo-Silver, C. E. (2011, December). *Video for teaching, learning, and research*. Invited Presentation. Munich Center for the Learning Sciences. Ludwig Maximilian University, Munich, Germany.
- Lajoie S.P., Lu J., Hmelo-Silver C. E., Wiseman J., Chan L.K., Cruz-Panesso I., Poitras E., Ranellucci J., Hong Y., Kazemi M., Summerside C. (201, November). *A case-study exploring the role of affect and culture in communicating bad news: Technology triggers for problem based learning and practice*. Poster presented at the Royal College's 2011 Simulation Summit, Montreal.
- Eberbach, C., Hmelo-Silver, C. E., Jordan, R., Goel, A., Rugaber, S. (2011). *Mediating disciplinary practice to understand aquatic ecosystems*. Presented at the 14th Biennial Conference of the European Association for Research on Learning and Instruction. Exeter, UK.
- Maher, C. A., Hmelo-Silver, C. E., Palius, M. F., & Sigley, R. (2011, August). *Reflecting on reasoning by studying videos*. Presented at the 14th Biennial Conference of the European Association for Research on Learning and Instruction. Exeter, UK.

- Hmelo-Silver, C. E. (2011, June). *From PBL to LBD and Beyond*. Invited presentation. Computer-supported Collaborative Learning 2011 Conference. University of Hong Kong.
- Hmelo-Silver, C. E. (2011, June), *Barrows Memorial Lecture: Scaffolding, technology, and achievement in problem-based learning*. University of Hong Kong Centenary Distinguished Lecture. University of Hong Kong Dental School.
- Hmelo-Silver, C. E. (2011, June). *Advanced PBL Facilitation Techniques Workshop*. Invited Workshop, University of Hong Kong Dental School.
- Hmelo-Silver, C. E. (2011, June). *Scaffolding, achievement, and technology in problem-based learning*. Invited Keynote Address. First International FACILITATE Conference on Problem-based Learning. Dublin, Ireland.
- Hmelo-Silver, C. E. (2011, May). *From the what to the how of transfer: A Research Journey*. Invited Presentation. Math and Science Education PhD Seminar. San Diego, CA.
- Sinha, S., Hmelo-Silver, C. E., Honwad, S., Jordan, R., Eberbach, C., Gray, S., (2011, April). *Understanding the “why” and uncovering the “how”: Transfer of conceptual representations*. Paper presented at Annual Meeting of the American Educational Research Association.
- Alexander, P. A., Chinn, C. A., Goldman, S. R., Hmelo-Silver, C. E. (2011, April). *What educational psychologists and learning scientists can learn from each other: A dialogue*. Invited Panel. Presented at Annual Meeting of the American Educational Research Association.
- Eberbach, C., Hmelo-Silver, C. E., Sinha, S., Honwad, S., Jordan, R., Rugaber, S., Goel, A. K. (2011, April). *Modeling observational practice in a middle school classroom*. Paper presented at Annual Meeting of the American Educational Research Association.
- Gray, S., Honwad, S., Sinha, S., Jordan, R., Hmelo-Silver, C. E., Vattam, S., Rugaber, S., Goel, A. K. (2011, April). *Assessing learning as an outcome of modeling*. Paper presented at Annual Meeting of the American Educational Research Association.
- Hmelo-Silver, C. E. (2010, July). *Learning Through Problem-solving*. Invited plenary presentation. AAPM Summer School: Teaching medical physics: Innovations in Learning. Philadelphia. PA.
- Hmelo-Silver, C. E. (2010, April). *Visualizations, mental models, and complex systems*. Presented at Developing Student Understanding of Complex Systems in the Geosciences conference. Carleton College, Northfield Minnesota.
- Hmelo-Silver, C. E., Sinha, S., Gray, S., Honwad, S., Eberbach, C., Jordan, R., Rugaber, S., Vattam, S., Goel, A., Ford, W., Schmidt, C. (2010, March). *Appropriating conceptual*

