

**Vita**  
**Cindy E. Hmelo-Silver**

Business Address: Center for Research on Learning and Technology  
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School of Education  
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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

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

Major: Cardiorespiratory Sciences B.S. 1978

**Experience:**

*Distinguished Professor* 2021-present

*Barbara B. Jacobs Chair in Education and Technology* 2015-present

*Director, Center for Research on Learning and Technology* 2014- present

*Professor, Learning Sciences*

School of Education, Indiana University

*Department Chair, Educational Psychology* 2012-2013

*Professor* 2010-2013

*Coordinator, Learning Sciences PhD specialization* 2011-2012

*Coordinator, Learning, Cognition and Development Ed.M.* 2010-2012

*Coordinator, PhD program in Educational Psychology* 2005-2008

*Associate Professor* 2004-2010

*Assistant Professor* 1998-2004

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

*Project Manager, Multiple Case-based Approach to Generative Environments for Learning*  
 Research Scientist, EduTech Institute, Georgia Institute of Technology 1995- 1996

*Postdoctoral Fellow, EduTech Institute, Georgia Institute of Technology* 1994-1995

*Research Assistant, Learning Technology Center,*  
 Vanderbilt University 1990-1994

*Instructor, Educational Psychology, Department of Psychology and Human Development,*  
 Peabody College, Vanderbilt University 1991

*Director of Clinical Education* 1988-1989  
 Clinical Assistant Professor of Health Sciences 1984-1989  
 Cardiorespiratory Sciences Department, State University of New York-  
 Health Sciences Center, Stony Brook, NY

*Respiratory Therapy Clinician, University Hospital, Stony Brook, NY* 1980-1984

*Respiratory Therapist, 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: PrimaryAI: Integrating Artificial Intelligence into Upper Elementary Science with Immersive Problem-Based Learning* (DRL# 1934128). Co-PI with PI Krista Glazewski, Co-PI's Anne Ottenbreit-Leftwich, Adam Scribner. \$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- 7/30/2021.

*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 -12/31/22.

*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 – 6/30/20.

*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. 10/1/2016-8/31/2021.

*Collaborative Research: Theoretical and Methodological tools for studying group productive disciplinary engagement* (DGE#1661234). PI. National Science Foundation. \$350, 928. 7/15/2017-6/30/2020.

*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 Bourgeois, 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. \$20,000 4/05-12/06

*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

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

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

*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**

*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:**

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:**

Eberbach, C., Hmelo-Silver, C. E., Jordan, R., Taylor, J., & Hunter, R. (in press).

Multidimensional Trajectories for understanding ecosystems. *Science Education*. 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). Synergistic Scaffolds for Collaborative Inquiry in Game-Based Learning Environments. *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. doi:<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., Šabanović, S. (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](https://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](https://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. *iJCSCCL*, 9, 305-344.
- Lajoie, S. P., Hmelo-Silver, C. E., Wiseman, J. G., Chan, L. K., Lu, J., Khurana, C., Cruz-Panesso, I., Poitras, E., Kazemitabar, M. (2014). Using online digital tools and video to support international problem-based learning. *Interdisciplinary Journal of Problem-based Learning*, 8(2). Retrieved at <http://dx.doi.org/10.7771/1541-5015.1412>
- Jordan, R.C., Brooks, W.R., Hmelo-Silver, C.E. Eberbach, C. & Sinha, S. (2014). Balancing broad ideas with context: An evaluation of student accuracy in describing ecosystem processes after a system-level intervention. *Journal of Biological Education*, 48, 57-62.
- Maher, C. A., Palius, M. F., Maher, J. A., Hmelo-Silver, C. E., & Sigley, R. (2014). Teachers can learn to attend to students' reasoning using videos as a tool. *Issues in Teacher Education*, 23 (1), 31-47.
- Jordan, R.C, Gray, S. A., Brooks, W. R., Honwad, S. & Hmelo-Silver, C. E. (2013). Process-based thinking in ecosystem education. *Natural Sciences Education*, 42, 68-74.
- Hmelo-Silver, C. E. (2013). Creating a learning space for problem-based learning. *Interdisciplinary Journal of Problem-based Learning Special Issue in Memory of Howard Barrows*. 7, 21-39.
- Sinha, S., Gray, S., Hmelo-Silver, C. E., Jordan, R., Eberbach, C., Goel, A., & Rugaber, S. (2013). Conceptual representations for transfer: A case study tracing back and looking forward. *Frontline Learning Research*. 1, 3-23.
- Jordan, R.C., Hmelo-Silver, C. E., Liu, L. & Gray, S. (2013). Fostering reasoning about complex systems: using the aquarium as a model ecosystem. *Applied Environmental Education and Communication*, 12, 55-64.
- Hmelo-Silver, C. E. (2012). International perspectives on problem-based learning: Contexts, cultures, challenges, and adaptations. *Interdisciplinary Journal of Problem-based Learning*, 6, 10-15.
- Jordan, R. C., Ruibal-Villesenor, M., Hmelo-Silver, C. E. , Etkina, E. (2011). Laboratory materials: Affordances or constraints? *Journal of Research in Science Teaching*, 48, 1010-1025.
- Vattam, S. S., Goel, A. K., Rugaber, S., Hmelo-Silver, C. E., Jordan, R., Gray, S., Sinha, S. (2011). Understanding complex natural systems by articulating structure-behavior-function models. *Educational Technology and Society*, 14, 66-81.
- Etkina, E., Karolina, A., Ruibal-Villasenor, M., Rosengrant, D., Jordan, R. & Hmelo-Silver, C. (2010). Using design and reflection to help students develop scientific abilities. *Journal of the Learning Sciences*, 19, 54-98.

- Jeong, H. & Hmelo-Silver, C. E. (2010). Productive use of learning resources in an online problem-based learning environment. *Computers and Human Behavior*, 26, 84-99.
- Hmelo-Silver, C. E., Liu, L. & Jordan, R. (2009). Visual representation of a multidimensional coding scheme for understanding technology-mediated learning about complex natural systems. *Research and Practice in Technology-Enhanced Learning Environments*, 4, 253-280.
- Liu, L. & Hmelo-Silver, C. E. (2009). Promoting complex systems learning through the use of conceptual representations in hypermedia. *Journal of Research in Science Teaching*, 46, 1023-1040.
- Katic, E., Hmelo-Silver, C. E., & Weber, K. H. (2009). Material mediation: Tools, representations, artifacts, and collaborative learning discourse. *International Journal of Teaching and Learning in Higher Education*, 21(1), 13-24.
- Hmelo-Silver, C. E., Derry, S. J., Bitterman, A. H., Hatrak, N. (2009). Targeting Transfer in a STELLAR PBL Course for Pre-service Teachers. *Interdisciplinary Journal of Problem-based Learning*.3(2), 24-42. Retrieved from <http://docs.lib.purdue.edu/ijpbl/vol3/iss2/4>.
- Duncan, R. G., & Hmelo-Silver, C. E. (2009). Learning progressions: Aligning curriculum, instruction, and assessment. *Journal of Research in Science Teaching*, 46, 606-609.
- Jordan, R., Gray, S., Demeter, M., Liu, L. & Hmelo-Silver, C. E. (2009). Promoting an Understanding of Ecological Concepts: A Review of Student Conflations of Ecological Systems and Cycles. *Journal of Applied Environmental Education And Communication*, 8, 40-48.
- Hmelo-Silver, C. E., Chernobilsky, E., & Jordan, R. (2008). Understanding collaborative learning processes in new learning environments. *Instructional Science*, 36, 409-430.
- Hmelo-Silver, C. E., Jordan, R., Liu, L., Gray, S., Demeter, M., Rugaber, S., Vattam, S., & Goel, A. (2008). Focusing on function: Thinking below the surface of complex natural systems. *Science Scope*, 31(9), 27-35.
- Hmelo-Silver, C. E. & Barrows, H. S. (2008). Facilitating collaborative knowledge building. *Cognition and Instruction*, 26, 48-94.
- Hmelo-Silver, C. E., Marathe, S., & Liu, L. (2007). Fish swim, rocks sit, and lungs breathe: Expert-novice understanding of complex systems. *Journal of the Learning Sciences*, 16, 307-331.
- Hmelo-Silver, C. E. & Bromme, R. (2007). Coding discussions and discussing coding: Research on collaborative learning in computer-supported environments. *Learning and Instruction*. 17, 460-464.

- Hmelo-Silver, C. E., Duncan, R. G., Chinn, C. A. (2007). Scaffolding and achievement in problem-based and inquiry learning: A response to Kirschner, Sweller, and Clark (2006). *Educational Psychologist, 42*, 99-107.
- Charney, J., Hmelo-Silver, C. E., Sofer, W., Neigeborn, L., Nemeroff, M., & Coletta, S. (2007). Cognitive apprenticeship in science through immersion in laboratory practices. *International Journal of Science Education, 29*, 195-213.
- Hmelo-Silver, C. E. (2006). Introduction: Cognitive tools for collaborative communities. *Journal of Educational Computing Research, 35*, 97-102.
- Derry, S. J., Hmelo-Silver, C. E., Nagarajan, A., Chernobilsky, E., & Beitzel, B. (2006). Cognitive Transfer Revisited: Can We Exploit New Media to Solve Old Problems on a Large Scale? *Journal of Educational Computing Research, 35*, 145-162.
- Hmelo-Silver, C. E. & Barrows, H. S. (2006). Goals and strategies of a problem-based learning facilitator. *Interdisciplinary Journal of Problem-based Learning, 1*. 21-39.
- Hmelo, Silver, C. E. & Azevedo, R. (2006). Understanding complex systems: Some core challenges. *Journal of the Learning Sciences, 15*, 53-61.
- Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review, 16*, 235-266.
- Chernobilsky, E., DaCosta, M. C., & Hmelo-Silver, C. E. (2004). Learning to talk the Educational Psychology talk through a problem-based course. *Instructional Science, 32*, 319-356.
- Hmelo-Silver, C. E. & Pfeffer, M. G. (2004). Comparing expert and novice understanding of a complex system from the perspective of structures, behaviors, and functions. *Cognitive Science, 28*, 127-138.
- Hmelo-Silver, C. E. (2003). Analyzing collaborative knowledge construction: Multiple methods for integrated understanding. *Computers and Education, 41*, 397-420.
- Hmelo, C. E., Nagarajan, A., & Day, R. S. (2002). It's harder than we thought it would be: A comparative case study of expert-novice experimentation. *Science Education, 86*, 219-243.
- Chinn, C. A., & Hmelo, C. E. (2002). Authentic Inquiry: Introduction to the Special Section. *Science Education, 86*, 171-174.
- Steinkuehler, C. A., Derry, S. J., Hmelo-Silver, C. E., & DelMarcelle, M. (2002). Cracking the resource nut with distributed problem-based learning in secondary teacher education. *Journal of Distance Education, 23*, 23-39.

