

Carla M. Firetto

Education

PhD, Educational Psychology (2013), The Pennsylvania State University, University Park, PA.

Dissertation: *Inspiring integration in college students reading multiple biology texts*.

MS, Educational Psychology (2007), The Pennsylvania State University, University Park, PA.

Thesis: *Intertextuality: A study of readers with multiple texts*.

BA, Psychology & Sociology (2005), Thiel College, Greenville, PA.

Academic Appointments

2024-Present **Associate Professor of Educational Psychology**, Arizona State University, Mary Lou Fulton Teachers College, Division for Advancing Educator Preparation

Affiliate Faculty: Learning Engineering Institute (2024-Present)

Affiliate Faculty: Institute for Social Science Research (2021-Present)

Member: Graduate Faculty Mentor Academy (2022-Present)

2017-2024 **Assistant Professor of Educational Psychology**.

2013-2017 **Postdoctoral Scholar**, *Quality Talk: Developing students' discourse to promote critical-analytic thinking, epistemic cognition, and high-level comprehension*, funded by the Institute of Education Sciences at The Pennsylvania State University

Scholarship

Peer-Reviewed Publications [Published]

*denotes current/former doctoral student. ^denotes undergraduate student.

28. **Firetto, C. M.**, Murphy, P. K., Starrett, E.*, Herman, E. A.*, Greene, J. A., Tang, Y.*,& Yan, L.* (2025). Investigating grade-level and text genre effects in Quality Talk discussions: An AI-powered discourse analysis of upper primary students' high-level comprehension. *Learning and Instruction*, 100. <https://doi.org/10.1016/j.learninstruc.2025.102208>
27. **Firetto, C. M.**, Murphy, P. K., Yan, L.*,& Tang, Y.* (2025). AI-Powered coding of elementary students' small-group discussions about text. *Proceedings of the Artificial Intelligence in Measurement and Education Conference (AIME-Con): Works in Progress*, 125–134. <https://aclanthology.org/2025.aimecon-wip.15>
26. Hyatt, J.-P. K., Bienenstock, E. J., **Firetto, C. M.**, Woods, E. R.*,& Comus, R. C.* (2025). Using aggregated AI detector outcomes to eliminate false positives in STEM-student writing, *Advances in Physiology Education*, 49(2), 486–495. <https://journals.physiology.org/doi/pdf/10.1152/advan.00235.2024>
25. **Firetto, C. M.**, Starrett, E.*,& Jordan, M. E. (2024). Using small-group discussion to foster in-service teachers' comprehension and instruction of sustainable energy transitions through PV science. *Journal of Science Teacher Education*, 35(3), 243–275. [10.1080/1046560X.2023.2246777](https://doi.org/10.1080/1046560X.2023.2246777)

24. **Firetto, C. M.**, Starrett, E.*, & Jordan, M. E. (2023). Embracing a culture of talk: STEM teachers' discussion engagement and enactment. *International Journal of STEM Education*, 10(50), 1–21. <https://doi.org/10.1186/s40594-023-00442-7>

23. **Firetto, C. M.**, Starrett, E.*, Montalbano, A. C.*, Yan, L.*, Penkrot, T. A., Kingsbury, J. S. & Hyatt, J.-P. K. (2023). The impact of effective study strategy use in an introductory human anatomy and physiology class. *Frontiers in Education*, 8, 1–12. <https://doi.org/10.3389/feduc.2023.1161772>

22. Yan, L.*, **Firetto, C. M.**, Starrett, E.*, Kingsbury, J. S., Penkrot, T. A., & Hyatt, J.-P. K. (2023). Exploring supports or incentives to promote undergraduate students' use of cooperative study groups. *International Journal of Educational Research Open*, 4, 1–12. <https://doi.org/10.1016/j.ijedro.2023.100252>

21. Murphy, P. K., Greene, J. A., **Firetto, C. M.**, Croninger, R. M. V.*, Duke, R. F.*, Li, M.*, Lobczowski, N. G.* (2022). Examining the effects of Quality Talk discussions on 4th- and 5th-grade students' high-level comprehension of text. *Contemporary Educational Psychology*, 71, 1–13. <https://doi.org/10.1016/j.cedpsych.2022.102099>

20. Starrett, E.*, **Firetto, C. M.**, & Jordan, M. E. (2022). Navigating sources of teacher uncertainty: Exploring teachers' collaborative discourse when learning a new instructional approach. *Classroom Discourse*, 1–24. <https://doi.org/10.1080/19463014.2021.2013266>

19. **Firetto, C. M.**, Van Meter, P. N., Kottmeyer, A. M.*, Turns, S. R., & Litzinger, T. A. (2021). An extension of the Thermodynamics Conceptual Reasoning Inventory (TCRI): Measuring undergraduate students' understanding of introductory thermodynamics concepts. *International Journal of Science Education*, 43(15), 2555–2576. <https://doi.org/10.1080/09500693.2021.1975847>

18. Wei, L.*, **Firetto, C. M.**, Duke, R. F.*, Greene, J. A., & Murphy, P. K. (2021). High school students' epistemic cognition and argumentation practices during small-group Quality Talk discussions in science. *Education Sciences*, 11(10), 616. <https://doi.org/10.3390/educsci11100616>

17. Lobczowski, N. G.*, Allen, E. M.*, **Firetto, C. M.**, Greene, J. A., & Murphy, P. K. (2020). An exploration of social regulation of learning during scientific argumentation discourse. *Contemporary Educational Psychology*, 63, 1–17. <https://doi.org/10.1016/j.cedpsych.2020.101925>

16. Murphy, P. K., Ebersöhn, L., Omidire, M. F., & **Firetto, C. M.** (2020). Exploring the structure and content of discourse in remote, rural South African classrooms. *South African Journal of Education*, 40(2), 1–11. <http://dx.doi.org/10.15700/saje.v40ns2a1826>