- representations: A case of transfer among middle school science teachers.* Presented at National Association for Research in Science Teaching, Philadelphia PA.
- Liu, L. & Hmelo-Silver, C. E. (2010, March). *Computer-Supported Collaborative Scientific Conceptual Change: Learning Science in CSCL Learning Environments.* Presented at National Association for Research in Science Teaching, Philadelphia PA.
- Hmelo-Silver, C. E. (2009, October). *Collaborative Knowledge Building in Problem-based-Learning.* Invited Presentation. University of Maryland, Physics Education Research Group.
- Hmelo-Silver, C. E. (2009, October). *Problem-based learning: What do we know and where do we go?.* Invited Keynote Presentation in Seminar on Promoting Reasoning and Problem-solving. Insper Instituto de Ensino e Pesquisa, Sao Paulo, Brazil.
- Hmelo-Silver, C. E., (2009, September). *Facilitating Knowledge Building Discourse in Problem-based Learning.* Invited Presentation. University of Delaware.
- Hmelo-Silver, C. E. (2009, August). *Facilitating social knowledge construction in communities of learners: Are we there yet (and how would we know)?* Invited keynote presentation. European Association for Research on Learning and Instruction. Amsterdam, Netherlands.
- Hmelo-Silver, C. E. (2009, August). *Computer supported inquiry learning: Future and vision symposium.* Invited panel. European Association for Research on Learning and Instruction. Amsterdam, Netherlands.
- Hmelo-Silver, C. E. (2009, August). *Scaffolding in the Classroom Symposium Discussant.* European Association for Research on Learning and Instruction. Amsterdam, Netherlands.
- Hmelo-Silver, C. E. (2009, June). *Problem-based learning: Current status and future prospects.* Invited opening keynote presentation. Second International PBL Symposium, Republic Polytechnic, Singapore.
- Hmelo-Silver, C. E. (2009, June). *Adapting PBL Models to Different Contexts and Classroom Realities.* Invited Workshop. Second International PBL Symposium, Republic Polytechnic, Singapore.
- Sinha, S. & Hmelo-Silver, C. E. (2009, April). *Uncovering students' engagement in technology-mediated learning.* Paper presented at Annual Meeting of the American Educational Research Association. San Diego, CA.
- Jordan, R., Hmelo-Silver, C. E., Gray, S., Rugaber, S., Vattam, S. & Goel, A. (2009, April). *Modeling practices as a function of task structure.* Paper presented at Annual Meeting of the American Educational Research Association. San Diego, CA.

- Liu, L., & Hmelo-Silver, C. E. (2009). *Collaborative Scientific Conceptual Change: A Multilevel Analysis of Computer-Supported Collaborative Learning*. Paper presented at Annual Meeting of the American Educational Research Association. San Diego, CA.
- Hmelo-Silver, C. E. (2009, March). *Designing and facilitating inquiry-oriented learning: Lessons from research in the learning sciences*. Invited keynote presentation. CITERS 2009 conference. Hong Kong University.
- Hmelo-Silver, C. E. (2009, March). *Facilitating knowledge building in problem-based learning*. Invited presentation. Hong Kong University.
- Hmelo-Silver, C. E. (2009, February). *Improving your chances of getting published*. Invited Workshop. Hong Kong University.
- Hmelo-Silver, C. E. (2009, February). *Conceptual Representations for Learning about Complex Biological System: From Expertise to Instruction*. Invited presentation. Hong Kong University.
- Jordan, R., Gray, S., & Hmelo-Silver, C.E. (2009, January). *Thinking below the surface: Using aquaria to teach about complex systems*. Alliance for New Jersey Environmental Educators Annual Meeting. Princeton University, Princeton, NJ.
- Hmelo-Silver, C. E. (2008, November). *From Expertise to instruction: Conceptual representations for learning about complex biological systems*. Invited presentation, Weizmann Institute of Science. Rehovot, Israel.
- Hmelo-Silver, C. E. (2008, November). *Supporting complex learning*. Invited presentation. University of Haifa, Haifa, Israel.
- Hmelo-Silver, C. E. (2008, September). *A tale of two classrooms: Learning from simulations*. Invited presentation, Korea University, Seoul, South Korea.
- Hmelo-Silver, C. E. (2008, September). *Using videocases in a problem-based educational psychology course*. Invited presentation, Hallym University, Chuncheon, South Korea.
- Hmelo-Silver, C. E. (2008, June). *Some thoughts on grain size...* Presented as part of workshop on *Analyzing Collaborative Interactions*. International Conference of the Learning Sciences. Utrecht, The Netherlands.
- Hmelo-Silver, C. E., Liu, L., Gray, S., & Jordan, R. (2008, April). *Reptools: Representational tools to supporting learning about complex systems*. Paper presented at Annual Meeting of National Science Teachers Association. Boston, MA.
- Hmelo-Silver, C. E., Jordan, R., Liu, L., Gray, S., & Jeong, H. (2008, April). *An integrated framework for bridging diverse analytical tools for understanding technology-mediated*