- Hmelo, C. E., Ramakrishnan, S., Day, R. S., Shirey, W., Brufsky, A., Johnson, C., Baar, J., & Huang, Q. (2001). The Oncology thinking Cap: Scaffolded use of a simulation to learn about designing clinical trials. *Teaching and Learning in Medicine, 13*, 183-191.
- Hmelo-Silver, C. E. (2000). Knowledge recycling: Crisscrossing the landscape of educational psychology in a problem-based learning course for preservice teachers. *Journal on Excellence in College Teaching, 11*, 41-56.
- Hmelo, C. E., Nagarajan, A., & Day, R. S. (2000). Effects of high and low prior knowledge on construction of a joint problem space. *Journal of Experimental Education, 69*, 36-56.
- Hmelo, C. E., Holton, D. L., & Kolodner, J. L. (2000). Designing to learn about complex systems. *Journal of the Learning Sciences, 9*, 247-298
- Hmelo, C. E. & Day, R. (1999). Contextualized questioning to scaffold learning from simulations. *Computers and Education, 32*, 151-164.
- Lin, X., Hmelo, C., Kinzer, C., & Secules, T. (1999). Designing technology to support reflection. *Educational Technology Research & Development, 47(3)*, 43-62.
- Hmelo, C. E., Guzdial, M., & Turns, J. (1998). Computer-support for collaborative learning: Learning to support student engagement. *Journal of Interactive Learning Research, 9*, 107-130.
- Hmelo, C. E. (1998). Cognitive consequences of PBL for the early development of medical expertise. *Teaching and Learning in Medicine, 10*, 92-100.
- Hmelo, C. E. (1998). Problem-based learning: Effects on the early acquisition of cognitive skill in medicine. *Journal of the Learning Sciences, 7*, 173-208.
- Hmelo, C. E., & Ferrari, M. (1997). The problem-based learning tutorial: Cultivating higher-order thinking skills. *Journal for the Education of the Gifted, 20*, 401-422.
- Vye, N. J., Goldman, S. R., Voss, J. F., Hmelo, C., & Williams, S. (1997). Complex math problem-solving by individuals and dyads. *Cognition and Instruction, 15*, 435-484.
- Hmelo, C. E., Gotterer, G. S., & Bransford, J. D. (1997). A theory-driven approach to assessing the cognitive effects of PBL. *Instructional Science, 25*, 387-408.
- Guzdial, M., Kolodner, J. L., Hmelo, C., Narayanan, H., Carlson D., Rappin, N., Hübscher, R., Turns, J. & Newstetter, W. (1996). Computer support for learning through complex problem solving. *Communications of the ACM, 39 (4)*, 43-45.
- Hmelo, C. E., Narayanan, N. H., Hübscher, R., Newstetter, W. C., & Kolodner, J. L. (1996). A multiple-case-based approach to generative environments for learning. *VIVEK: The Indian Quarterly of Artificial Intelligence, 9(1)*, 2-18.

- Lin, X., Bransford, J. D., Hmelo, C., Kantor, R., Hickey, D., Secules, T., Petrosino, A., Goldman, S. R., & the CTGV. (1995). Instructional design and the development of learning communities: An invitation to a dialogue. *Educational Technology*, 35(5), 53-63.
- Moore, J. L., Lin, X., Schwartz, D. L., Petrosino, A., Hickey, D. T., Campbell, O., Hmelo, C., and The Cognition and Technology Group at Vanderbilt. (1994). The relationship between situated cognition and anchored instruction: A response to Tripp. *Educational Technology*, 8, 28-32.
- Novick, L. R. & Hmelo, C. E. (1994). Transferring symbolic representations across non-isomorphic problems. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 20, 1296-1321.
- Hmelo, C., with the Cognition and Technology Group at Vanderbilt. (1993). Technological tools to enhance math education: The Jasper series. *Communications of the ACM*, 36, 52-54.
- Hmelo, C. with the Cognition and Technology Group at Vanderbilt. (1993). Anchored instruction and situated cognition revisited. *Educational Technology*, 22(3), 52-70.
- Hmelo, C. E. (1990). Computer-assisted instruction in health professions education: A review of the published literature. *Journal of Educational Technology Systems*, 18, 83-101.
- Hmelo, C. & Axton, K. (1989). Job satisfaction and task complexity among respiratory care practitioners. *Respiratory Care*, 34, 1129-1134.
- Hmelo C. (1987). AIDS: Implications for cardiopulmonary technologists. *Journal for Cardiovascular and Pulmonary Technology*, 1, 24-27.
- Hmelo C. (1987). AIDS: Issues for respiratory care practitioners. *Respiratory Management*, 17(6), 21-26.

### **Edited Books:**

- Lund, K., Nicolai, G., Lavoué, E., Hmelo-Silver, C., Gweon, G., & Baker, M. (2019). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings* (Volumes 1 & 2). Lyon, France: International Society for the Learning Sciences.
- Fischer, F. Hmelo-Silver, C. E., Goldman, S. R. & Reimann, P. (2018). *International Handbook of the Learning Sciences*. NY: Routledge.
- Bridges, S. M., Chan, L-K., & Hmelo-Silver, C. E. (Eds.). (2016). *Educational technologies in medical and health sciences education*. New York: Springer.

Walker, A., Leary, H., Hmelo-Silver, C. E., Ertmer, P. A. (Eds.). (2015). *Essential Readings in Problem-based Learning*. West Lafayette, IN: Purdue University Press.

Hmelo-Silver, C. E., Chinn, C. A., Chan, C. K., & O'Donnell, A. M. (Eds.). (2013). *International Handbook of Collaborative Learning*. New York. Taylor and Francis.

Puntambekar, S., Erkens, G., Hmelo-Silver, C. E. (Eds.). (2011). *Analyzing interactions in CSCL: Methodology, approaches, and issues*. New York: Springer.

Kumpulainen, K., Hmelo-Silver, C. E., César, M. (Eds.). (2009). *Investigating Classroom interaction: Methodologies in action*. Rotterdam: Sense Publishers.

O'Donnell, A. M., Hmelo-Silver, C. E., & Erkens, G (Eds.). (Eds.). (2006). *Collaborative learning, reasoning, and technology*. Mahwah NJ: Erlbaum.

Evensen, D. & Hmelo, C. E. (Eds.). (Eds.). (2000). *Problem-based learning: Research perspectives on learning interactions*. Mahwah NJ: Erlbaum.

Hmelo, C., (with the Cognition and Technology Group at Vanderbilt). (1997). *The Jasper Project: Lessons in Curriculum, Instruction, Assessment, and Professional Development*. Mahwah NJ: Erlbaum.

### **Book Chapters:**

Fick, Sarah J., Hmelo-Silver, C. E., Barth-Cohen, L., Yoon, S., Baek, J. (in press). Systems and system models. In J. Nordine and O. Lee (Eds). *Crosscutting Concepts: Strengthening Science and Engineering Learning*. NSTA.

Danish, J., Saleh, A., Gomoll, A., Sigley, R. & Hmelo-Silver, C. E. (in press). Supporting Object-Oriented Transfer in School. In C. Hohensee & J. Lobato (Eds.). *Transfer of Learning: Progressive Perspectives for Mathematics Education and Related Fields*.

Saleh, A., Hmelo-Silver, C. E., Glazewski, K. (in press). Collaborative interactions in inquiry learning. In R. Duncan & C. Chinn (Eds). *International Handbook of Inquiry Learning*. Routledge. New York: Routledge.

Hmelo-Silver, C. E. & Jeong, H. (in press). An overview of CSCL methods. In U. Cress, C. Rosé, A. F. Wise, & J. Oshima (Eds.), *International Handbook of Computer Supported Collaborative Learning*. New York: Springer.

Lajoie, S. P., Bodnar, S. Hmelo-Silver, C., Chen, Y., Zheng, J., Huang, L. & Kazemitabar M. (2020). Towards quality on-line problem-based learning. In S. Bridges & R. Imafuku (Eds.). *Interactional research into problem-based learning*. (pp. 367-390). West Lafayette: Purdue University Press.