15. **Firetto, C. M.**, Murphy, P. K., Greene, J. A., Li, M.*, Wei, L.*, Montalbano, C.*, Hendrick, B.* & Croninger, R. M. V.* (2019). Bolstering students' written argumentation by refining an effective discourse intervention: Negotiating the fine line between flexibility and fidelity. *Instructional Science*, 47, 181–214. <https://doi.org/10.1007/s11251-018-9477-x>

14. Wei, L.* **Firetto, C. M.**, Murphy, P. K., Li, M.*, Greene, J. A., & Croninger, R. M. V.* (2019). Facilitating fourth-grade students' written argumentation: The use of an argumentation graphic organizer. *The Journal of Educational Research*, 112(5), 627–639. <https://doi.org/10.1080/00220671.2019.1654428>

13. **Firetto, C. M.**, & Van Meter, P. N. (2018). Inspiring integration in college students reading multiple biology texts. *Learning and Individual Differences*, 65, 123-134. <https://doi.org/10.1016/j.lindif.2018.05.011>

12. Kosh, A. E.*, Greene, J. A., Murphy, P. K., Burdick, H., **Firetto, C. M.**, & Elmore, J. (2018). Automated scoring of students' small-group discussions to assess reading ability. *Educational Measurement: Issues and Practice*, 37(2), 20–34. <https://doi.org/10.1111/emip.12174>

11. Murphy, P. K., Greene, J. A., **Firetto, C. M.**, Hendrick, B.*, Li, M.*, Montalbano, C.* & Wei, L.* (2018). Quality Talk: Developing students' discourse to promote high-level comprehension. *American Educational Research Journal*, 55(5), 1113–1160. <https://doi.org/10.3102/0002831218771303>

10. Wei, L.*, Murphy, P. K., & **Firetto, C. M.** (2018). How can teachers facilitate productive small-group talk? An integrated taxonomy of teacher discourse moves. *Elementary School Journal*, 118(4), 578–609. <https://doi.org/10.1086/697531>

9. Murphy, P. K., Greene, J. A., **Firetto, C. M.**, Li, M.*, Lobczowski, N. G.*, Duke, R. F.*, Wei, L.* & Croninger, R. M. V.* (2017). Exploring the influence of homogeneous versus heterogeneous grouping on students' text-based discussions and comprehension. *Contemporary Educational Psychology*, 51, 336–355. <https://doi.org/10.1016/j.cedpsych.2017.09.003>

8. **Firetto, C. M.**, Van Meter, P. N., Turns, S. R., & Litzinger, T. A. (2016). The validation of a conceptual reasoning inventory for introductory thermodynamics. *International Journal of Engineering Education*, 32(6), 2635–2652. http://www.ijee.ie/latestissues/Vol32-6/25_ijee3340ns.pdf

7. Alexander, P. A., Dumas, D., Grossnickle, E. M., List, A., & **Firetto, C. M.** (2016). Measuring relational reasoning. *The Journal of Experimental Education*, 84(1), 119–151. <https://doi.org/10.1080/00220973.2014.963216>

6. Li, M.*, Murphy, P. K., Wang, J.*, Mason, L. H., **Firetto, C. M.**, Wei, L.* & Chung, K. S.* (2016). Promoting reading comprehension and critical-analytic thinking: A comparison of three approaches with fourth and fifth graders. *Contemporary Educational Psychology*, 46, 101–115. <https://doi.org/10.1016/j.cedpsych.2016.05.002>

5. Murphy, P. K., Andiliou, A., **Firetto, C. M.**, Bowersox, C. M., Baker, M., & Ramsay, C. M. (2016). Intratextual persuasive messages as catalysts for higher-order thinking: An exploratory investigation. *Journal of Literacy Research*, 48(2), 134–163. <https://doi.org/10.1177/1086296X16660652>

4. Murphy, P. K., **Firetto, C. M.**, Wei, L.*, Li, M.* & Croninger, R. M. V.* (2016). What REALLY works: Optimizing classroom discussions to promote comprehension and critical-

analytic thinking. *Policy Insights from Behavioral and Brain Science*, 3(1), 27–35. <https://doi.org/10.1177/2372732215624215>

3. Van Meter, P. N., **Firetto, C. M.**, Turns, S. R., Litzinger, T. A., Cameron, C. E.* & Shaw, C. W.* (2016). Improving students' conceptual reasoning by prompting cognitive operations. *Journal of Engineering Education*, 105(2), 245–277. <https://doi.org/10.1002/jee.20120>
2. Li, M.* Murphy, P. K., & **Firetto, C. M.** (2014). Examining the effects of text genre and structure on fourth- and fifth-grade students' high-level comprehension as evidenced in small-group discussions. *International Journal of Educational Psychology*, 3(3), 205–234. <http://dx.doi.org/10.4471/ijep.2014.12>
1. Litzinger, T. A., Van Meter, P. N., **Firetto, C. M.**, Passmore, L. J., Masters, C. B., Turns, S. R., Gray, G. L., Costanzo, F., & Zappe, S. E. (2010). A cognitive study of problem solving in statics. *Journal of Engineering Education*, 99(4), 337–353. <https://doi.org/10.1002/j.2168-9830.2010.tb01067.x>

Editorially-Reviewed Publications

Journal Articles

1. Murphy, P. K., **Firetto, C. M.**, & Greene, J. A. (2017). Enriching students' scientific thinking through relational reasoning: Seeking evidence in texts, tasks, and talk. *Educational Psychology Review*, 29(1), 105–117. <https://doi.org/10.1007/s10648-016-9387-x>