- learning about complex natural systems*. Paper presented at Annual Meeting of the American Educational Research Association. New York, NY.
- Liu, L. & Hmelo-Silver, C. E. (2008, April). *Differential effects of alternative conceptual representations on co-regulated learning*. Paper presented at annual meeting of the American Educational Research Association. New York, NY.
- Etkina, E., Van Heuvelen, A., Karelina, A., Ruibal-Villasenor, M., Rosengrant, D., Jordan, R., & Hmelo-Silver, C. E. (2008, April). *Transfer of scientific abilities*. Paper presented at annual meeting of the American Educational Research Association. New York, NY.
- Hmelo-Silver, C. E., Spector, J. M., Horwitz, P., & Savery, J. *Problem-oriented learning: Preparing lifelong learners for the digital age*. Plenary panel presented at CELDA 2007, Carvoeiro, Portugal.
- Hmelo-Silver, C. E. (2007, October). Invited Panelist. *Writing effective federal grant proposals: Lessons learned from successful researchers*. NSF sponsored panel at Association for Educational Communications and Technology annual meeting. Anaheim, CA.
- Hmelo-Silver, C. E. Liu, L., Gray, S., Finkelstein, H., & Schwartz, R. (2007, August). *Enacting things differently: Using NetLogo models to learn about complex systems*. Paper presented at biennial meeting of European Association for Research on Learning and Instruction. Budapest, Hungary.
- Hmelo-Silver, C. E. & Derry, S. J. (2007, August). *Using videocases in a problem-based course for preservice teachers*. Paper presented at biennial meeting of European Association for Research on Learning and Instruction. Budapest, Hungary.
- Hmelo-Silver, C. E. (2007, June). *The power of technology to support complex learning*. Invited keynote presentation. Network-based Education 2007. Rovaniemi, Finland.
- Hmelo-Silver, C. E. (2007, June). *Collaborative learning in complex learning environments*. Invited presentation, University of Helsinki. Helsinki, Finland.
- Hmelo-Silver, C. E. & Chernobilsky, E. (2007, April). *CORDTRA: A representational lens for analyzing tool-mediated collaborative learning*. Paper presented at annual meeting of the American Educational Research Association. Chicago, IL.
- Derry, S. J., Gressick, J. & Hmelo-Silver, C.E. (2007, April). *Using contrasting cases methodology to explore the role of soft skills in successful and unsuccessful online collaboration*. Paper presented at annual meeting of the American Educational Research Association. Chicago, IL.
- Duschl, R., Duncan, R. G., Chinn, C., Hmelo-Silver, C., Goldman, S., Pellegrino, J., Wink, D., Bertenthal, M. (2007, April). *Tracing a learning trajectory for deepening science inquiry*

- from the elementary to the middle grades*. Presented at annual meeting of the American Educational Research Association. Chicago, IL.
- Hmelo-Silver, C. E. (2007, April). *Comment on Balancing the Tension Between Science and Design in Design-based Science Curricula*. Presented at annual meeting of the American Educational Research Association. Chicago, IL.
- Hmelo-Silver, C. E. & Derry, S. J. (2006, August). *Adapting Problem-based Learning to Preservice Teacher Education*. Paper presented at EARLI SIG 11 Conference, Ireland.
- Derry, S. J. & Hmelo-Silver, C. E. (2006, August). Cognitive studies of successful and unsuccessful learning groups within a “STELLAR” teacher education course. Paper presented at EARLI SIG 11 Conference, Ireland.
- Hmelo-Silver, C. E. & Azevedo, R. A. (2006, April). *Understanding complex systems: Some core challenges*. Paper presented at annual meeting of the American Educational Research Association. San Francisco CA.
- Nagarajan, A. & Hmelo-Silver, C. E. (2006, April). *Innovative Facilitation in PBL: Lessons from the lab for the classroom*. Paper presented at annual meeting of the American Educational Research Association. San Francisco CA.
- Hmelo-Silver, C. E. (2006, April). Discussion of. *Software environments that support new designs for collaborative learning and assessment*. Presented at annual meeting of the American Educational Research Association. San Francisco CA.
- Hmelo-Silver, C. E. (2006, March). *Conceptual Representations to Support Learning About Complex Biological Systems*. Invited presentation at Institute for Ecosystem Studies. Millbrook, NY.
- Hmelo-Silver, C. E. (2005, December). *Using Representational Tools to Support Deep Learning about Complex Biological Systems*. Presented at NSF REC Principal Investigator Meeting. Washington, D.C.
- Hmelo-Silver, C. E., Chernobilsky, E., Nagarajan, A., & Derry, S. J. (2005, August). *Two sides of the coin: Multiple perspectives on Collaborative Knowledge Construction in Online Problem-based learning*. Paper presented at annual meeting of European Association for Research on Learning and Instruction. Nicosia, Cyprus.
- Hmelo-Silver, C. E. (2005, August). *Designing for collaboration: A few comments*. Paper presented at annual meeting of European Association for Research on Learning and Instruction. Nicosia, Cyprus.
- Hmelo-Silver, C. E. (2005, August). *Problem-based learning, problem solving, and technology*. Paper presented at First International Powerusers of ICT Symposium. San Jose, Costa Rica.