- Hmelo-Silver, C. E., Bridges, S., McKeown, J. M. (2019). Facilitating Problem-based learning. In M. Moallem, N. Dabbagh, & W. Hung (Eds.). *Wiley Handbook of Problem-based Learning*, pp. 297-319. Hoboken: Wiley Blackwell.
- Gomoll, A., Glazewski, K., Hmelo-Silver, C. E., Brush, T., & Jung, J. (2018). Defined and enacted threshold concepts in engineering education: Applied competencies within multi-level systems. In M. Savin-Baden & G. Tombs (Eds). *Threshold Concepts in Problem-based Learning* (pp. 67-80). Leiden: Brill.
- Hmelo-Silver, C. E., Kapur, M., & Hamstra, M. (2018). Learning through Problem Solving. In F. Fischer, C. E. Hmelo-Silver, S. R. Goldman, & P. Reimann (Eds). *International Handbook of the Learning Sciences* (pp. 210-220). New York: Routledge.
- Fischer, F., Goldman, S. R., Hmelo-Silver, C. E., & Reimann, P. (2018). Evolution of Research in the Learning Sciences. In F. Fischer, C. E. Hmelo-Silver, S. R. Goldman, & P. Reimann (Eds). *International Handbook of the Learning Sciences* (pp.1-8). New York: Routledge.
- Hmelo-Silver, C. E., Jordan, R. Sinha, S., Yu, Y., & Eberbach, C. (2017). PMC2E: Conceptual Representations to Promote Transfer. In E. Manalo, Y. Uesaka, & C. A. Chinn (Eds.), *Promoting spontaneous use of learning and reasoning strategies* (pp. 276-291). Singapore: Routledge.
- Hmelo-Silver, C.E. & Rehak, A.M. (2017). Active Learning. In K. Peppler (Ed.), *The SAGE encyclopedia of out-of-school learning*. (pp.5-9). New York: Sage.
- Hmelo-Silver, C.E. & Jeong, H. (2017). Computer-supported Collaborative Learning. In K. Peppler (Ed.), *The SAGE encyclopedia of out-of-school learning* (pp.123-128). New York: Sage.
- Hmelo-Silver, C. E., Jung, J., Lajoie, S. P., Lu, J., Yu, Y., Wiseman, J., Chan, L-K. (2016). Video as context and conduit for problem-based learning. In S. M. Bridges, S. M., L-K Chan, & C. E. Hmelo-Silver. (Eds.), *Educational technologies in medical and health sciences education* (pp.57-77). New York: Springer.
- Bridges, S., Chan, L. K., & Hmelo-Silver, C. E. (2016). Situated learning and educational technologies: Theory and practice. In S. M. Bridges, S. M., L-K Chan, & C. E. Hmelo-Silver. (Eds.), *Educational technologies in medical and health sciences education* (pp.1-6). New York: Springer.
- Hmelo-Silver, C. E. & Chinn, C. A. (2016). Collaborative learning. In E. Anderman & L. Corno (Eds.), *Handbook of Educational Psychology, 3<sup>rd</sup> Edition* (pp. 349-363). New York: Routledge.
- Hmelo-Silver, C. E. & Barrows, H. S. (2015). Problem-based learning: Goals for learning and strategies for facilitating. In A. Walker, H. Leary, C. E. Hmelo-Silver, & P.A. Ertmer (Eds.),



*Essential Readings in Problem-based Learning* pp. 69-84). West Lafayette: Purdue University Press.

Hmelo-Silver, C. E., (2015). The learning space in problem-based learning. In A. Walker, H. Leary, C. E. Hmelo-Silver, & P.A. Ertmer (Eds.), *Essential Readings in Problem-based Learning* (pp 43-56). West Lafayette: Purdue University Press.

Lu, J., Bridges, S., & Hmelo-Silver, C. E. (2014). Problem-based Learning. In R. K. Sawyer (Ed.), *Cambridge Handbook of the Learning Sciences, 2<sup>nd</sup> Edition*. (pp. 298-318). New York: Cambridge University Press.

Jakubik, T. & Hmelo-Silver, C. E. (2014). Collaboration and comics. In S. Rutherford (Ed.), *Collaborative Learning: Theory, Strategies and Educational Benefits* (pp 35-54). Nova Publishers. NY.

Eberbach, C., & Hmelo-Silver, C. (2014). Inquiry, Learning Through. In R. Gunstone (Ed.), *Encyclopedia of Science Education* (pp. 1-4): Springer Netherlands.

Hmelo-Silver, C. E., Jordan, R., & Sinha, S. (2013). Seeing to understand: Using visualizations to understand learning in technology-rich learning environments. In R. Luckin, S. Puntambekar, P. Goodyear, B. L. Grabowski, J. Underwood, & N. Winters (Eds). *Handbook of Design in Educational Technology* (pp. 457-471). New York: Routledge.

Hmelo-Silver, C. E. (2013). Multivocality as a tool for design-based research. In D. Suthers, K. Lund, C. P. Rosé, C. Teplov & N. Law (Eds.), *Productive Multivocality in the Analysis of Group Interactions* (pp. 561-573). New York: Springer.

Liu, L. & Hmelo-Silver, C. E. (2013). Promoting the collaborative use of cognitive and metacognitive skills through conceptual representations in hypermedia. In D. Treagust & C-Y. Tsui (Eds). *Multiple representations in biological education*. (pp. 75-92). New York: Springer.

Hmelo-Silver, C. E. & De Simone, C. (2013). Problem-based learning: An instructional model of collaborative learning. In C. E. Hmelo-Silver, C. A. Chinn, C. K. K. Chan, & A. M. O'Donnell (eds.). *International Handbook of Collaborative Learning*. (pp. 370-385). New York: Taylor and Francis.

O'Donnell, A. M. & Hmelo-Silver, C. E. (2013). What is collaborative learning?: An overview. In C. E. Hmelo-Silver, C. A. Chinn, C. K. K. Chan, & A. M. O'Donnell (Eds.), *International Handbook of Collaborative Learning*. (pp. 1-15 ). New York: Taylor and Francis.

Jordan, R. C., Ehrenfeld, J. G., Gray, S. A., Brooks, W. R., Howe, D. V. & Hmelo-Silver, C. E. (2012). Cognitive considerations in the development of citizen science projects. In J. L. Dickinson & R. Bonney (Eds), *Citizen science: Public collaboration*. (pp. 167-178). Ithaca NY: Cornell University Press.

- Hmelo-Silver, C. E. & Eberbach, C. (2012). Learning theories and problem-based learning. In S. Bridges, C. McGrath, & T. Whitehill (Eds.), *Researching problem-based learning in clinical education: The next generation* (pp. 3-17). New York: Springer
- Hmelo-Silver, C. E., Jordan, R., Liu, L., & Chernobilsky, C. E. (2011). Representational tools for understanding complex computer-supported collaborative learning environments. In S. Puntambekar, G. Erkens, & C. E. Hmelo-Silver (Eds.), *Analyzing interactions in CSCL: Methodology, approaches and issues* (pp. 83-106). New York: Springer.
- Liu, L. & Hmelo-Silver, C. E. (2010), Conceptual representation embodied in hypermedia: An approach to promoting knowledge co-construction. In M. Khine & I. Saleh (Eds.). *New Science of Learning: Cognition, computers, and collaboration in Education* (pp.341-356). New York: Springer.
- Liu, L. & Hmelo-Silver, C. E. (2010). Computer-supported collaborative scientific conceptual change: Effects of collaborative processes on student learning. In B. Ertl (Ed). *E-collaborative knowledge construction: Learning from computer-supported and virtual environments* (pp.124-138). Hershey PA: IGI Global Publishers.
- Hmelo-Silver, C. E., Chernobilsky, E., & Nagarajan, A. (2009). Two sides of the coin: Multiple perspectives on collaborative knowledge construction in online problem-based learning. In K. Kumpulainen, C. E., Hmelo-Silver & M. César (Eds.), *Investigating Classroom interaction: Methodologies in action* (pp. 73-98). Rotterdam: Sense Publishers.
- Kumpulainen, K., Hmelo-Silver, C. E., & César, M. (2009). Introduction. In K. Kumpulainen, C. E., Hmelo-Silver & M. César (Eds.), *Investigating Classroom interaction: Methodologies in action* (pp. 1-5). Rotterdam: Sense Publishers.
- Hmelo-Silver, C. E. (2008). Problem-based learning. In Anderman, E. M. & Anderman, L. (Eds.), *Psychology of Classroom Learning: An Encyclopedia*. Gale Group.
- Hmelo-Silver, C. E. (2008). Project-based learning. In Anderman, E. M. & Anderman, L. (Eds.), *Psychology of Classroom Learning: An Encyclopedia*. Gale Group.
- Hmelo-Silver, C. (2008). Practice and next steps for educational research. In R. A. Duschl and R. E. Grandy (Eds.), *Establishing a consensus agenda for K-12 science inquiry: Recommendations for research and applications* (pp. 272-274). Sense Publishers.
- Hmelo-Silver, C.E., Katic, E., Nagarajan, A., & Chernobilsky, E. (2007). Soft leaders, hard artifacts, and the groups we rarely see: Using video to understand peer learning processes. In R. Goldman, R. Pea, B. Barron, & S. Derry (Eds.), *Video research in the learning sciences* (pp. 255-270). Mahwah NJ: Erlbaum.
- Hmelo-Silver, C. E. & Derry, S. J. (2007). Developing design principles to scaffold ePBL: A case study of eSTEP. In O. S. Tan (Ed.), *Problem-based learning in E-learning breakthroughs* (pp. 15-31). Singapore: Thomson Learning.