Book Chapters

8. **Firetto, C. M.** (2020). Learning from multiple complementary perspectives: A systematic review. In P. Van Meter, A. List, D. Lombardi, & P. Kendeou (Eds), *Handbook of learning from multiple representations and perspectives* (pp. 223–244). Routledge.
7. Murphy, P. K., & **Firetto, C. M.** (2018). Quality Talk: A blueprint for productive talk. In P. K. Murphy (Ed.), *Classroom discussions in education* (pp. 101–133). Routledge.
6. Murphy, P. K., **Firetto, C. M.**, & Li, M.* (2017). Knowledge and the Model of Domain Learning. In H. Fives & D. Dinsmore (Eds.), *The Model of Domain Learning: Understanding the development of expertise* (pp. 19–36). Routledge.
5. Murphy, P. K., Wilkinson, I. A. G., Soter, A. O., & **Firetto, C. M.** (2017). Instruction based on discussion. In R. E. Mayer & P. A. Alexander (Eds.), *Handbook of research on learning and instruction* (2nd ed, pp. 432–459). Routledge.
4. Murphy, P. K., **Firetto, C. M.**, Li, M.* Wei, L.* & Croninger, R. M. V.* (2017). Fostering student writing through intervention research: An examination of key components. In R. Fidalgo & T. Olive (Series Eds.) & R. Fidalgo, K. R. Harris, & M. Braaksma, (Vol. Eds.), *Studies in Writing Series: Vol. 34., Design principles for teaching effective writing*, (pp. 253–279). Brill. https://doi.org/10.1163/9789004270480_012

3. Murphy, P. K., **Firetto, C. M.**, & Long, V. A.* (2015). Harnessing the power of knowledge and beliefs in teaching and learning: Interventions that promote change. In D. Scott & E. Hargreaves (Eds.), *The SAGE handbook of learning* (pp. 388–403). SAGE Publications.
2. Van Meter, P. N., & **Firetto, C. M.** (2013). Cognitive Model of Drawing Construction: Learning through the construction of drawings. In G. J. Schraw, M. T. McCrudden, & D. R. Robinson (Eds.), *Learning through visual displays* (pp. 247–280). Information Age Publishing.
1. Van Meter, P. N., & **Firetto, C. M.** (2008). Intertextuality and the study of new literacies: Research critique and recommendations. In J. Coiro, M. Knobel, C. Lankshear, & D. J. Leu (Eds.), *Handbook of research on new literacies* (pp. 1079–1092). Routledge.

White Paper

1. Firetto, C. M., & Konak, A. (2024). Theoretical perspectives on critical thinking: Implications for entrepreneurship education research and practice. Venturewell. <https://venturewell.org/wp-content/uploads/Theoretical-Perspectives-on-Critical-Thinking-White-Paper-IUSE.pdf>

Essay

2. Kurz, A., & **Firetto, C. M.** (2025). The Continuous Improvement Topical Action Group: Bottom-up faculty-led change. Invited essay for the Division for Advancing Educator Preparation (DEP) as part of MLFC's 7-year Academic Performance Review (APR).
1. Van Meter, P. N., **Firetto, C. M.**, Turns, S. R., Litzinger, T. A., Cameron, C. E.* & Shaw, C. W.* (2016). Right side of the law: A non-traditional thermodynamics assignment offers a model for teaching engineering fundamentals. *ASEE Prism*, 26(1), 41. [Invited essay based on the 2016 *Journal of Engineering Education* publication, highlighted in the section JEE Selects]. Available at <http://www.asee-prism.org/jee-selects-4/>

Encyclopedia Entries

2. Murphy, P. K., **Firetto, C. M.**, Lloyd, G. M., Wei, L.⁺, & Baszczewski, S. E.* (2020). Classroom discussions. In L. Zhang (Ed.) *Oxford Research Encyclopedia of Education*. Oxford University Press. <http://dx.doi.org/10.1093/acrefore/9780190264093.013.869>
1. **Firetto, C. M.**, & Murphy, P. K. (2019). Metacognition. In J. S. Damico & M. J. Ball (Eds.), *The SAGE encyclopedia of human communication sciences and disorders*. SAGE.

Digital Media and Other Scholarly Products

Blog

1. Murphy, P. K., & **Firetto, C. M.** (2015, March 4). Swinging for the fences: Education interventions make a difference for learners. *Psychology Today*. <https://www.psychologytoday.com/blog/psyched/201503/swinging-the-fences/>

Coding Manual

1. Murphy, P. K., **Firetto, C. M.**, Greene, J. A., & Butler, A. M. (2017). *Analyzing the talk in Quality Talk discussions: A coding manual*. The Pennsylvania State University.
doi.org/10.18113/S1XW64

Video Production and Digital Materials

4. **Firetto, C. M.**, & Starrett, E.* (2022). *Engaging in small group study discussions* [Infographic]. DOI [10.17605/OSF.IO/9VTSW](https://doi.org/10.17605/OSF.IO/9VTSW) [infographic created for use in research and disseminated for public use].
3. Starrett, E.*, & **Firetto, C. M.** (2022). *Cooperative study strategies* [Video].
<https://www.youtube.com/watch?v=JHA-Fw0kUto> [video created for use in research and disseminated for public use].
2. Murphy, P. K., Greene, J. A., & **The Quality Talk Team**. (2016). *Quality Talk language arts engagement* [Video]. Institute of Education Sciences.
<http://www.qualitytalk.psu.edu/2014/03/18/qtlanguagearts>
1. Murphy, P. K., Greene, J. A., & **The Quality Talk Team**. (2015). *Promoting Quality Talk in high school STEM classes* [Video]. Teaching and Learning Video Showcase, The National Science Foundation. <http://videohall.com/p/532>

Select Grant Applications

Funded

5. **Firetto, C. M.** (PI), Starrett, E., (Co-PI), Yan, L.* (Co-PI). (2024-2025). Exploring individual differences in high-level comprehension and equitable talk for upper primary students
Sponsor: *Mary Lou Fulton Teachers College Internal Scholarship Grant* (competitive and peer-reviewed).
4. **Firetto, C. M.** (PI), Patton, L. (Co-PI), Oliver, J. (Co-PI), & Yan, L.* (Co-PI). (2022-2023). Supporting teacher candidates' understanding of ethical educational assessments through equity-focused, small-group discussions. Sponsor: *Mary Lou Fulton Teachers College Internal Scholarship Grant* (competitive and peer-reviewed).
3. **Firetto, C. M.** (PI). (2020-2021). Exploring active learning exercises in introductory anatomy and physiology courses. Sponsor: *Mary Lou Fulton Teachers College Internal Scholarship Grant* (competitive and peer-reviewed).
2. **Firetto, C. M.** (PI), Hyatt, J.-P. K. (Co-PI), Kingsbury, J. (Co-PI), & Penkrot, T. (Co-PI). (2020-2021; No-Cost Extension to 2023). Leveraging collaborative in-class learning exercises (CICLES) to promote a deeper understanding of anatomy and physiology. Sponsor: *Institute for Social Science Research at Arizona State University* (competitive and peer-reviewed).
1. **Firetto, C. M.** (PI), Hyatt, J.-P. K. (Co-PI), Kingsbury, J. (Co-PI), & Penkrot, T. (Co-PI). (2018-2019). Supporting undergraduate students' construction of an integrated understanding of anatomy and physiology. Sponsor: *Mary Lou Fulton Teachers College Internal Scholarship Grant* (competitive and peer-reviewed).