- Hmelo-Silver, C. E. & Derry, S. J. (2005, April). *Meshing conceptual ideas with the terrain of practice in a problem-based learning: Preservice teachers' evolving sense of agency*. Paper presented at annual meeting of the American Educational Research Association. Montreal CA.
- Derry, S. J. & Hmelo-Silver, C. E. (2005, April). *Cognitive transfer revisited: Can we exploit new media to solve old problems on a large-scale?* Paper presented at annual meeting of the American Educational Research Association. Montreal CA
- Liu, L., Hmelo-Silver, C. E., Marathe, M. (2005, April). *Function before form: An alternative approach to learning about complex systems*. Paper presented at annual meeting of the American Educational Research Association. Montreal CA.
- Nagarajan, A., Chernobilsky, E., Hmelo-Silver, C. E. (2005, April). Task value and effort as predictors of success in a teacher-education problem-based course. Paper presented at annual meeting of the American Educational Research Association. Montreal CA.
- Hmelo-Silver, C. E. & Narayanan, N. H. (2005, March). Causal learning about complex systems: Multiple perspectives. Invited presentation at Institute for Human and Machine Cognition. Pensacola FL.
- Hmelo-Silver, C. E. (2004, October). *Foregrounding Function to Support Deep Learning in Science*. Presented at National Science Foundation Principal Investigators Meeting. Washington, D.C.
- Hmelo-Silver, C. E., Marathe, S., & Liu, L. (2004, August). *Understanding complex systems: An expert-novice comparison*. Paper presented at annual meeting of the American Psychological Association. Honolulu, HI.
- Hmelo-Silver, C.E. (2004, June). Panel on Research Methods. Virtual Math Team Workshop. Drexel University, Philadelphia PA.
- Katic, E. & Hmelo-Silver, C. E. (2004, April). *Crossing artifacts: Blocks, pizza, and video as material artifacts to guide collaborative discourse*. Paper presented at annual meeting of the American Educational Research Association. San Diego, CA.
- Hmelo-Silver, C.E. (2004, April). *Research directions in PBL: Scaffolding and activity structures*. Paper presented at annual meeting of the American Educational Research Association. San Diego, CA.
- Hmelo-Silver, C.E. (2004, April). *Representational tools to support learning about complex biological systems*. Paper presented at annual meeting of the American Educational Research Association. San Diego, CA.

- Hmelo-Silver, C.E. (2004, April). *Problem-based and interactive learning environments: Issues and influences* (discussant). Paper presented at annual meeting of the American Educational Research Association. San Diego, CA.
- Hmelo-Silver, C.E. (2004, February). From face-to-face to online scaffolding for collaborative knowledge-building. Invited presentation at Drexel University College of Information Science & Technology Research & Teaching Talk series.
- Hmelo-Silver, C. E. (2004, January). *Getting the big picture: The relation of discourse and representation*. The Fifteenth Annual Winter Conference on Discourse, Text and Cognition. Jackson Hole, WY.
- Hmelo-Silver, C.E. & Malhotra, B. (2003, August). *Understanding structures, behaviors, and functions in mental models of a complex system*. Paper presented at European Association for Research on Learning and Instruction Annual Meeting. Padova, Italy.
- DaCosta, M.C. & Hmelo-Silver, C.E. (2003, August). *Educational psychology as a toolbox? Analysis of preservice teachers' ontological understanding*. Paper presented at European Association for Research on Learning and Instruction Annual Meeting. Padova, Italy.
- Hmelo-Silver, C. E. & Suthers, D. (2003, June). *Representational guidance for knowledge building discourse*. Workshop presented at CSCL03. Bergen, Norway.
- Hmelo-Silver, C. E. (2003, June). *Tensions in facilitating online problem-based learning*. Presented at Laboratory for Comparative Human Cognition, University of California, San Diego, LaJolla, CA.
- Hmelo-Silver, C. E. (2003, April). *The constructivist teacher: Facilitating problem-based learning*. Paper presented at American Educational Research Association Annual Meeting. Chicago, IL.
- DaCosta, M. C., Hmelo-Silver, C. E. & Derry, S. (2003, April). *Towards an assessment methodology for pre-service teacher thinking in an online problem-based learning environment*. Paper presented at American Educational Research Association Annual Meeting. Chicago, IL.
- Pfeffer, M. G. Hmelo-Silver, C. E., & Malhotra, B. A. (2003, April). *Fish swim and rocks sit: Understanding structures, behaviors, and functions in a complex system*. Paper presented at American Educational Research Association Annual Meeting. Chicago, IL.
- Chernobilsky, E. Hmelo-Silver C. E., & DelMarcelle, M. (2003, April). *Collaborative discourse, tools, and activity in online problem-based learning*. Paper presented at American Educational Research Association Annual Meeting. Chicago, IL.