- Hmelo-Silver, C. E., Nagarajan, A., & Derry, S. J. (2006). From face-to-face to online participation: Tensions in facilitating problem-based learning. In M. Savin-Baden & K. Wilkie (Eds.), *Problem-based learning online* (pp. 61-78). Berkshire England: Open University Press.
- Hmelo-Silver, C. E. (2006). Design principles for scaffolding technology-based inquiry. In A. M. O'Donnell, C. E. Hmelo-Silver, & G. Erkens (Eds.), *Collaborative learning, reasoning, and technology* (pp. 147-170). Mahwah, NJ: Erlbaum.
- Derry, S. J., & Hmelo-Silver, C. E. (2005). Reconceptualizing teacher education: Supporting case-based instructional problem solving on the World Wide Web. In L. PytlikZillig, B. M. & R. Bruning (Eds.), *Technology-based education: Bringing researchers and practitioners together* (pp. 21-38). Greenwich, CT: Information Age Publishing.
- Hmelo-Silver, C. E., Chernobilsky, E., & DaCosta, M. C. (2004). Psychological tools in problem-based learning. O. Tan (ed). *Enhancing thinking through problem-based learning approaches: International perspectives* (pp. 17-37). Singapore: Thomson Learning.
- Hmelo-Silver, C. E. (2003). Problem-based learning. In J. W. Guthrie (Ed.), *Encyclopedia of Education* (2<sup>nd</sup> ed., Vol. 4, pp. 1173-1175). New York: MacMillan Reference.
- Hmelo, C. E. & Lin, X. (2000). Becoming self-directed learners: Strategy development in problem-based learning. In D. Evensen & C. E. Hmelo (Eds.). *Problem-based learning: Research perspectives on learning interactions* (pp.227-250). Mahwah, NJ: Erlbaum.
- Hmelo, C. E. & Evensen, D. (2000). Problem-based learning: Gaining insights on learning interactions through multiple methods of inquiry. In D. Evensen & C. E. Hmelo (Eds.). *Problem-based learning: Research perspectives on learning interactions* (pp. 1-16). Mahwah, NJ: Erlbaum.
- Faidley, J., Evensen, D. H., Salisbury-Glennon, J., Glenn, J., & Hmelo, C. E. (2000). How're we doin' and how can we know: ways of assessing group processing in a problem-based learning context. In D. Evensen & C. E. Hmelo (Eds.). *Problem-based learning: Research perspectives on learning interactions* (pp. 109-136). Mahwah, NJ: Erlbaum.
- Hmelo, C., with the Cognition and Technology Group at Vanderbilt. (2000). Adventures in anchored instruction: Lessons learned from beyond the ivory tower. In R. Glaser (Ed.), *Advances in instructional psychology* (Vol. 5). Mahwah, NJ: Erlbaum.
- Hmelo, C., with the Cognition and Technology Group at Vanderbilt. (1996). Looking at technology in context: A framework for understanding technology and education research. In D. C. Berliner and R. C. Calfee (Eds.), *Handbook of educational psychology* (pp. 807-840). New York: MacMillan.

Hmelo, C., with the Cognition and Technology Group at Vanderbilt. (1994). From visual word problems to learning communities: Changing conceptions of cognitive research. In K. McGilly (Ed.), *Classroom lessons: Integrating cognitive theory and classroom practice* (pp. 157-200). Cambridge, MA: MIT Press/Bradford Books.

### **Peer-reviewed Conference Proceedings:**

Gomoll, A., Hmelo-Silver, C. E., & Sabanovic, S. (2020). Teacher Professional Vision in the Work of Co-Design. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020*, Volume 4 (pp. 2014-2021). Nashville, Tennessee: International Society of the Learning Sciences.

Chen, Y., Saleh, A., Hmelo-Silver, C. E., Glazewski, K., Mott, B., & Lester, J. C. (2020). Supporting Collaboration: From Learning Analytics to Teacher Dashboards. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020*, Volume 3 (pp. 1689-1692). Nashville, Tennessee: International Society of the Learning Sciences.

Danish, J., Stiso, C., Nicholas, C., Hmelo-Silver, C. E., Rogers, M. P., & Francis, D. C. (2020). What, How, and Why Do Elementary Teachers Think About Using Representations in Their Science Teaching?. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020, Volume 4 (pp. 1934-1941)*. Nashville, Tennessee: International Society of the Learning Science

Bae, H., Saleh, A., Feng, C., Glazewski, K., Hmelo-Silver, C. E., Chen, Y., Scribner, A., Brush, T., Mott, B., & Lee, S. (2020). Designing Intelligent Cognitive Assistants with Teachers to Support Classroom Orchestration of Collaborative Inquiry. In M. Gresalfi & I. S. Horn (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) Volume 4* (pp. 2101-2108). Nashville, Tennessee: International Society of the Learning Sciences. (Nominated for Best Student Paper Award)

Housh, K., Rehmat, A. P., Hmelo-Silver, C. E., Cisterna, D., & Liu, L. (2020). Evaluating Computer-based Science Assessments for Universal Design Learning Principles. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020*, Volume 3 (pp. 1739-1740). Nashville, Tennessee: International Society of the Learning Sciences.

Cisterna, D., Liu, L., Chen, S., van Rijn, P., Graf, A., Rehmat, A. P., Housh, K., & Hmelo-Silver, C. E. (2020). Students' Ideas about the NGSS Crosscutting Concept of System and System Models: Evidence From Parallel Assessments. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020*, Volume 2 (pp. 829-830). Nashville, Tennessee: International Society of the Learning Sciences.

- Saleh, A., Bae, H., Hmelo-Silver, C. E., Glazewski, K., Chen, Y., Mott, B., & Lester, J. C. (2020). Using Activity Theory to Understand the Synergy Between Human and Computer Support in Collaborative Inquiry Learning. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020, Volume 3* (pp. 1785-1786). Nashville, Tennessee: International Society of the Learning Sciences.
- Moreland, M., Vickery, M., Ryan, Z., Murphy, D., Av-Shalom, N., Hmelo-Silver, C. E., Danish, J., Duncan, R., & Chinn, C. (2020). Representing Modeling Relationships in Systems: Student Use of Arrows. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020, Volume 3* (pp. 1773-1774). Nashville, Tennessee: International Society of the Learning Sciences.
- Rehmat, A. P., Hmelo-Silver, C. E., Housh, K., Liu, L., & Cisterna, D. (2020). Assessing Systems Thinking Across Disciplines: A Learning Progression. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020, Volume 2* (pp. 899-900). Nashville, Tennessee: International Society of the Learning Sciences.
- Rogat, T. K., Cheng, B. H., Hmelo-Silver, C. E., Traynor, A., Adeoye, T., Gomoll, A., Downing, B., & Scribner, J. A. (2020). A Multidimensional Framework of Group Productive Disciplinary Engagement. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, 14th International Conference of the Learning Sciences (ICLS) 2020, Volume 2* (pp. 841-842). Nashville, Tennessee: International Society of the Learning Sciences.
- Lee, S., Mott, B., Ottenbreit-Leftwich, A., Scribner, A., Taylor, S., Glazewski, K., Hmelo-Silver, C. E., & Lester, J. (2020). Designing a Collaborative Game-Based Learning Environment for AI-Infused Inquiry Learning in Elementary School Classrooms. In *Proceedings of the 2020 ACM Conference on Innovation and Technology in Computer Science Education* (pp. 566-566).
- Mott, B. W., Taylor, R. G., Lee, S. Y., Rowe, J. P., Saleh, A., Glazewski, K. D., Hmelo-Silver, C. E., & Lester, J. C. (2019). Designing and Developing Interactive Narratives for Collaborative Problem-Based Learning. In *International Conference on Interactive Digital Storytelling* (pp. 86-100). New York: Springer.
- Vogel, F., Jeong, H., Yoon, S., Håklev, S., Gillain, L. V., Abassi, N. G., ... & Hmelo-Silver, C. (2019). Understanding CSCL through the lens of research synthesis. In: K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & M. Baker (Eds.) *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer-Supported Collaborative Learning (CSCL) 2019, Volume 2* (pp. 799-807). Lyon, France: International Society of the Learning Sciences.

- Saleh, A., Chen, Y., Hmelo-Silver, C. E., Glazewski, K., Mott, B., Rowe, J., & Lester, J. (2019). Supporting Collaborative Problem-solving in a Game-based Learning Environment. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2*. (pp. 1029-1030). Lyon, France.
- Jeong, H., Seo, S., Jeong, J. Y., Hmelo-Silver, C. E., & Grauwin, S. What Can Be Learned About Computer Supported Collaborative Learning from a Bibliographic Coupling Analysis (2019) . In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2*. (pp. 712-715). Lyon, France: International Society of the Learning Sciences.
- Uttamchandani, S. & Hmelo-Silver, C. E. (2019). Structure for Agency: Possibilities and Challenges for Adaptive Collaborative Learning Support in Educational Equity Projects. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2*. (pp. 895-896). Lyon, France: International Society of the Learning Sciences.
- Bridges, S. M., Chan, L-K., Green, J. L., Saleh, A., & Hmelo-Silver, C. E. (2019). Dialogic Intervisualizing: Rethinking Text-Discourse Relations in Multimodal Problem-based Learning. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2*. (pp. 949-950). Lyon, France: International Society of the Learning Sciences.
- Bae, H., Craig, K., Danish, J., Hmelo-Silver, C. E., & Szostalo, M. (2019). Mediating Collaboration in History with Network Analysis. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2*. (pp. 1025-1028). Lyon, France.
- Bae, H., Craig, K., Danish, J., Hmelo-Silver, C. E., Uttamchandani, S., Szostalo, M. & McRanie, A. (2019). The Power of a Network Analysis Tool for Collaborative Learning. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2*. (pp. 1025-1028). Lyon, France: International Society of the Learning Sciences.

- Gomoll, A. & Hmelo-Silver, C. E. (2019). Co-designing Problem-based Learning Experiences Using Video as a Boundary Object. . In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2.*(pp. 752-753). Lyon, France: International Society of the Learning Sciences.
- Bae, H., Glazewski, K., Hmelo-Silver, C. E., Lester, J., Mott, B. W., Rowe, J. (2019). Intelligent Cognitive Assistants to Support Orchestration in CSCL. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2.*(pp. 947-948). Lyon, France: International Society of the Learning Sciences.
- Saleh, A., Chen, Y., Rehmat, A., Housh, K., Hmelo-Silver, C., Glazewski, K., Lester, J. (2019). Assessing Collaborative Problem Solving. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2.*(pp. 893-894). Lyon, France: International Society of the Learning Sciences.
- Rogat, T. K. Cheng, B. H., Traynor, A., Adeoye, T. F., Gomoll, A., & Hmelo-Silver, C. E. (2019). Examining Group Productive Disciplinary Engagement. In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2.*(pp. 779-780). Lyon, France: International Society of the Learning Sciences.
- Rogat, T. K., Cheng, B. H. Gomoll A , Adeoye, T., Hmelo-Silver, C. E., Traynor, A. Lundh, P. (2019). *Theorizing and operationalizing social engagement as a precursor to productive disciplinary engagement in collaborative groups.* In K. Lund, G. Niccolai, E. Lavoué, C. Hmelo-Silver, G. Gweon, & Baker, M. (Eds.). *A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in Collaborative Settings, 13th International Conference on Computer Supported Collaborative Learning (CSCL) 2019, Volume 2.*(pp. 867-868). Lyon, France: International Society of the Learning Sciences.
- Gomoll, A., Hillenburg, R., Hmelo-Silver, C., & Šabanović, S. Designing Robots for Social Change: Exploring a Jr. High Human-Centered Robotics Curriculum. In *Fablearn 2019 Proceedings*. Retrieved June 3, 2019 at [https://nyc2019.fablearn.org/wp-content/uploads/2019/04/FL2019\\_paper\\_55.pdf](https://nyc2019.fablearn.org/wp-content/uploads/2019/04/FL2019_paper_55.pdf)
- Saleh, A., Hmelo-Silver C. E., Chen, Y., Shanahan, K., Rowe, J., & Lester, J. (2018). Scaffolding Peer Facilitation in Computer-Supported Problem-Based Learning Environments. In J. Kay & R. Luckin (Eds.). *Proceedings ICLS 2018* (pp. 831-1834). London UK.