Unfunded

4. **Firetto, C. M.** (PI), Lopez, M. (Co-PI), Hyatt, J.-P. K. (Co-PI), Kingsbury, J. (Co-PI). HSI implementation and evaluation project: Adapting an approach for Peer-Led Study Discussions (PLSDs) in introductory anatomy and physiology. Sponsor: *National Science Foundation*. (Total Requested: \$499,999).
3. **Firetto, C. M.** (PI), Lopez, M. (Co-PI), Hyatt, J.-P. K. (Co-PI), Kingsbury, J. (Co-PI), Plummer, S. (Co-PI), Cahill, L., (Co-PI) & Rumble, R. (Co-PI). Promoting effective and equitable peer-led small-group study discussions for undergraduate STEM students. Sponsor: *Spencer Foundation*. (Total Requested: \$75,000).
2. Rillero, P. (PI), & **Firetto, C. M.** (Sr. Personnel). Growing healthy foods: Sustainability, nutrition, stewardship, and education through school-based, small-area, raised-bed, irrigated farm systems. Sponsor: *USDA: National Institute of Food and Agriculture*. (Requested: \$198,066; Firetto's Recognition: \$59,420).
1. Murphy, P. K. (PI), **Firetto, C. M.** (Co-PI), & Greene, J. A. (Co-PI). Exploring the influence of homogeneous versus heterogeneous grouping on students' cognitive engagement, comprehension, and epistemic cognition. Sponsor: *US Department of Education: Institute of Education Sciences*. (Total Requested: ~\$1,400,000; ASU Subcontract: \$202,601).

Research Presentations

Peer-Reviewed, International

11. **Firetto, C. M.** (2021, July 7-9). Examining teachers' critical-analytic thinking and discussion efficacy after participating in content discussions: A follow-up study. In P. K. Murphy (Chair), *Leveraging teacher-researcher collaborations to support students' critical-analytic thinking through discussion* [Symposium]. World Education Research Association (WERA), Santiago De Compostela, Spain [virtual].
10. Murphy, P. K., Greene, J. A., & **Firetto, C. M.** (2017, July 11-15). *Using Quality Talk Language Arts to enhance fifth-grade students' argumentation and writing*. In M. McKeown & A. Crosson (Chairs), *Exploring intervention effects on students' argument writing* [Symposium]. Society for the Scientific Study of Reading Annual Meeting, Halifax, Nova Scotia.
<https://www.triplesr.org/exploring-intervention-effects-students%20%99-argument-writing>
9. **Firetto, C. M.**, Murphy, P. K., Greene, J. A., Li, M.*, Wei, L.* & Montalbano, C.* (2015, August 25-29). *Enhancing students' written argumentation through Quality Talk*. European Association for Research on Learning and Instruction (EARLI), Limassol, Cyprus.
<https://earli.org/assets/files/BOA-2015.pdf>
8. Li, M.*, **Firetto, C. M.**, Murphy, P. K., Greene, J. A., Wei, L.*, Croninger, R. M. V.* & Montalbano, C.* (2015, August 6-9). *Examining the transfer effects of Quality Talk on fourth graders' written argumentation*. American Psychological Association (APA) Annual Convention, Toronto, Canada.

7. **Firetto, C. M.**, & Van Meter, P. N. (2013, August 27-31). *Cognitive Model of Drawing Construction: Using think alouds to measure cognitive processes*. European Association for Research on Learning and Instruction (EARLI), Munich, Germany. <https://earli.org/assets/files/BOA-2013.pdf>

6. Van Meter, P. N., & **Firetto, C. M.** (2013, August 27-31). *What can drawings tell us about drawing to learn?*. European Association for Research on Learning and Instruction (EARLI), Munich, Germany. <https://earli.org/assets/files/BOA-2013.pdf>

5. **Firetto, C. M.**, & Van Meter, P. N. (2012, August 29-31). *The effect of task instruction and text overlap on the integration of multiple cross-domain sources*. Text and Graphics Special Interest Group of the European Association for Research on Learning and Instruction (EARLI), Grenoble, France.

4. **Firetto, C. M.**, & Van Meter, P. N. (2011, August 30-September 3). *Effects of drawing and diagram selection on learning from multiple representations in biology*. European Association for Research on Learning and Instruction (EARLI), Exeter, UK. <https://earli.org/assets/files/BOA-2011.pdf>

3. Shull, P., **Firetto, C. M.**, & Passmore, L. (2011, June 26-29). *Improved team function: Student-driven team rules and consequences*. American Society for Engineering Education (ASEE) Conference and Exposition, Vancouver, Canada.

2. Van Meter, P. N., **Firetto, C. M.**, & Litzinger, T. A. (2008, August 27-29). *Solving engineering problems using multiple representations: Differences between strong and weak problem solvers*. Text and Graphics Special Interest Group of the European Association for Research on Learning and Instruction (EARLI), Tilburg University, Netherlands.

1. Litzinger, T. A., Van Meter, P. N., **Firetto, C. M.**, Passmore, L., Masters, C., Costanzo, F., Gray, G., Turns, S. R., & Higley, K. (2008, July 7-10). *A cognitive study of problem-solving in statics*. Research in Engineering Education Symposium, Davos, Switzerland.