- Hmelo-Silver, C. E. (2002, December). *Tensions in facilitating online PBL*. Presented at workshop What do we know and need to know about facilitated online learning for teacher professional development. Madison WI.
- Hmelo-Silver, C. E. (2002, November). *Scaffolding collaborative knowledge-building discourse*. Invited talk, Teachers College. Columbia University. New York, NY.
- Hmelo-Silver, C. E., DaCosta, M. C., & Chernobilsky, E. (2002, October). *Knowledge construction using online videocases*. Presented at Fifth International Conference on the Learning Sciences. Seattle WA.
- Hmelo-Silver, C. E. (2002, July). *Problem-based learning workshop*. Presented at Summer Academy for the Advancement of College Teaching. Pennsylvania system of higher education. Millersville, PA.
- Hmelo-Silver, C. E. (2002, June). *Scaffolding collaborative discourse*. Invited paper presented at School of Cognitive and Computer Science, University of Sussex. United Kingdom.
- Hmelo-Silver, C. E. (2002, June). *Collaborative discourse in a PBL tutorial*. Paper presented at PBL2002 conference. Baltimore, MD.
- Chernobilsky, E. & Hmelo-Silver, C. E. (2002, June). *Learning to talk the educational psychology talk through a problem-based course in educational psychology*. Paper presented at PBL2002 conference. Baltimore, MD.
- Hmelo-Silver, C. E. (2002, May). *Scaffolding to support technology-based inquiry*. Paper presented at Rutgers Invitational Symposium on Education. New Brunswick, NJ
- Hmelo-Silver, C. E., & Barrows, H.S. (2002, April). *Goals and strategies of a constructivist teacher*. Paper presented at American Educational Research Association Annual Meeting. New Orleans, LA.
- DelMarcelle, M., Derry, S., & Hmelo-Silver, C. E. (2002, April). *Identifying antecedents to tutorial interactions in online PBL discourse*. Paper presented at American Educational Research Association Annual Meeting. New Orleans, LA.
- Hmelo-Silver, C. E. (2002, January). *Analyzing interactions*. Presented at Documenting Collaborative Interactions: Issues and Approaches Workshop. CSCL 2002. Boulder, Co.
- Hmelo-Silver, C. E. (2001, August). *Question asking in a student-centered tutorial group*. Paper presented at the annual meeting of the European Association for Research on Learning and Instruction. Freiburg, Switzerland.
- Hmelo, C. E. (2001, April). *Using video-cases to support problem-based learning*. Paper presented at American Educational Research Association Annual Meeting. Seattle, WA.

- Hmelo, C. E. (2001, March). *Learning, problem-solving, and problem-based learning*. Invited talk, Georgetown University Law Center Faculty Retreat. Baltimore, MD.
- Hmelo, C. E. (2001, March). *Facilitating collaborative ways of knowing*. National Academy of Education Fellows Retreat. New York, NY.
- Hmelo, C. E. (2000, October). *Scaffolded use of a simulation to support the development of inquiry skills*. Demonstration presented at Center for Interactive Learning Technologies Meeting, Washington D.C.
- Hmelo, C. E. (2000, October). *Knowledge as a tool for thinking*. Paper presented at National Academy of Education Annual Meeting, New York, NY.
- Hmelo, C. E. (2000, April). *Collaborative knowledge construction in a tutorial group*. Paper presented at American Educational Research Association Annual Meeting, New Orleans, LA.
- Dutton, R. E. & Hmelo, C. E. (2000, April). *Using science as a tool for medical problem solving*. Paper presented at American Educational Research Association Annual Meeting, New Orleans, LA.
- Suthers, D., Hmelo, C., Schank, P., Jackiw, N., Sandoval, B., Gray, J. (2000, April). *Community tools project: Interoperable components for shared active representations: Interoperability among knowledge building components*. Paper presented at American Educational Research Association Annual Meeting, New Orleans, LA.
- Hmelo, C. E. (2000, April). *Bridging the cognitive and situated: New uses of multimedia in case-based and problem-based learning* (Session Chair). Symposium presented at American Educational Research Association Annual Meeting, New Orleans, LA.
- Hmelo, C. E. (2000, April). *Problem-based learning in an online technology course*. (Session discussant). Symposium presented at American Educational Research Association Annual Meeting, New Orleans, LA.
- Hmelo, C. E. (2000, February). *Problem-based learning for teachers*. Paper presented at Rutgers University Professional Development Outreach Series, Rutgers University Office of Continuous Education, New Brunswick, NJ.
- Hmelo, C. E., Nagarajan, A., Ramakrishnan, S., & Day, R.S. (1999, April). *It's harder than we thought it would be: A comparative case study of expert-novice experimentation strategies*. Paper presented at American Educational Research Association Annual Meeting, Montreal CA.