- Gomoll, A. S., Tolar, E., Hmelo-Silver, C. E., & Šabanović, S. (2018). "Things Are Made to Fail": Constructive Failures in a Middle School Robotics Curriculum. In J. Kay & R. Luckin (Eds.). *Proceedings ICLS 2018* (pp. 1563-1564). London UK.
- Tolar, E., Gomoll, A. S., Li, P-J., Oistad, B., Šabanović, S. & Hmelo-Silver, C. E. (2018). Robots That Help: Moving Toward Human-Centered Designs. In In J. Kay & R. Luckin (Eds.). *Proceedings ICLS 2018* (pp. 1407-1408). London UK.
- Huang, J., Gomoll, A. S., Tolar, E., Hmelo-Silver, C.E., Sabanovic, S. Visualizing Complex Classrooms Through Real Time Observations (2018). In In J. Kay & R. Luckin (Eds.). *Proceedings ICLS 2018* (pp. 1609-1610). London UK.
- Bae, H., Xia, F., Chen, Y., Craig, K., & Hmelo-Silver, C. E. (2018). Developing Historical Thinking in PBL Class Supported with Synergistic Scaffolding. In In J. Kay & R. Luckin (Eds.). *Proceedings ICLS 2018* (pp. 1483-1484). London UK.
- Huang, L., Bodnar, S., Zheng, J., Kazemitabar, M., Lajoie, S., Chen, Y., Birk, G., Hmelo-Silver, C., Sarmiento, J.P., Goldman, R., Wiseman, J. & Chan, L. (2017). Visualizing dominant behaviours in problem-based learning environments: A case study analysis of the HOWARD platform. In J. Dron & S. Mishra (Eds.), *Proceedings of E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 359-364). Vancouver, British Columbia, Canada: Association for the Advancement of Computing in Education (AACE). Retrieved November 8, 2017 from <https://www.learntechlib.org/p/181320/>.
- Huang, J., Hmelo-Silver, C., Jordan, R., Frensley, T., Gray, S., & Newman, G. (2017). Scientific discourse of citizen scientists: collaborative modeling as a boundary object. In B. K. Smith, M. Borge, E. Mercier, & K. Y. Lim. (Eds.) *Proceedings CSCL 2017* (pp. 399-406). Philadelphia PA.
- Chen, Y., Birk, G., Hmelo-Silver, C. E., Kazemitabar, M., Bodnar, S., Lajoie, S. P. (2017). Visualizations to support facilitation: The instructors' view. In B. K. Smith, M. Borge, E. Mercier, & K. Y. Lim. (Eds.) *Proceedings CSCL 2017* (pp. 857-858). Philadelphia PA.
- McKeown, J. M., Hartley, K. A., Faulkner, R. T., Hmelo-Silver, C. E., Jeong, H., & Emmanuel N. (2017, June). A meta-synthesis of CSCL literature in STEM education. In B. K. Smith, M. Borge, E. Mercier, & K. Y. Lim. (Eds.) *Proceedings CSCL 2017* (pp. 439-486). Philadelphia PA.
- Emmanuel, N., Hmelo-Silver, C. Jeong, H., Hartley, K., Berntsen, C., & McKeown, J. (2017). Technology affordances for CSCL: A preliminary review. In B. K. Smith, M. Borge, E. Mercier, & K. Y. Lim. (Eds.) *Proceedings CSCL 2017* (pp. 767-768). ISLS. Philadelphia PA.



- Hmelo-Silver, C. E., Jeong, H., Hartley, K., Faulkner, R. T. (2017). Computer-Supported Collaborative Learning in STEM Domains: Towards a Meta-synthesis. In *Proceedings 50<sup>th</sup> Annual Hawaii International Conference on System Sciences* (pp. 2066-2075). URI: <http://hdl.handle.net/10125/41405>. Hawaii. HICSS.
- Rehak, A. M., Gomoll, A. S., Hmelo-Silver, C. E., & Danish, J. (2016). Developing Pre-Service Teachers' Professional Vision Through Collaborative Multimedia Artifacts. In C. K. Looi, J. Polman, U. Cress, and P. Reimann (Eds.). *Proceedings of the Twelfth International Conference of the Learning Sciences* (Vol 1, pp. 130-137). Singapore. ISLS.
- Yoon, S. A. & Hmelo-Silver, C. E. (2016). What Do Learning Scientists Do? A Survey of the ISLS Membership. In C. K. Looi, J. Polman, U. Cress, and P. Reimann (Eds.). *Proceedings of the Twelfth International Conference of the Learning Sciences* (Vol 1, pp. 114-121). Singapore. ISLS.
- Ludvigsen, S., Jeong, H. & Hmelo-Silver, C., Cress, U., Reiman, P., Kapur, M. & Rummel, N. & Law N. (2016). Future of the CSCL community. In Looi, C. K., Polman, J. L., Cress, U., and Reimann, P. (Eds.). *Proceedings of the Twelfth International Conference of the Learning Sciences, Volume 1*, 16-22. Singapore: ISLS.
- Bridges, S., Wong, A. M. Y., Hmelo-Silver, C., Chan, C., Green, J. L. (2016). From Classroom Interaction to Clinical Reasoning: An Interactional Ethnography of PBL in Speech and Hearing Sciences. In C. K. Looi, J. Polman, U. Cress, and P. Reimann (Eds.). *Proceedings of the Twelfth International Conference of the Learning Sciences* (Vol 2, pp. 1255-1256). Singapore. ISLS.
- Chen, Y., Hogaboam, P., Hmelo-Silver, C.E., Lajoie, S.P., Wiseman, J., Bodnar, S., Kazemitabar, M. and Chan, L.K. (2016). Instructional dashboards to support deep learning in an online problem-based learning environment. In *Learning Environments for Deep Learning in Inquiry and Problem-Solving Contexts*, (pp. 6-12) available at <http://kml-lab.org/website/PDF/Proceedings.pdf#page=6>. Singapore.
- Kazemitabar, M. A., Bodnar, S., Hogaboam, P., Chen, Y., Sarmiento, J. P., Lajoie, S. P., Hmelo-Silver, C., Goldman, R., Wiseman, J. & Chan. L. (2016). Creating Instructor Dashboards to Foster Collaborative Learning in On-line Medical Problem-based Learning Situations. In *Proceedings of the 18th Human Computer Interaction International (HCII) conference*. Toronto, Canada.
- Jeong, H. Hmelo-Silver, C. E., Jo, K. & Shin, M. (2016). CSCL in STEM education: Preliminary findings from a meta-analysis. In *Proceedings 49<sup>th</sup> Annual Hawaii International Conference on System Sciences*. (pp. 11-20). Piscataway, NJ. IEEE Computer Society Press.
- Jeong, H. & Hmelo-Silver, C. E. (2015). Research questions and research methods in CSCL research. In O. Lindwall, P. Hakkinen, T. Koschmann, P. Tchounikine, and S. Ludvigsen (Eds.), *Exploring the Materials Conditions of Learning: Computer Supported Collaborative*

*Learning (CSCL) Conference 2015* (pp. 316-322). Gothenburg, Sweden: International Society of the Learning Sciences.

Hmelo-Silver, C. E., Jordan, R. C., Novak, W.E. Huang, C.J., Mellor, D., Gray, S., Crall, A., Newman, G. (2015). Engaging Citizen Scientists in Model-Based Reasoning. In O. Lindwall, P. Hakkinen, T. Koschmann, P. Tchounikine, and S. Ludvigsen (Eds.), *Exploring the Materials Conditions of Learning: Computer Supported Collaborative Learning (CSCL) Conference 2015* (pp. 693-694). Gothenburg, Sweden: International Society of the Learning Sciences. Gothenburg, Sweden.

Hmelo-Silver, C. E., Maher, C. A., Palius, M. F., Sigley, R. & Alston, A. (2014). Showing what they know: Multimedia artifacts to assess learner understanding. In J. Polman, E. Kyza, K. O'Neill, I. Tabak, W. Penuel, A. S. Jurow, K. O'Connor, T. Lee, L. D'Amico (Eds). *Proceedings ICLS 2014* (pp.410-417). Boulder, CO: International Society of the Learning Sciences.

Eberbach, C. Hmelo-Silver, C. E. & Yu, Y. (2013). The long and winding road to collaborative observational practice. In N. Rummel, M. Kapur, S. Puntambekar, & M. Nathan (Eds). *Proceedings. CSCL 2013*. Madison WI: International Society of the Learning Sciences.

Reynolds, R., Hmelo-Silver, C. E., Sorenson, L., Van Ness, C. (2013). Interview findings on middle schoolers' collaboration in self-organizing game design teams. In N. Rummel, M. Kapur, S. Puntambekar, & M. Nathan (Eds). *Proceedings CSCL 2013*. Madison WI: International Society of the Learning Sciences

Hmelo-Silver, C. E., Maher, C. A., Palius, M. F., Sigley, R., Alston, A., Agnew, G., Mills, C. (2013). Building multimedia artifacts using a cyber-enabled video repository: The VMCAntalytic. *Proceedings of the 46th Hawaii International Conference on System Sciences* (pp. 3078-3087). Hawaii: IEEE.