Peer-Reviewed, National

38. **Firetto, C. M.**, Hong, Y.-C., & Chi, M. T. H. (2026, April 8-12, accepted). Beyond passive online learning: Evaluating a constructive engagement upgrade for software engineering students. American Educational Research Association (AERA) Annual Meeting, Los Angeles, CA, United States.

37. Yan, Y.*, Bernier, J.*., & **Firetto, C. M.** (2026, April 8-12, accepted). Reimagining science talk: Investigating elementary teachers' discussion practices during the Equitable Classroom Discussion intervention. American Educational Research Association (AERA) Annual Meeting, Los Angeles, CA, United States.

36. **Firetto, C. M.**, Murphy, P. K., Yan, Y.*., & Tang, Y.* (2025, October 27-29). *AI-powered coding of elementary students' small-group discussions about text*. Artificial Intelligence in Measurement and Education Conference (AIME-Con). Pittsburgh, PA, United States.

35. Hyatt, J.-P. K., Bienenstock, E. J., Woods, E. R.*, Comus, R. C.* & **Firetto, C. M.** (2025, April 24-27). *Detecting AI use in lower-division A&P course work*. American Physiological Society Summit. <https://journals.physiology.org/doi/abs/10.1152/physiol.2025.40.S1.0126>

34. Starrett, E.*, & **Firetto, C. M.** (2024, April 11-14). *Purposefully embedding uncertainty into a mathematics teacher preparation course*. American Educational Research Association (AERA) Annual Meeting, Philadelphia, PA, United States.

33. **Firetto, C. M.**, Yan, L.*, Starrett, E.*, Jaber, L. ^, Penkrot, T. A., Kingsbury, J. S., & Hyatt, J.-P. K. (2024, April 11-14). *Examining undergraduate anatomy and physiology students' connection generation in collaborative online study groups*. American Educational Research Association (AERA) Annual Meeting, Philadelphia, PA, United States.

32. **Firetto, C. M.**, Oliver, J., Patton, L., & Yan, L*. (2023, August 4, 2023). *Supporting teacher candidates' equitable engagement in small-group discussions*. American Psychological Association (APA) Annual Convention, Washington, D.C., United States.

31. **Firetto, C. M.**, Starrett, E.*, Yan, L.*, Hyatt, J.-P. K., & Penkrot, T. (2023, April 13-16). *Promoting collaborative study strategy use with biology undergraduate students*. American Educational Research Association (AERA) Annual Meeting, Chicago, IL, United States.

30. **Firetto, C. M.**, Montalbano, A. C.*, Starrett, E.*, Yan, L.*, Hyatt, J.-P. K., & Penkrot, T. (2022, August 4-6). *A study strategy module for biology undergraduates: Uptake and impact*. American Psychological Association (APA) Annual Convention, Minneapolis, MN, United States [virtual].

29. **Firetto, C. M.**, Starrett, E.*, Jaber, L. ^, & Kingsbury, J. (2021, October 12-15). *Using study-group discussions to promote connection generation in an introductory anatomy and physiology course*. Scholarly Consortium of Innovative Psychology in Education (SCIPIE), Tempe, AZ, United States [virtual].

28. Primor, L.*, **Firetto, C. M.**, Katzir, T., & Yeari, M. (2021, July 12-16). *Exploring the impact of reading single vs. multiple texts on integration synthesis tasks and the underexamined role of topic*. Society for the Scientific Study of Reading (SSSR) Conference [virtual].

27. **Firetto, C. M.** (2021, April 8-12). *Embedding authentic discussions in professional development to promote science teachers' discussion competency and enactment*. American Educational Research Association (AERA) Annual Meeting [virtual].

26. **Firetto, C. M.**, Hyatt, J.-P. K., Kingsbury, J., & Penkrot, T. (2020, August 6-9). *Using in-class learning activities to promote integration strategy use*. American Psychological Association (APA) Annual Convention, Washington, DC, United States [virtual]. DOI [10.17605/OSF.IO/K2DHU](https://doi.org/10.17605/OSF.IO/K2DHU)

25. **Firetto, C. M.** (2020, April 17-21). *Leveraging teacher-researcher collaborations to support students' critical-analytic thinking through discussion* [Discussant]. American Educational Research

Association (AERA) Annual Meeting, San Francisco, CA, United States. (Conference Canceled).

24. **Firetto, C. M.** (2020, April 17-21). Building teachers' critical-analytic thinking and discussion efficacy through content discussions. In C. Firetto (Chair), *Leveraging teacher-researcher collaborations to support students' critical-analytic thinking through discussion* [Symposium]. American Educational Research Association (AERA) Annual Meeting, San Francisco, CA, United States. (Conference Canceled).

23. **Firetto, C. M.**, & Mulhearn, S. C.* (2018, August 9-12). *The influence of text format on college biology students' integration: Multiple vs. single texts*. American Psychological Association (APA) Annual Convention, San Francisco, CA, United States.

22. Croninger, R. M. V.*, Murphy, P. K., **Firetto, C. M.**, Li, M.*, & Wei, L.* (2018, August 9-12). *Facilitating small-group discussions across different ability groups: Effect of teacher discourse moves*. American Psychological Association (APA) Annual Convention, San Francisco, CA, United States.

21. Murphy, P. K., Greene, J. A., **Firetto, C. M.**, Li, M.*, Duke, R. F.*, Croninger, R. M. V.*,& Lobczowski, N. G.* (2018, April 13-17). *Promoting students' multifaceted literacy competence through Quality Talk: A quasi-experimental study*. American Educational Research Association (AERA) Annual Meeting, New York, NY, United States.

20. Murphy, P. K., **Firetto, C. M.**, & Li, M.* (2018, April 13-17). *Knowledge and the MDL: What we knew, what we know, and what remains unknown*. American Educational Research Association (AERA) Annual Meeting, New York, NY, United States.

19. Allen, E.*, Montalbano, C.*, Greene, J. A., Murphy, P. K., Butler, A. M., **Firetto, C. M.**, & Wei, L.* (2017, August 3-6). *The effects of Quality Talk on STEM relational reasoning*. American Psychological Association (APA) Annual Convention, Washington, DC, United States.