- Hmelo, C. E. (1998, November). *Problem-based learning: Issues in research and practice*. Invited paper presentation at SUNY Stony Brook School of Health Technology and Management.
- Hmelo, C. E., Lestock, K., Jeong, H., & Chi, M. T. H. (1998, April). *Assessing transfer of workplace skills*. Paper presented at American Educational Research Association Annual Meeting, San Diego, CA.
- Williams, S. & Hmelo, C. E. (1998, April). *Learning through problem solving: Lessons from classroom research*. Symposium chaired at American Educational Research Association Annual Meeting, San Diego, CA.
- Hmelo, C. E., & Lin X. (1998, April). *Becoming self-directed learners: Strategy development in problem-based learning*. Paper presented at American Educational Research Association Annual Meeting, San Diego, CA.
- Hmelo, C. E., & Day, R. S. (1998, April). *Contextualized questioning: Helping students learn from simulations*. Poster presented at American Educational Research Association Annual Meeting, San Diego, CA.
- Evensen, D. H. & Hmelo, C. E. (1998, April). *Problem-based learning: A research perspective on learning interactions*. Symposium chaired at American Educational Research Association Annual Meeting, San Diego, CA.
- Hmelo, C. E., (1998, March). *New models of medical education: Perspectives from research on expertise*. Invited paper presentation, Formalizing the informal: A rationale for the clinical teaching of medical students and residents, Pittsburgh, PA.
- Hmelo, C. E. (1997, October). *Constructing flexible knowledge and skills through problem-based learning*. Invited paper presentation, The Schreyer Institute for Innovation in Learning and the Engineering Coalition of Schools for Excellence in Education and Leadership (ECSEL). Pennsylvania State University.
- Hmelo, C. E. (1997, September). *Using structure, function, behavior models in design problems for science learning*. Paper presented at Design Education Workshop, Georgia Institute of Technology.
- Hmelo, C. E., Holton, D. L., & Gertzman, A. (1997, March). *Building artificial lungs: Learning by design*. Paper presented at American Educational Research Association Annual Meeting, Chicago, IL.
- Hmelo, C. E., Guzdial, M., & Turns, J. (1997, March). *Computer-support for collaborative learning: Learning to make it work*. Paper presented at American Educational Research Association Annual Meeting, Chicago, IL.

- Hmelo, C. E., & Guzdial, M. (1996, November). *Learning to make collaborative learning technology work: A case study of CaMILE*. Paper presented at NISE Symposium on Interdisciplinary Collaboration, Madison WI.
- Shikano, T. & Hmelo, C. E. (1996, April). *Students' learning strategies in a problem-based curriculum for sustainable technology*. Paper presented at American Educational Research Association Annual Meeting, New York, N.Y.
- Hmelo, C. E., Narayanan, N. H., Newstetter, W. C., & Kolodner, J. L. (1995, December). *A multiple-case-based approach to generative environments for learning*. Paper presented at Second International Symposium on Cognition and Education, Varanasi India.
- Hmelo, C. E. & Guzdial, M. (1995, May). *Software-realized scaffolding: A case study of McBAGEL*. Paper presented at Fourth International Workshop on Human and Machine Cognition, Seaside, FLA.
- Hmelo, C. E. (1995, April). *The effect of problem-based learning on the early development of medical expertise*. Paper presented at American Educational Research Association Annual Meeting, San Francisco, CA.
- Hmelo, C. E. & Gotterer, G. S., (1994, June). *Self-directed learning outcomes in problem-based learning*. Paper presented at Problem-based learning: The State of Art, McMaster University, Hamilton, Ontario.
- Hmelo, C. E., Gotterer, G. S., & Bransford, J. D. (1994, April). *The cognitive effects of problem-based learning: A preliminary study*. Paper presented at American Educational Research Association Annual Meeting (ERIC Document # ED371026), New Orleans, LA.
- Hmelo, C. E., Williams, S. M., Vye, N. J., Goldman, S. R., Bransford, J. D., & the Cognition and Technology Group at Vanderbilt. (1993, April). *A longitudinal study of the effects of anchored instruction on mathematical problem solving transfer*. Poster presented at American Educational Research Association Annual Meeting, Atlanta, GA.
- Williams, S. M., Bransford, J. D., Vye, N. J., Goldman, S. R., & Hmelo, C. E. (1993, April). *Computer-based instruction in analogical problem solving*. Poster presented at American Educational Research Association Annual Meeting, Atlanta, GA.
- Goldman, S. R., Vye, N. J., Williams, S., Rewey, K. L., & Hmelo, C. (1992, April). *Planning net representations and analyses of problem solving*. Paper presented at American Educational Research Association Annual Meeting, San Francisco, CA.
- Novick, L. R. & Hmelo, C. E. (1991, November). *Representational transfer in math and logic problem solving*. Poster presented at Thirty-Second Annual Meeting of the Psychonomic Society, San Francisco, CA.