Hmelo-Silver C. E., Khurana, C. A., Lajoie S. P., Lu J., Wiseman J., Chan L. K., Cruz-Panesso. I. (2013). Using Online Digital Tools and Video to Support International Problem-based Learning. *Proceedings of the 46th Hawaii International Conference on System Sciences* (pp. 68-76) Hawaii: IEEE.

Eberbach, C., Hmelo-Silver, C., Jordan, R., Sinha, S., & Goel, A. (2012). Multiple trajectories for understanding ecosystems. In J. van Aalst, K. Thompson, M. J. Jacobson & P. Reimann (Eds.), *The future of learning: Proceedings of the 10th International Conference of the Learning Sciences (ICLS 2012) – Volume 1* (pp. 411-418). Sydney, Australia: ISLS. (Nominated for Best Paper).

Jeong, H., & Hmelo-Silver, C. (2012). Technology supports in CSCL. In J. van Aalst, K. Thompson, M. J. Jacobson & P. Reimann (Eds.), *The future of learning: Proceedings of the 10th International Conference of the Learning Sciences (ICLS 2012) – Volume 1* (pp. 339-346). Sydney, Australia: ISLS.

- Hmelo-Silver, C. E., Maher, C. A., Palius, M. F., Sigley, R. (2012). Resources for Reasoning: Use of Video and Text in a CSCL Environment. *The future of learning: Proceedings of the 10th International Conference of the Learning Sciences (ICLS 2012) – Volume 2*, (pp. 537-538). Sydney, Australia: ISLS
- Sinha, S., Adams, K. Rogat, T. K., Hmelo-Silver, C. E. (2012). The role of technologies in facilitating collaborative engagement. *The future of learning: Proceedings of the 10th International Conference of the Learning Sciences (ICLS 2012) – Volume 2*, (pp. 489-490). Sydney, Australia: ISLS.
- Sigley, R., Maher, C. A., Palius, M. F. & Hmelo-Silver, C. E. (2012). Are their arguments convincing? *Proceedings of the 10<sup>th</sup> Annual Hawaii International Conference on Education*, 1537-1543.
- Jeong, H. & Hmelo-Silver, C. E. (2011). A Portrait of CSCL Methodologies. In H. Spada, G. Stahl, N. Miyake & N. Law (Eds.). *Proceedings CSCL 2011* (pp.550-557). International Society of the Learning Sciences, Hong Kong. (Nominated for Best Paper)
- Hmelo-Silver, C. E., Jordan, R., Honwad, S., Eberbach, C., Sinha, S., Goel, A., Rugaber, S., Joyner, D. (2011). Foregrounding behaviors and functions to promote ecosystem understanding. In *Proceedings of Hawaii International Conference on Education* (pp. 2005-2013). Honolulu HI: HICE.
- Honwad, S. Hmelo-Silver, C. E., Jordan, R., Sinha, S., Eberbach, C., Goel, A., Rugaber, S. (2011). Learning about Ecosystems in a Computer Supported Collaborative Learning Environment. In H. Spada, G. Stahl, N. Miyake, N. Law (Eds.). *CSCL2011: Connecting research to practice, Volume II*. (pp. 982-983). International Society for the Learning Sciences.
- Honwad, S., Hmelo-Silver, C., Jordan, R., Eberbach, C., Gray, S., Sinha, S., Goel, A.K., Vattam, S.S., Rugaber, S. & Joyner, D. (2010). Connecting the Visible to the Invisible: Helping Middle School Students Understand Complex Systems. *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 133-139). Portland, OR: Cognitive Science Society.
- Eberbach, C., & Hmelo-Silver, C. E. (2010). Observing the seen and unseen: Computer and social mediation of a complex biological system. In Z. C. Zacharia, C. P. Constantinou & M. Papaevripidou (Eds.), *Computer Based Learning in Science* (pp. 213-224). Warsaw: OELiZK.
- Hmelo-Silver, C. E., Maher, C. A., Agnew, G., Palius, M. (2010). The video mosaic: Design and preliminary research. In Gomez, K., Lyons, L., & Radinsky, J. (Eds.) *Learning in the Disciplines: Proceedings of the 9th International Conference of the Learning Sciences (ICLS 2010) - Volume 2* (pp. 425-426). International Society of the Learning Sciences: Chicago IL.
- Jeong, H. & Hmelo-Silver, C. E. (2010). An overview of CSCL methodologies. In Gomez, K., Lyons, L., & Radinsky, J. (Eds.) *Learning in the Disciplines: Proceedings of the 9th International Conference of the Learning Sciences (ICLS 2010) - Volume 1* (pp. 921-928).

International Society of the Learning Sciences: Chicago IL.

Sinha, S., Gray, S., Hmelo-Silver, C. E., Jordan, R., Honwad, S., Eberbach, C., Rugaber, S., Vattam, S. & Goel, A. (2010). Appropriating conceptual representations: A case of transfer in a middle school science teacher. In Gomez, K., Lyons, L., & Radinsky, J. (Eds.) *Learning in the Disciplines: Proceedings of the 9th International Conference of the Learning Sciences (ICLS 2010) - Volume 1* (pp. 834-841). International Society of the Learning Sciences: Chicago IL.

Jeong, H. & Hmelo-Silver, C. E. (2010). Technology use in CSCL: A content meta-analysis. In Sprague, R. (Ed). *Proceedings of the 43rd Hawaii International Conference on System Sciences (HICSS-43)*, 10 pages, CD-ROM, IEEE Computer Society. Piscataway, NJ.

Hmelo-Silver, C. E. (2009). What do we know about problem-based learning? Current status and future prospects. *Proceedings, 2<sup>nd</sup> International PBL Symposium* (pp. 2-19). Republic Polytechnic, Singapore.

Liu, L. & Hmelo-Silver, C. E. (2009). Collaborative scientific conceptual change: A framework for analyzing science learning. In O'Malley C., Suthers D., Reimann P, Dimitracopoulou A. (Eds). *Computer Supported Collaborative Learning Practices: CSCL2009 Conference Proceedings*. International Society for the Learning Sciences. Rhodes, Greece.

Gray, S., Hmelo-Silver, C. E., Liu, L., R., J., Jeong, H., Schwartz, R., et al. (2008). Learning with ecosystem models: A tale of two classrooms. In G. Kanselaar, Jonker, V., Kirschner, P., & Prins, F. (Eds.), *International perspectives in the learning sciences: Creating a learning world. Proceedings of the Eighth International Conference for the Learning Sciences* (Vol. 1, pp. 289-296). Utrecht, The Netherlands: International Society for the Learning Sciences.

Hmelo-Silver, C. E., & Jeong, H. (2008). Using contrasting cases to understand how learners use online resources. In G. Kanselaar, Jonker, V., Kirschner, P., & Prins, F. (Eds.), *International perspectives in the learning sciences: Creating a learning world. Proceedings of the Eighth International Conference for the Learning Sciences* (Vol. 3, pp. 349-351). Utrecht, The Netherlands: International Society for the Learning Sciences.

Liu, L., & Hmelo-Silver, C. E. (2008). Collaborative Scientific Conceptual Change in a Simulation-supported Learning Environment. In G. Kanselaar, Jonker, V., Kirschner, P., & Prins, F. (Eds). *International perspectives in the learning sciences: Creating a learning world. Proceedings of the Eighth International Conference for the Learning Sciences* (Vol. 1, pp. 477-484). Utrecht, The Netherlands: International Society for the Learning Sciences.

Rummel, N., & Hmelo-Silver, C. E. (2008). Using contrasting cases to relate collaborative processes to outcomes in CSCL. In G. Kanselaar, Jonker, V., Kirschner, P., & Prins, F. (Eds.), *International perspectives in the learning sciences: Creating a learning world. Proceedings of the Eighth International Conference for the Learning Sciences* (Vol. 3, p. 346). Utrecht, The Netherlands: International Society for the Learning Sciences.

- Jeong, H., & Hmelo-Silver, C. E. (2008). Use of learning resources in a technologically-mediated online PBL environment. In *Proceedings International Conference on PBL 2008* [CD-ROM]. Colima, Mexico.
- Karelina, A., Eugenia Etkina, Van Heuvelen, A., Rubali Villasenor, M, Rosengrant, D., & Hmelo-Silver, C. (2007) Design labs: Does transfer occur? In *2007 Physics Education Research Conference*, (Greensboro, NC, August 2007), L. Hsu, C. Henderson, & L. McCullough (Eds.), AIP Conference Proceedings, Vol 951, 92-95
- Marathe, S., Hmelo-Silver, C.E., & Liu, L. (2007). A qualitative analysis of expert-expert differences in understanding aquariums. In D.S. McNamara & J.G. Trafton (Eds.), *Proceedings of the 29th Annual Cognitive Science Society* (pp. 1265-1270). Austin, TX: Cognitive Science Society.
- Liu, L., & Hmelo-Silver, C. E. (2007). Computer-supported Collaborative Learning and Conceptual Change. In C. Chinn, G. Erkens, & S. Puntambekar (Eds). *Proceedings of CSCL 2007* (pp. 454-463). New Brunswick, NJ: International Society of the Learning Sciences.
- Bitterman, A., Hatrak, N., & Hmelo-Silver, C. E. (2007). Learning about transfer in an online problem-based course. In C. Chinn, G. Erkens, & S. Puntambekar (Eds). *Proceedings of CSCL 2007* (pp. 81-83). New Brunswick, NJ: International Society of the Learning Sciences.
- Hmelo-Silver, C. E. (2007). The power of technology to support complex learning. *The power of media in education: NBE 2007 conference* (pp. 23-34). In H. Ruokamo, M. Kangas, M. Lehtonen, & K. Kumpulainen (Eds). Rovaniemi, Finland: University of Lapland
- Liu, L. Hmelo-Silver, C., & Marathe, S. (2007). RepTools: Representational tools to support learning about complex systems. In *Proceedings of the NARST 2007 Annual Meeting* [CD-ROM].
- Hmelo-Silver, C. E., Chernobilsky, E., & Mastov, O. (2006). Representations for analyzing tool-mediated collaborative learning. In S. A. Barab, K. E. Hay, & D. T. Hickey (Eds.). *Proceedings of 7<sup>th</sup> International Conference of the Learning Sciences* (pp. 1059-1060). Mahwah. NJ: Erlbaum.
- Azevedo, R. & Hmelo-Silver, C. E. (2006). Core challenges in understanding complex systems. In S. A. Barab, K. E. Hay, & D. T. Hickey (Eds.). *Proceedings of 7<sup>th</sup> International Conference of the Learning Sciences* (p. 1075). Mahwah. NJ: Erlbaum.
- Liu, L., Marathe, S., & Hmelo-Silver, C. E. (2006). Effects of conceptual representations on learning from hypermedia. In S. A. Barab, K. E. Hay, & D. T. Hickey (Eds.). *Proceedings of 7<sup>th</sup> International Conference of the Learning Sciences* (pp. 495- 501). Mahwah. NJ: Erlbaum.