18. Li, M.*, Murphy, P. K., **Firetto, C. M.**, & Wei, L.* (2017, August 3-6). *Effects of text and learner characteristics on the acquisition of high-level comprehension*. American Psychological Association (APA), Annual Convention, Washington, DC, United States.

17. Montalbano, C.*, Allen, E.*, Greene, J. A., Murphy, P. K., **Firetto, C. M.**, & Wei, L.* (2017, August 3-6). *Investigating changes in relational reasoning in small-group discourse over time and across ability groups*. American Psychological Association (APA), Washington, DC, United States.

16. Wei, L.*, **Firetto, C. M.**, Murphy, P. K., Li, M.*,& Croninger, R. M. V.* (2017, April 27-May 1). *The effect of using a graphic organizer on fourth graders' argumentative writing*. American Educational Research Association (AERA) Annual Meeting, San Antonio, TX, United States.

15. **Firetto, C. M.**, Murphy, P. K., Greene, J. A., Li, M.*, Wei, L.* Montalbano, C.*, Hendrick, B.*,& Croninger, R. M. V.* (2016, April 8-12). *Using Quality Talk to foster transfer of students' critical-analytic discussions to their argumentative writing*. American Educational Research Association (AERA) Annual Meeting, Washington, DC, United States.

14. Greene, J. A., Murphy, P. K., Butler, A., **Firetto, C. M.**, Allen, E. M.*, Wang, J.*, Wei, L.* & Yu, S.* (2016, April 8-12). Fostering relational reasoning and scientific understanding through Quality Talk discourse. In D. Dumas (Chair), *The malleability of relational reasoning: Effects of direct or indirect interventions on learning processes and outcomes* [Symposium]. American Educational Research Association (AERA) Annual Meeting, Washington, DC, United States.
13. Kosh*, A. E., Greene, J. A., Murphy, P. K., Burdick, H., & **Firetto, C. M.** (2016, April 7-11). *Measuring reading comprehension through automated analysis of students' small-group discussions*. National Council on Measurement in Education (NCME) Annual Meeting, Washington, DC, United States.
12. Murphy, P. K., Greene, J. A., **Firetto, C. M.**, Hendrick, B.*, Montalbano, C.*, Li, M.* & Wei, L.* (2016, April 8-12). *Enhancing students' comprehension and critical-analytic thinking through Quality Talk discussions*. American Educational Research Association (AERA) Annual Meeting, Washington, DC, United States.
11. Murphy, P. K., Greene, J. A., **Firetto, C. M.**, Li, M.*, Lobczowski, N. G.*, Croninger, R. M. V.* & Duke, R. F.* (2016, April 8-12). Examining the effect of homogeneous and heterogeneous grouping in classroom discourse. In L. Ebersöhn (Chair), *Public scholarship to educate diverse democracies* [Symposium]. World Education Research Association (WERA), Washington, DC, United States.
10. Murphy, P. K., Greene, J. A., **Firetto, C. M.**, Montalbano, C.*, Li, M.* & Wei, L.* (2016, April 8-12). Promoting relational reasoning in elementary students' writing. In D. Dumas (Chair), *The malleability of relational reasoning: Effects of direct or indirect interventions on learning processes and outcomes* [Symposium]. American Educational Research Association (AERA) Annual Meeting, Washington, DC, United States.
9. Wei, L.*, Murphy, P. K., & **Firetto, C. M.** (2016, April 8-12). *Toward an integrated taxonomy of teacher discourse moves in small-group, text-based discussions*. American Educational Research Association (AERA) Annual Meeting, Washington, DC, United States.
8. **Firetto, C. M.**, & Van Meter, P. N. (2015, April 16-20). *Inspiring integration in college students reading multiple biology texts*. American Educational Research Association (AERA) Annual Meeting, Chicago, IL, United States.
7. Long, V. A.*, **Firetto, C. M.**, & Murphy, P. K. (2014, August 7-10). *Transfer effects from small group discussions of text to writing*. American Psychological Association (APA) Annual Convention, Washington, DC, United States.
6. Turns, S. R., Van Meter, P. N., **Firetto, C. M.**, & Litzinger, T. A. (2013, June 23-26). *Development of an intervention to improve students' conceptual understanding of thermodynamics*. American Society for Engineering Education (ASEE) Annual Conference and Exposition, Atlanta, GA, United States.
5. Passmore, L., Litzinger, T. A., Masters, C., Turns, S. R., Van Meter, P. N., **Firetto, C. M.**, & Zappe, S. (2010, June 20-23). *Sources of students' difficulties with couples and moments in statics*.

American Society for Engineering Education (ASEE) Conference and Exposition, Louisville, KY, United States.

4. Litzinger, T. A., **Firetto, C. M.**, Van Meter, P. N., Passmore, L., Masters, C., Turns, S. R., & Zappe, S. (2009, June 14-17). *Improving students' ability to model during problem-solving in statics*. Presented at the annual conference and exposition of the American Society for Engineering Education (ASEE), Austin, TX, United States.
3. Litzinger, T. A., **Firetto, C. M.**, Van Meter, P. N., Passmore, L., Masters, C., & Higley, K. (2008, June 22-25). *Identifying and remediating difficulties with problem-solving in statics*. American Society for Engineering Education (ASEE) Annual Conference and Exposition, Pittsburgh, PA, United States.
2. **Firetto, C. M.**, & Van Meter, P. N. (2008, March 24-28). *The effects of surface features and readers' goals on intertextuality*. American Educational Research Association (AERA) Annual Meeting, New York, NY, United States.
1. Van Meter, P. N., **Firetto, C. M.**, & Higley, K. (2007, April 9-13). The integration of representations: A program of research for academic development. In P. A. Alexander (Chair), *The roles of perception, cognition, emotion, and social factors in academic development* [Symposium]. American Educational Research Association (AERA) Annual Meeting, Chicago, IL, United States.

