

***Dov Zazkis***  
*CURRICULUM VITAE*

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**Academic Degrees**

2013	PhD	Mathematics Education	University of California San Diego/ San Diego State University <i>(Dissertation: Calculus Students' Representation Use in Group-Work and Individual Settings)</i>
2009	MSc	Mathematics <i>Magna cum laude</i>	University of Northern British Columbia (Canada) <i>(Thesis: Hamilton Cycles in Highly Symmetric Graphs)</i>
2006	BSc	Mathematics (major) Statistics (minor)	Simon Fraser University (Vancouver, Canada)

**Academic Positions**

2015-Present	Arizona State University, Assistant Professor, School of Mathematical and Statistical Sciences.		
2014-2015	Oklahoma State University, Visiting Assistant Professor, Department of Mathematics		
2013-2014	Rutgers University, Post-Doctoral Researcher (Proving Styles in University Mathematics), Graduate School of Education.		
2012-2013	San Diego State University, Research Assistant (Characterizing Successful Programs in College Calculus), Department of Mathematics and Statistics.		
2010-2013	San Diego State University, Teaching Assistant (Instructor), Department of Mathematics and Statistics.		
2009-2010	University of California San Diego, Research Assistant (Transforming Attitudes via Best Practices CS1), Department of Computer Science.		
2009-2009	Simon Fraser University, Online-Course Developer/Departmental Assistant, Department of Mathematics.		
2008-2009	University of Northern British Columbia, Graduate Instructor, Department of Mathematics and Statistics.		
2007-2008	University of Northern British Columbia, Graduate Teaching Assistant, Department of Mathematics and Statistics.		

**Articles in Refereed Journals**

16. \*David, E.J., & **Zazkis, D.** (accepted with minor revisions). Characterizing introduction to proof courses: A survey of R1 and R2 institutions across the U.S.

15. \*Lew, K.M., & Zazkis, D. (in press). Undergraduate Mathematics Students' at-home exploration of a prove-or-disprove task. *Journal of Mathematical Behavior*.
14. Cook, J.P. & Zazkis, D. (2017) a contradiction in how introductory textbooks approach matrix multiplication? *IMAGE: The Bulletin of the International Linear Algebra Society*, 59, 21-22.
13. Zazkis, D., & Mills, M. (2017). The roles of transitory arguments in students' formalization processes. *Research in Mathematics Education*, 19(3), 257-275.
12. Zazkis, D. (2016). On Transitions Between Representations: The Role of Contextual Reasoning in Calculus Problem Solving. *Canadian Journal of Science, Mathematics and Technology Education*, 16(4), 374-388.
11. Zazkis, D., Weber, K., & Mejia-Ramos, J.P. (2016). Bridging the gap between graphical arguments and verbal-symbolic in calculus. *Educational Studies in Mathematics*, 93(2), 155-173.
10. Zazkis, D., & <sup>1</sup>\*Villanueva, M. (2016). Student conceptions of what it means to base a proof on an informal argument. *International Journal of Research in Undergraduate Mathematics Education*, 2, 318-337.
9. Zazkis, D. & Zazkis, R. (2016). Prospective teachers' conceptions of proof comprehension: Revisiting a proof of the Pythagorean theorem. *International Journal of Science and Mathematics Education*, 14(4), 777–803.
8. Zazkis, D., Weber, K., & Mejia-Ramos, J.P. (2015). The proving behaviors and competencies of highly successful mathematics majors. *Journal of Mathematical Behavior*, 39, 11–27.
7. Zazkis, D. (2015). Monsters, secret lovers and former friends: Personification as a lens into pre-service teachers' relationship with mathematics. *For the learning of mathematics*, 35(1), 33-38.
6. Leung\*, K., Shen, S.P., Rasmussen, C., & Zazkis, D<sup>2</sup>. (2014). Calculus from a statistical perspective. *College Mathematics Journal*, 45(5), 377-386.
5. Zazkis, D. (2014). Proof-scripts as a lens for exploring students' understanding of odd/even functions. *Journal of Mathematical Behavior*, 35, 31-43.
4. Zazkis, R. & Zazkis, D. (2014) Script writing in the mathematics classroom: Imaginary conversations on the structure of numbers. *Research in Mathematics Education*, 16(1), 54-70.
3. Zazkis, D., Rasmussen, C., & Shen, S.P. (2014). A mean-ingful approach for teaching the concept of integration. *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies*, 24(2), 116-137.

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<sup>1</sup> The “\*” symbol indicates that the co-author was a student or post doctoral fellow at the time the manuscript was written.

<sup>2</sup> CMJ stipulates that authors' names appear in alphabetical order. I should be second author.

2. **Zazkis, D.** (2012). On students' conceptions of arithmetic average: the case of inference from a fixed total. *International Journal of Mathematical Education in Science and Technology*, 1-10.
1. Zazkis, R. & **Zazkis, D.** (2011). The significance of mathematical knowledge in teaching elementary methods courses: Perspectives of mathematics teacher educators. *Educational Studies in Mathematics*, 76(3), 247-263.