Hmelo, C. E. & Novick, L. R. (1991, June). *Retrieval and mapping as processes in representational transfer*. Poster presented at Third Annual Convention of the American Psychological Society, Washington, D.C.

Hmelo, C. E. (1988, July). *The use of computer-assisted instruction*. Invited presentation. American Association for Respiratory Care Summer Forum, San Francisco, CA.

Hmelo, C. E. (1988, July). *Selection and evaluation of computer-assisted instruction*. Invited presentation. American Association for Respiratory Care Summer Forum, San Francisco, CA.

Hmelo, C. E. (1988, June). *AIDS and the respiratory care practitioner*. Paper presented at First World Congress on Allied Health, Elsinore, Denmark.

Hmelo, C. E. (1987, November). *Computer assisted instructional applications*. Paper presented at American Society of Allied Health Professionals Annual meeting, Las Vegas, NV.

Hmelo, C. E. & McPeck, M. (1984, November). *Computer aided instruction with high-level graphics on a contemporary personal computer*. Paper presented at American Association for Respiratory Care Annual Meeting. Phoenix, Arizona.

Teaching

Indiana University Graduate:

P632 Theorizing Learning in Context: Cultural Psychology

P674 Collaborative Learning

P674 Learning through problem solving

P674 Current readings in the Learning Sciences

P633 Capturing Learning in Context: Design-based Research

P573 Apprenticeship in the Learning Sciences

Rutgers Undergraduate:

15:300:306 Educational Psychology: Principles of Classroom Learning

Rutgers Graduate:

16:300:503 Proseminar in Educational Research

15:295:580 Psychology of Learning

16:300:695 Special Topics: Transfer

16:300:695 Special Topics: Cultural Psychology

15:295:550 Learning through Problem Solving

15:295:502 Cognition and Memory

15: 262:622 Cognition, Collaboration, and Technology

15:262:610 Design-based Research

Dissertations chaired:

2023 Yuxin Chen
2023 Karyn Housh
2019 Andrea Gomoll, Ph.D., User Experience Designer, Gomoll Research and Design.
2018 Jessica McKeown, PhD., Senior Learning Scientist, McGraw Hill
2018 Andrea Strackeljahn, PhD., Curriculum Specialist, Indiana University School of Optometry
2013-2014 Supervised first Ed.D. cohort of reformulated Ed.D. program on *Design of Learning Environments* at Rutgers Graduate School of Education:
Marc Cicchino, Ed.D. Director of Innovation, Northern Valley Regional High School District
Tara Jakubik Skiba, Ed.D., English Teacher, Hackensack High School
Carrie Prior Ed.D., Associate Dean, Associate Dean, School of Technology, Excelsior University, SUNY Albany
Sheila Frye, Ed.D., Elementary Reading Specialist, Valley View Elementary School
2013 Suparna Sinha, PhD. Researcher, Center for Math Science and Computer Education, Rutgers University
2012 Lynne Richard, PhD. Associate Professor, Florida International University
2008 Lei Liu, PhD. Senior Research Scientist, Educational Testing Service
2006 Anandi Nagarajan, PhD. Assistant Vice Provost for Pedagogy, New York University

Professional Service:

Editorial Boards:

Guest Editor (with Susan Goldman and Elena Kyza), *Cognition and Instruction* Special Issue on Researcher and Teacher Learning
Associate Editor, *Instructional Science*, 2014- 2020
Editorial Board, *Information and Learning Sciences*, 2018- present
Founding Editorial Board, *Frontline Learning Research*, 2013- present
Co-Editor-in-Chief, *Journal of the Learning Sciences*, 2009-2013
Associate Editor, *Journal of Research in Science Teaching*, 2005-2009
Editorial Board, *American Educational Research Journal*, 2016- present
Editorial Board, *Educational Psychologist*, 2009- present
Editorial Board, *Rapid Community Reports*, 2018-2021
Editorial Board, *Journal of Research in Science Teaching*, 2002- 2005
Strand Co-Editor, Complex Systems, *Journal of the Learning Sciences*, 2005-2008
Editorial Board, *Journal of the Learning Sciences*, 2004-2008, 2013- present
Review Board, *Journal of the Learning Sciences*, 1998- 2003
Consulting Editor, *Journal of Experimental Education*, 2000-2005
Editorial Board, *international journal of Computer-Supported Collaborative Learning (ijCSCL)*, 2004- present

Editorial Board, *Interdisciplinary Journal of Problem-based Learning*, 2005-2012, Advisory board 2013- present

Guest editor, *Journal of Educational Computing Research, Cognitive Tools for Collaborative Communities*, 2006

Guest editor (with Susan Williams), *Journal of Learning Sciences* special issue on *Learning through problem solving*, 1998

Guest editor (with Ravit Duncan) special issue of *Journal of Research in Science Teaching on Learning Progressions*. 2009.