Invited, External Audience

3. **Firetto, C. M.** (2021, February 26). *Exploring active learning exercises in introductory anatomy and physiology courses* [Invited presentation]. Teachers College Doctoral Council (TCDC) Education Research Conference [virtual].
2. Murphy, P. K., Greene, J. A., & **Firetto, C. M.** (2016, December). A quantitative and qualitative examination of homogeneous and heterogeneous grouping in classroom discourse [Presentation]. Institute of Education Sciences Annual Principal Investigators Meeting, Washington, DC, United States.
1. Murphy, P. K., Greene, J. A., & **Firetto, C. M.** (2015, December). *Quasi-experimental evidence of the efficacy of Quality Talk's effects upon fifth-grade students' argumentation skills* [Presentation]. Institute of Education Sciences Annual Principal Investigators Meeting, Washington, DC, United States.

Invited, Internal Audience

6. **Firetto, C. M.**, & Yan, L. (2025, November 20). AI-Powered coding of elementary students' small-group discussions about text. AI Carnival, Tempe, AZ, United States.
5. **Firetto, C. M.** (2021, October). *Supporting learners' high-level comprehension of text-based content through tasks and talk* [Invited]. MLFTC PhD Transdisciplinary Seminar, Tempe, AZ, United States.
4. **Firetto, C. M.** (2018, November). *Transdisciplinary research panel* [Collaborative research presentation]. MLFTC All-College Meeting, Tempe, AZ, United States.

3. Murphy, P. K., Greene, J. A., **Firetto, C. M.**, & Butler, A. M. (2016, October). *Using Quality Talk to enhance high-level comprehension in science and language arts* [Presentation]. Research Penn State 2016: Materials Day Reinvented at the Pennsylvania State University, University Park, PA, United States.
2. Li, M.*, **Firetto, C. M.**, Murphy, P. K., Greene, J. A., Wei, L.*, Croninger, R. M. V.* & Montalbano, C.* (2015, November). *Examining the transfer effects of Quality Talk on fourth graders' written argumentation* [Presentation]. Science of Learning Poster Conference at the Pennsylvania State University, University Park, PA, United States.
1. Wei, L.*, Murphy, P. K., & **Firetto, C. M.** (2015, February). *Toward an integrated taxonomy of teacher moves in text-based small-group discussions* [Presentation]. Graduate Student Research Symposium at the Pennsylvania State University, University Park, PA, United States.

Academic Leadership in Scholarship

Expertise Provided to National Science Foundation (NSF) Grants

- *Advisory Board Member* - Alexander De Rosa (PI); Research Initiation: Facilitating Knowledge Transfer within Engineering Curricula (NSF PFE-RIEF #2301341) 2022-2025
- *External Evaluator* - P. Karen Murphy (PI); Enhancing Teacher Preparation in Elementary Mathematics through a Research-based Framework for Teacher-facilitated Discussions (NSF IUSE Award # 1912415) 2020-2025
- *Educational Consultant and Contributor* - Sarah Zappe (PI); Workshop: Building a Framework to Understand the Impact of Entrepreneurship Support Programs (ESP) on the Formation of Engineers (NSF EEC# 2220329) 2023-2024

Awards in Recognition of Scholarship

Mary Lou Fulton Teachers College – Promising Research Scholar Award 2021

Teaching and Mentorship

Teaching (Lead Instructor)

* Denotes doctoral student co-teaching or mentoring opportunity

Assistant Professor of Educational Psychology, Arizona State University
TEL 318: Instructional Thought & Action: Assessment for Learning

Prospective educators examine theories of assessments exploring why we assess, how we assess, and the ways assessments are interpreted in classroom settings. Emphasizes designing, selecting, implementing, and/or evaluating appropriate assessments specific to pathways and for students with diverse educational needs across all grade levels.

Spring 2026	
Summer 2025	
Spring 2024	
Fall 2024 (2x)	
Spring 2023*	
Fall 2022	

TEL 504: Learning and Instruction	Introduces psychology of learning and instruction. Includes the foundations of learning theories and their application to educational practice.	Spring 2026, 2025, 2024, 2023, 2022, 2021, 2018
DCI 702: Transdisciplinary Seminar II	Guides PhD students to study, understand and solve multiple aspects of the problem area in a transdisciplinary fashion, approaching the problem from multiple theoretical perspectives, methodological practices and disciplines.	Spring 2025
EDP 310: Educational Psychology for Non-Teachers, Motivation	Human behavior in educational situations. Individual differences, factors affecting learning, behavioral and cognitive learning, motivation, testing, and assessment.	Summer 2022 Summer 2021 Summer 2019
EDP 311: Educational Psychology for Future Teachers	Planning and conducting effective instruction based on learning theories and principles. This course specifically addresses student learning. We examine beliefs about how students learn, how to assess students learning, and the processes of motivation that initiate and sustain student learning. This course also exposes prospective teachers to the practice of teacher inquiry; how can teachers examine and reflect upon their current teaching practices and using data and research to create positive learning environments for their students.	Spring 2022 Fall 2021* (2x) Spring 2021 Fall 2020* (2x) Spring 2020* Fall 2019 (2x) Fall 2018 (2x) Fall 2017
EDP 313: Childhood and Adolescence	Principles underlying total development of pre- and early-adolescent children. Emphasizes physical, intellectual, social, and emotional development with practical implications for teachers.	Summer 2018
TEL 215: Introduction to Child & Adolescent Development	Emphasizes the cognitive, social-emotional, and physical domains of child and adolescent development.	Spring 2018
Adjunct Faculty , Bucknell University		
EDUC 201: Educational Psychology	This is a required course for all certification students and involves observation of teachers and classrooms in local schools and associated assignments.	Spring 2011 (2x) Fall 2010 (2x)
Course Instructor , The Pennsylvania State University		
EDPSY 297B: Learning in STEM	Designed to enable success for entering first year science and engineering undergraduate students.	Summer 2013
EDPSY 010: Individual Differences and Education		

Overview of the major theories and significant research on the development and explanation of individual differences and how those differences affect the education of school-age children.