- Nagarajan, A. & Hmelo-Silver, C. E. (2006). Scaffolding learning from contrasting video cases. *Proceedings of 7<sup>th</sup> International Conference of the Learning Sciences* (pp. 439- 445). Mahwah, NJ: Erlbaum.
- Hmelo-Silver, C. E. & Liu, L. (2006). Foregrounding function: Conceptual representations to support learning about complex biological systems. In *Proceedings of the NARST 2006 Annual Meeting* [CD-ROM].
- Hmelo-Silver, C. E., Derry, S. J. Woods, D., DelMarcelle, M., & Chernobilsky, E. (2005). From parallel play to meshed interaction: The evolution of the eSTEP system. In T. Koschmann, D. D. Suthers, & T-W. Chan (Eds.), *Proceedings of CSCL 2005* (pp. 195-204). Mahwah NJ: Erlbaum.
- Derry, S. J., Hmelo-Silver, C. E., Feltovich, J. Nagarajan, A., Chernobilsky, E. & Halfpap, B. (2005). Making a Mesh of It: A STELLAR Approach to Teacher Professional Development. In T. Koschmann, D. D. Suthers, & T-W. Chan (Eds.), *Proceedings of CSCL 2005* (pp. 105-114). Mahwah NJ: Erlbaum. (Received best paper nomination)
- Chernobilsky, E., Nagarajan, A., Hmelo-Silver, C. E. (2005). Problem-based learning online: Multiple perspectives on collaborative knowledge construction. In T. Koschmann, D. D. Suthers, & T-W. Chan (Eds.), *Proceedings of CSCL 2005* (pp. 63-52). Mahwah NJ: Erlbaum. (Received best student paper nomination)
- Liu, L., Hmelo-Silver, C. E., & Marathe, S. (2005). How Representation Matters: Comparing Collaborative Learning with Alternative Versions of Hypermedia. In T. Koschmann, D. D. Suthers, & T-W. Chan (Eds.), *Proceedings of CSCL 2005* (pp. 398-402). Mahwah NJ: Erlbaum.
- Hmelo-Silver, C. E., & Chernobilsky, E. (2004). Understanding collaborative activity systems: The relation of tools and discourse in mediating learning. In Y. B. Kafai, W. A. Sandoval, N. Enyedy, A. S. Nixon & F. Herrera (Eds.), *Proceedings of Sixth International Conference of the Learning Sciences* (pp. 254-261). Mahwah NJ: Erlbaum.
- Marathe, S., Liu, L. & Hmelo-Silver, C. E. (2004). A breath of fresh air: Alternative approaches to learning about complex systems. In Y. B. Kafai, W. A. Sandoval, N. Enyedy, A. S. Nixon & F. Herrera (Eds.), *Proceedings of Sixth International Conference of the Learning Sciences* (p. 621). Mahwah NJ: Erlbaum..
- Nagarajan, A., Hmelo-Silver, C.E., & Chernobilsky, E. (2004). The benefits and challenges of learning from contrasting video cases. In Y. B. Kafai, W. A. Sandoval, N. Enyedy, A. S. Nixon & F. Herrera (Eds.), *Proceedings of Sixth International Conference of the Learning Sciences* (p. 624). Mahwah NJ: Erlbaum.

- Hmelo-Silver, C. E. (2003). Facilitating collaborative knowledge construction. In *Proceedings of 36<sup>th</sup> Annual Hawaii International Conference on System Sciences* (CD / ROM). HI: IEEE Computer Society Press.
- Derry, S. J. & Hmelo-Silver, C. E. (2002). Addressing Teacher Education as a Complex Science: Theory-based Studies Within the STEP Project. In P. Bell, R. Stevens, & T. Stoics (Eds.). *Keeping learning complex: The proceedings of the fifth international conference of the learning sciences* (pp. 612-615). Mahwah, NJ: Erlbaum.
- Hmelo-Silver, C. E. (2002). Collaborative Ways of Knowing: Issues in Facilitation. In G. Stahl (ed.) *Proceedings of CSCL 2002* (pp. 199-208). Hillsdale, NJ: Erlbaum.
- Steinkuehler, C.A., Derry, S. J., Woods, D. K. & Hmelo-Silver, C. E. (2002). The STEP environment for distributed problem-based learning on the World Wide Web. . In G. Stahl (ed.) *Proceedings of CSCL 2002* (pp. 217-226). Hillsdale, NJ: Erlbaum.
- Siegel, M., Derry, S., Kim, J. B., Steinkuehler, C., Street, J., Canty, N., Fassnacht, C., Hewson, K., Hmelo, C., & Spiro, R. (2000). Promoting teachers' flexible use of the learning sciences through case-based problem solving on the WWW: A theoretical design approach. In B. Fishman & S. O'Connor-Divelbiss (Eds.), *Proceedings: Fourth International Conference of the Learning Sciences* (pp. 273-279). Mahwah, NJ: Erlbaum.
- Nagarajan, A., Hmelo, C., & Day, R. (1999). Collaborative scientific inquiry in a simulated laboratory. In C. Hoadley (Ed.) *Proceedings: Computer Support for Collaborative Learning 99* (pp. 416-424). Mahwah, NJ: Erlbaum.
- Hmelo, C. E., Ramakrishnan, S., Day, R. S., Shirey, W. E., Huang, Q., & Baar, J. (1998). Developing inquiry skills through scaffolded use of a simulation. In A. Bruckman, M. Guzdial, J. L. Kolodner, A. Ram (Eds). *Proceedings of the Third International Conference of the Learning Sciences* (pp. 145-151). Charlottesville, VA: AACE.
- Hmelo, C. E., Ramakrishnan, S., Day, R. S., Shirey, W. E., & Huang, Q., (1998). Scaffolded use of a modeling tool to support scientific inquiry. In *Proceedings of the International Conference on Computers and Education: Global education on the net* (pp. 381-387). AACE. Beijing China.
- Ramakrishnan, S., Hmelo, C. E., Day, R. S., Shirey, W. E., & Huang, Q. (1998). The integration of a novice user interface into a professional modeling tool. In C.G. Chute (Ed.) *Proceedings of AMIA 98* (pp. 678-682). Bethesda, MD: AMIA.
- Guzdial, M., Hmelo, C., Hübscher, R., Nagel, K., Newstetter, W. Puntambekar, S., Shabo, A., Turns, J. & Kolodner, J. L. (1997). Integrating and guiding collaboration: Lessons learned in computer-supported collaborative learning research at Georgia Tech. In R. Hall, N. Miyake, & N. Enyedy (Eds.). *Proceedings of Computer Supported Collaborative Learning 97*.(pp.91-100). Toronto CA. University of Toronto.

- Hmelo, C. E., Holton, D. L., Allen, J. K., & Kolodner, J. L. (1997). Designing for understanding: Children's models of lungs. In M. G. Shafto & P. Langley (Eds.), *Proceedings of the Nineteenth Annual Meeting of the Cognitive Science Society* (pp. 313-318). Mahwah NJ: Erlbaum.
- Abowd, G. D., Atkeson, C., Feinstein, A., Hmelo, C., Kooper, R., Long, S., Sawhney, N. and Tani, M. (1996) Teaching and learning as multimedia authoring: The classroom 2000 project. In *Proceedings of the ACM Multimedia'96 Conference*. New York: Association for Computing Machinery.
- Hmelo, C. E. & Coté, N. C. (1996). The development of self-directed learning strategies in problem-based learning. In D. C. Edelson & E. A. Domeshek (Eds.), *Proceedings of ICLS 96* (pp. 421-426). Charlottesville VA: AACE.
- Hmelo, C. E. & Guzdial, M. (1996). Of black and glass boxes: Scaffolding for learning and doing. In D. C. Edelson & E. A. Domeshek (Eds.), *Proceedings of ICLS 96* (pp. 128-134). Charlottesville VA: AACE.
- Kolodner, J. L., Hmelo, C. E., & Narayanan, N. H. (1996). Problem-based learning meets case-based reasoning. In D. C. Edelson & E. A. Domeshek (Eds.), *Proceedings of ICLS 96* (pp. 188-195). Charlottesville VA: AACE.
- Newstetter, W. C. & Hmelo, C. E. (1996). Distributing cognition or how they don't: An investigation of student collaborative learning. In D. C. Edelson & E. A. Domeshek (Eds.), *Proceedings of ICLS 96* (pp. 462-467). Charlottesville VA: AACE.
- Hmelo, C. E., Vanegas, J. A., Realff, M., Bras, B., Mulholland, J., Shikano, T., & Guzdial, M. (1995). Technology support for collaborative learning in a problem-based curriculum for sustainable technology. In J. L. Schnase (Ed.), *Proceedings of CSCL 95: The First International Conference on Computer Support for Collaborative Learning*, (pp. 169-172). Hillsdale NJ: Erlbaum.
- Narayanan, N. H., Hmelo, C. E., Petrushin, V., Newstetter, W. C., Guzdial, M., & Kolodner, J. L. (1995). Computational support for collaborative learning through generative problem solving. In J. L. Schnase (Ed.), *Proceedings of CSCL 95: The First International Conference on Computer Support for Collaborative Learning*, (pp. 247-254). Hillsdale NJ: Erlbaum.
- Lin, X., Hmelo, C., & the Cognition and Technology Group at Vanderbilt. (1995). Design and Development of Technology Supported Learning Communities. In *Proceedings of International Conference on Computers and Education 1995*. Charlottesville VA: AACE.
- Hmelo, C. E., Lunken, E. Y., Gramoll, K., & Yusuf, I. (1995). Multimedia courseware for teaching dynamic concepts: Assessment of student learning. In D. Budny, R. Herrick, G. Bjedov, & J. B. Perry *Frontiers in Education 1995* [CD-ROM]. Washington D.C.: American Society for Engineering Education.