Guest editor (with Andrew Walker and Heather Leary) special issue of *Interdisciplinary Journal of Problem-based Learning in Memory of Howard Barrows*.

Guest Editor (2017) *Instructional Science* Special Issue on Systems, with Susan Yoon

Conference Reviewer:

International Conference on the Learning Sciences

American Educational Research Association annual meeting

Computer Supported Collaborative Learning conference

Cognitive Science Society annual meeting

International Conference on Computers and Education

Review board, Network Based Education 2007

Ad Hoc reviewer:

Teaching and Learning in Medicine

Teachers College Record

Psychological Science

Computers and Education

Innovations in Education and Teaching International

Higher Education

Cognition and Instruction

Review of Educational Research

Educational Researcher

Cognitive Science

Handbook of Educational Psychology

Journal of Educational Psychology

Pedagogies

Learning and Individual Differences

Journal of Engineering Education

Advances in Health Sciences Education

AERA Open

Grant Reviewer

Spencer Foundation Small Grant review panel 2020-2021

National Science Foundation

Institute for Education Sciences

Israeli Science Foundation

Dutch Science Foundation

Social and Behavioral Science Council of Canada

Academy of Finland

Primary panelist, Institute for Education Sciences Math and Science Learning panel, 2010-2013

Proposal reviewer, Netherlands NWO council for Educational Research (PROO)

Conferences and Professional Organization Service:

ISLS 2022 Advisory Board

CSCL Program co-chair, ISLS 2021, Bochum, Germany

Program co-chair, CSCL 2019, Lyon, France

ISLS Fellows Committee Chair, 2018-2021 Past-chair 2021-2024

ICLS doctoral consortium mentor, 2018

Co-chair, ICLS 2016 Workshops

Co-chair, CSCL 2015 Doctoral Consortium

International Society for the Learning Sciences:

Past President, 2014-2015

President, 2013-2014

President-elect, 2012-2013

Organizing Committee, Visioning workshop on Research on Information and Computing Technology for Online Higher Education, Computing Research Association, February, 2013.

Elected Co-chair, ISLS CSCL community, 2010- 2012

Program committee, CSCL 2011

Co-chair, CSCL 2011 Early Career Workshop

Co-Chair, ICLS 2010 Doctoral Consortium

CSCL 2009 Steering Committee

Co-chair, ISLS publications committee, 2008-2009

Board of Directors, International Society of Learning Sciences, 2007-2015

Elected to CSCL community committee of ISLS, 2006-2010, 2010-2012, 2017-2021

CSCL 2007 conference co-chair

ICLS 2005 steering committee

ISLS conference committee co-chair 2004—2006

Tutorial Co-Chair, CSCL 2005

Program committee, CSCL 2005

Member, International Society of the Learning Sciences Conference Committee, 2002-2007

Co-director (with Angela O'Donnell), Rutgers Invitational Symposium on Education, May 2002

Panelist, ICLS 2002 Doctoral Consortium

Member, APA Division 15 Committee on Electronic Communications, 2002-

Program chair, Special interest group on Problem-based Learning, AERA, 1999-2001

Program chair-elect, Special interest group on Problem-based Learning, AERA, 1998-1999

Program committee, Computer Supported Collaborative Learning Conference 1997

Advisory Boards:

KodiLL Advisory board, University of Augsburg, Germany, 2021-

NeMO EHR CoreAdvisory board, University of Nebraska, 2021-

CIRCLS Advisory board 2020-

PLANS, PI, Marcia Linn, UC Berkeley 2016-2018

IC4, PI, Eric Hamilton, Pepperdine, 2018

DUE grant, PI Tammy Long, Michigan State University, 2016

Collaborator, Virtual Math Team @ Drexel project
Faculty affiliate, Metromath Center, Rutgers University
Founding member, Advisory Board, Rutgers Center for Literacy Development
Chair, Advisory Board, Robert B. Davis Institute for Research on Learning, 2007-2013
ITest-Nano, University of Pennsylvania
Consultant, Institute for Ecosystem Studies
Member, International Advisory Board, CICERO Learning Network, University of Helsinki
Framing Transfer Project (Randi Engle CAREER award), UC Berkeley
Digital Library Connect project, Utah State University
Brian Belland CAREER award, Utah State University

Community Service

Richland-Bean Blossom School District STEM advisory board 2020

Other:

Evaluator, Research assessment exercise, University of Oulu, November, 2007