Fall 2011

EDPSY 014: Learning and Instruction

This introduction to educational psychology course provides students with an understanding of the major concepts, principles and theories, and related research of learning and teaching.

Summer 2010
Summer 2009
Summer 2008

Teaching (Course Coordination and Curriculum Design)

TEL 318: Instructional Thought & Action: Assessment for Learning

- Course Coordinator and Developer (ongoing)
- Estimated annual impact on over 800 ASU students and future teachers

TEL 504: Learning and Instruction

- Course Coordinator and Developer (ongoing)

EDP 310: Educational Psychology for Non-Teachers: Motivation (1-credit)

- Developer (2021-2022)

EDP 311: Educational Psychology for Future Teachers

- Course Coordinator and Co-Developer (2021-2022)

TEL 310: Instructional Thought & Action: Instructional Design and Planning

- Co-developer (2021)

Mentoring (Committee Membership)

Committee Membership, ASU - Degree Conferred

- Doctoral Chair/Advisor (1 student)
- Committee Member (4 students)

Committee Membership, ASU - In Progress

- Doctoral Chair/Advisor (1 student)

External Committees, International

- External Reviewer (3 students)

Mentoring (Supervising Research Projects)

Graduate Students, 2x Secondary Research Supervisor

Teaching Professionals, 4x Fulbright Teacher Exchange, Faculty Mentor Supervisor

Undergraduate Students. 2x, Barrett Honors College, Enrichment Credit Supervisor

Awards for Mentorship

[ASU Graduate College – Outstanding Instructional Faculty Mentor Award](#)

2022

Service

Internal Professional Service

Arizona State University

- University Undergraduate Standards Committee Member (2023-present)
- Outstanding Faculty Mentor Awards Review Committee Member (2022-2023)
- Seed Funding Grant Proposal Reviewer [ISSR] (2022 - present)
- Graduate Student Poster Contest Reviewer [ISSR] (2022-present)

Mary Lou Fulton Teachers College

- Governance and Policy Committee Member (2021-2024)
- Learning, Literacies, and Technologies (LLT) PhD Committee Member (2021-present)
 - LLT Research Grant subcommittee chair (2022-present)
- MLFTC Internal Grant Reviewer (2019, 2021, 2023)
- Search Committee Member: Gifted Education Program Co-instructor Pool (2022)

Division for Advancing Educator Preparation (DEP) & Elementary Education (EED) Program/Pathway

- Co-Chair Continuous Improvement TAG (Term: 2020-Present)
 - Working Group Chair for UOEEE Assessment Plans and Reporting, Program Learning Outcome Data (via Common Assessments and End of Program Surveys)

External Professional Service

Professional Service

- Governing Board Member for Desert Heights Charter Schools District (2025-present)
- American Psychological Association (APA)
 - Division 15 Representative to APA Council (2024-2027).
 - Program Co-Chair (2020-2021) for Division 15
 - Reviewer for APA Division 15 Proposals
 - Reviewer for Division 15 Graduate Student Poster Award (2018)
 - Discussion Facilitator: Collaborative Session *Applying Psychological Science to Teaching, Learning, and Well-Being in Schools* (2018)
- American Educational Research Association (AERA)
 - Awards Coordinator (2025-present)
 - Reviewer for AERA Division C Proposals
 - Session Chairperson (2017)
 - Reviewer for the AERA Division C Graduate Student Research Award (2016)

- National Science Foundation (NSF)
 - Discussion Facilitator: *Effective Practices for Assessment in Engineering Education* (2009)
 - Discussion Facilitator: *Mechanics Education Workshop* (2009)
- Textbook/Handbook Reviewer
 - Educational Psychology (2018, 2019, 2022)
 - Child Development (2019)
 - Taylor and Francis handbook prospectus (2019)

Professional Development Workshops Delivered

- *Formative assessment for reflective practice* (February 2021). Distance Learning Webinar [Panel Member], virtual. <https://www.youtube.com/watch?v=HLg24dnvYXw>
- *How to engage in Quality Talk about science content* (May 2020). Quantum Energy and Sustainable Solar Technologies (QESST) Research Experience for Teachers (RET) summer program, virtual.
- *How to engage in Quality Talk about science content* (May 2018). Quantum Energy and Sustainable Solar Technologies (QESST) Research Experience for Teachers (RET) summer program, Tempe, AZ, United States.
- *How'd they do that? Advice from early career colleagues with grant writing experience* (March 2018). Junior Faculty Development Workshop [Panel Member], Tempe, AZ, United States.
- *Quality Talk in science classrooms* (June 2017). Materials Research Science and Engineering Centers Research Experience for Teachers program, University Park, PA, United States
- *Facilitating effective small-group discussions* (August 2015). CHEM 110 Teaching Assistants in Training Workshop, University Park, PA, United States.
- *Myths about how students learn in STEM courses* (November 2013). Mathematics Teaching Group and Center for Excellence in Science Teaching Workshop, University Park, PA, United States. <https://meeting.psu.edu/p7ab3x59vg1/>

Editorial Boards and Reviewer Experience

Editorship

- *Contemporary Educational Psychology* (Associate Editor) 2022-Present
- *SAGE Open* (Editor) 2015-Present

Editorial Board

- *Review of Educational Research* (Board Member 2018 - 2024)
- *Contemporary Educational Psychology* (Board Member 2017 - 2022)

Ad Hoc Reviewer

<ul style="list-style-type: none"> • <i>British Journal of Educational Psychology</i> • <i>Educational Psychologist</i> • <i>Elementary School Journal</i> • <i>International Journal of Educational Development</i> • <i>International Journal of STEM Education</i> • <i>Journal of Computer Assisted Learning</i> 	<ul style="list-style-type: none"> • <i>Journal of Educational Psychology</i> • <i>Journal of Engineering Education</i> • <i>The Journal of Experimental Education</i> • <i>Learning and Instruction</i> • <i>Learning and Individual Differences</i> • <i>Thinking Skills and Creativity</i>
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Award for Service

[Outstanding Reviewer Award – Review of Educational Research](#)

(2017)

Carla M. Firetto (17 of 17)