Hmelo, C., Shikano, T., Bras, B., Mulholland, J., Realff, M., & Vanegas, J. (1995). A problem-based course in sustainable technology. In D. Budny, R. Herrick, G. Bjedov, & J. B. Perry (Eds.), *Frontiers in Education 1995* [CD-ROM]. Washington D.C.: American Society for Engineering Education.

Kolodner, J. L., Allen, J. K., Bullock, B., Hmelo, C., Khan, S., McCracken, M., Mistree, F., Newstetter, W., & Realff, M. (1995). Toward a pre-disciplinary introductory design sequence. In D. Budny, R. Herrick, G. Bjedov, & J. B. Perry (Eds.), *Frontiers in Education 1995* [CD-ROM]. Washington D. C.: American Society for Engineering Education.

Hmelo, C. E. (1995). Problem-Based Learning: Development Of Knowledge And Reasoning Strategies. In J.D. Moore and J. F. Lehman (Eds) *Proceedings of the Seventeenth Annual Conference of the Cognitive Science Society* (pp. 403-408). Hillsdale NJ: Erlbaum.

Hmelo, C. E., & Narayanan, N. H. (1995). Anchors, cases, problems, and scenarios as contexts for learning. In J.D. Moore and J. F. Lehman (Eds) *Proceedings of the Seventeenth Annual Conference of the Cognitive Science Society* (pp. 5-8). Hillsdale NJ: Erlbaum.

Bras, B., Hmelo, C., Mulholland, J., Realff, M., & Vanegas, J. (1995). A problem-based curriculum for sustainable technology. In J.P. Mohsen. (Ed.), *Proceedings of The Second Congress on Computing in Civil Engineering* Vol. 1, pp. 326-333, American Society of Civil Engineers.

Hmelo, C. & Novak B. (1989). A model course in computer literacy for students in the allied health professions. In J. Greenberg (Ed.), *Proceedings: Innovations in Instructional Computing*. SUNY Computing Officers Association Conference, Saratoga Springs NY.

Hmelo, C. (1989). The use of a computer simulated laboratory experiment in a pulmonary physiology course. In J. Greenberg (Ed.), *Proceedings: Innovations in Instructional Computing*. SUNY Computing Officers Association Conference, Saratoga Springs NY.

Ganetis, J., Hmelo, C. & McPeck, M. (1988). The neonatal respiratory care practitioner as a member of the multidisciplinary high-risk neonatal transport team. In D. Firestone & E. Kra (Eds.) *Proceedings Ninth Annual Conference on Interdisciplinary Health Team Care* (pp. 381-394). Stony Brook, NY: School of Allied Health Professions SUNY.

McPeck M., Hmelo C., Skaredoff, M. N., & Erikson, R. (1982). Calculator and computer programs for managing high frequency jet ventilation. *Proceedings: Fourth International Symposium on Computers in Critical Care and Pulmonary Medicine*, London, England.

### **Other Publications:**

Hmelo-Silver, C. E. (2019). Workshop report: Building interdisciplinary capacity for understanding and supporting computer-supported collaborative learning. *ISLS Rapid*

*Community Reports*. Available at: <http://go.iu.edu/2crE> (peer reviewed for ISLS repository).

Saleh, A., Weiser, G., Rehmat, A., Housh, K., Cisterna, D., Liu, L., & Hmelo-Silver, C. E. (2019). A call to action: A response to Osborne, Rafanello and Kind (2018). *Journal of Research in Science Teaching*, 56, 526-528.

McKeown, J. & Hmelo-Silver, C. E. (2016). Commentary: Expanding conceptualizations for the study of learning: Implications for theory and research. *Frontline Learning Research*. 4(4) 56-58. DOI: <http://dx.doi.org/10.14786/flr.v4i4.318>

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:**

Park Rogers, M., Hmelo-Silver, C. E., Nicholas, C., Cross Francis, D., & Danish, J. (2021). Learning to Teach with Science Representations: Meaningfully Connecting the Three Dimensions of Science. Submitted to *Science and Children*.

Danish, J.A., Johnson, H., Nicholas, C., Cross Francis, D. Hmelo-Silver, C., Park Rogers, M., Askew, R., Gerber, A., Enyedy, N. (2020). Video as context for learning how to mediate

inquiry learning with representations. Submitted to *Learning, Culture and Social Interaction*.

Chen, Y., Hmelo-Silver, C. E., Lajoie, S. P., Zheng, J., Huang, L., & Bodnar, S. (2020). Orchestration Technology in Online PBL: How PBL Teachers Use A Learning Analytics Dashboard to Assess Multiple Groups. Under revision for *Interdisciplinary Journal of Problem-based Learning*.

Bae, H., Craig, K., Xia, F., Chen, Y. and Hmelo-Silver, C.E. (2019). Developing historical thinking in large lecture classrooms through PBL inquiry supported with synergistic scaffolding. Submitted to *IJPBL*

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:**

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., Phonethisbavads, 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., & Llort, K. (2019, March). *Developing a Hypothetical Learning Progression for NGSS Crosscutting Concepts: Structure-Function and Systems & System Models*. Presented a 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. Tübingen, 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 10<sup>th</sup> 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 14<sup>th</sup> 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 14<sup>th</sup> 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**

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

Indiana University Graduate:

P632 Theorizing Learning in Context: Cultural Psychology  
P674 Collaborative Learning  
P674 Learning through problem solving  
P633 Design-based Research  
P573 Apprenticeship in the Learning Sciences

**Dissertations chaired:**

2006 Anandi Nagarajan, PhD. Instructional Designer, New York University  
2008 Lei Liu, PhD. Research Scientist, Educational Testing Service  
2012 Lynne Richard, PhD. Assistant Professor, Florida International University  
2013 Suparna Sinha, PhD. Researcher, Center for Math Science and Computer Education,  
Rutgers University

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. Language Arts Supervisor, Roxbury High School  
Tara Jakubik Skiba, Ed.D., English Teacher, Hackensack High School  
Carrie Wojenski Ed.D., Associate Vice Provost for Global Academic Programs, SUNY Albany  
Sheila Frye, Ed.D., Elementary Reading Specialist, Valley View Elementary School

2018 Andrea Rehak, PhD. Digital Learning Consultant, IUPUI Center for Teaching and Learning  
2018 Jessica McKeown, PhD. Senior Learning Scientist, McGraw Hill  
2019 Andrea Gomoll, Ph.D., Postdoctoral scholar, University of California, San Diego.



## **Professional Service:**

### **Editorial Boards:**

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-present  
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*

### **Grant Reviewer**

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)  
Spencer Foundation Small Grant review panel 2020-

### **Conferences and Professional Organization Service:**

Program committee, Computer Supported Collaborative Learning Conference 1997  
Program chair-elect, Special interest group on Problem-based Learning, AERA, 1998-1999  
Program chair, Special interest group on Problem-based Learning, AERA, 1999-2001  
Member, APA Division 15 Committee on Electronic Communications, 2002-  
Co-director (with Angela O'Donnell), Rutgers Invitational Symposium on Education, May 2002  
Panelist, ICLS 2002 Doctoral Consortium  
Member, International Society of the Learning Sciences Conference Committee, 2002-  
Program committee, CSCL 2005  
    Tutorial Co-Chair, CSCL 2005  
ISLS conference committee co-chair 2004—2006  
ICLS 2005 steering committee  
CSCL 2007 conference co-chair  
Elected to CSCL community committee of ISLS, 2006-2010, 2010-2012, 2017-2021  
Board of Directors, International Society of Learning Sciences, 2007-2015  
CSCL 2009 Steering Committee  
Co-chair, ISLS publications committee, 2008-2009  
Co-Chair, ICLS 2010 Doctoral Consortium  
Co-chair, CSCL 2011 Early Career Workshop  
Program committee, CSCL 2011  
Elected Co-chair, ISLS CSCL community, 2010- 2012  
Organizing Committee, Visioning workshop on Research on Information and Computing  
Technology for Online Higher Education, Computing Research Association, February, 2013.  
International Society for the Learning Sciences:

President-elect, 2012-2013  
President, 2013-2014  
Past President, 2014-2015  
Co-chair, CSCL 2015 Doctoral Consortium  
Co-chair, ICLS 2016 Workshops  
ICLS doctoral consortium mentor, 2018  
ISLS Fellows Committee Chair, 2018-2021  
Program co-chair, CSCL 2019, Lyon, France  
CSCL Program co-chair, ISLS 2021, Bochum, Germany

**Advisory Boards:**

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 (R. Engle CAREER award), UC Berkeley  
Digital Library Connect project, Utah State University  
Brian Belland CAREER award, Utah State University  
DUE grant, PI Tammy Long, Michigan State University, 2016  
PLANS, PI, Marcia Linn, UC Berkeley 2016-  
IC4, PI, Eric Hamilton, Pepperdine, 2018-

**Community Service**

Richland-Bean Blossom School District STEM advisory board

**Other:**

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