### **Chapters in Edited Books**

4. Cook, J.P., **Zazkis, D.**, & \*Estrup, A. (2018). Rationale for Matrix Multiplication in Linear Algebra Textbooks. In S. Stewart, C. Andrews-Larson, A. Berman, & M. Zandieh (Eds). *Challenges and Strategies in Teaching Linear Algebra* (103-125). Springer international publishing.
  3. **Zazkis, D.**, & Cook, J.P. (2017). Interjecting scripting studies into a mathematics education research program: The case of zero-divisors and the zero-product property. In R. Zazkis & P. Herbst (Eds). *Scripting Approaches in Mathematics Education: Mathematical Dialogues in Research and Practice* (205-228), New York: Springer.
  2. **Zazkis, D.** & \*Nuñez, G. (2015). How Departments Use Local Data to Inform and Refine Program Improvement. In D. Bressoud, V. Vesa & C. Rasmussen (Eds). *Insights and Recommendations from the MAA National Study of College Calculus* (123-132), Washington, DC: MAA Press.
  1. **Zazkis, D.** & Zazkis, R. (2013). Wondering about wonder in mathematics. In K. Egan, A.I. Cant & G. Judson (Eds). *Wonder-full Education: The centrality of wonder in teaching and learning across the curriculum* (66-85). New York: Routledge.
- Zazkis, D.** & Zazkis, R. (2014). Wondering about wonder in mathematics. In M. Pitici (Ed). *The Best Writing on Mathematics*, NJ: The Princeton University Press. (Reprinted from *Wonder-full Education: The centrality of wonder in teaching and learning*, pp. 66-85, by A. Cant, K. Egan, & G. Judson Eds. 2013, New York: Routledge.)

### **Books**

1. **Zazkis, D.** (2009). *Considering Symmetries of the Middle Levels Problem: A Novel Algorithmic approach*. VDM Verlag.

### **Book reviews**

1. Zazkis, R., & **Zazkis, D.** (2013). Mathematical thinking: how to develop it in the classroom. *Research in Mathematics Education*, 15(1), 89-95.

### **Refereed Publications Under Review or in Preparation**

- \*Mirin, A. & **Zazkis, D.** (under review). Making Implicit Differentiation Explicit.
- Dawkins, P.C., **Zazkis, D.**, Cook, J.P., (under review). The interdependencies between sets, logic and proof in transition to proof textbooks.
- \*Lew, K.M., & **Zazkis, D.** (in preparation). What makes a good student proof? Differences in instructor grading behavior point to differences in instructor priorities.
- Dawkins, P.C. & **Zazkis, D.** (in preparation). What connections do students make when reading proofs?

**Zazkis, D.**, & Moss, D. (in preparation). Assessing the effects of mathematics education readings on pre-service teachers' understandings of teacher-student interactions using lesson plays.

**Articles in Refereed Conference Proceedings**

22. Dawkins, P.C., & **Zazkis, D.** (2018). Computational and Inferential Orientations: Lessons from observing undergraduates read mathematical proofs. *Proceedings of the Conference for Psychology of Mathematics Education - North American Chapter*. Greenville, South Carolina.
21. \*Lew, K.M., & **Zazkis, D.** (2018). An Undergraduate Mathematics Student's Counterexample Generation Process. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*. San Diego, CA.
20. \*David, E.J., & **Zazkis, D.** (2017). Characterizing the Nature of Introduction to Proof Courses: A Survey of R1 and R2 Institutions across the U.S. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*. San Diego, CA.
19. **Zazkis, D.**, & Mamolo, A. (2016). Personification as a lens into relationships with mathematics. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*. Pittsburgh, PA.
18. Mills, M., & **Zazkis, D.** (2016). Students' formalization of pre-packaged informal arguments. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*. Pittsburgh, PA.
17. **Zazkis, D.**, & \*Villanueva, M. (2015). Student conceptions of what it means to base a proof on an informal argument. *Proceedings of the Conference for Psychology of Mathematics Education - North American Chapter*, (pp. 379-386). East Lansing, Michigan.
16. **Zazkis, D.**, Weber, K., & Mejia-Ramos, J.P. (2015). How do mathematics majors translate informal arguments into formal proofs? *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp. 16-30). Pittsburgh, PA. [Runner-up, best paper award]
15. **Zazkis, D.**, Weber, K., & Mejia-Ramos, J.P. (2015). Variation in Successful Mathematics Majors Proving. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp.1086-1094). Pittsburgh, PA.
14. **Zazkis, D.**, Weber, K., & Mejia-Ramos, J.P. (2014). Activities that mathematics majors use to bridge the gap between informal arguments and proofs. *Proceedings of the Conference for Psychology of Mathematics Education*, (pp. 417-424). Vancouver, Canada.
13. Rasmussen, C., Ellis, J. & **Zazkis, D.** (2014). Features of successful calculus programs at five doctoral degree granting institutions. *Proceedings of the Conference for Psychology of Mathematics Education*, (pp.33-40). Vancouver, Canada.
12. Zazkis, R. & **Zazkis, D.** (2014). Proof Scripts as a Lens for Exploring Proof Comprehension. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp. 1198-1204). Denver, CO.

11. **Zazkis, D.** (2014). Comparing Calculus Students' Representation Use Across Different Settings. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp. 1191-1196). Denver, CO.
10. Larsen, S., Johnson, E. & **Zazkis, D.** (2014). Characteristics of Successful Programs in College Calculus: How Calculus Instructors Talk about their Students. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp.792-796). Denver, CO.
9. Rasmussen, C., Ellis, J. & **Zazkis, D.** (2014). Lessons Learned From Case Studies of Successful Calculus Programs at Five Doctoral Degree Granting Institutions. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp. 999-1004). Denver, CO.
8. **Zazkis, D.** (2013). Prompted and unprompted transitions between representational modes in calculus. *Proceedings of the Conference for Psychology of Mathematics Education - North American Chapter*, (pp. 1232-1239). Chicago, Illinois.
7. **Zazkis, D.** (2013). Odd dialogues on odd and even functions. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp. 314-320). Denver, CO.
6. **Zazkis, D.** (2013). Fostering Students' Understanding of The Connection Between Function and Derivative: A Dynamic Geometry Approach. *Proceedings of the Conference for Research in Undergraduate Mathematics Education* (pp. 694-698). Denver, CO.
5. Bowers, J. & **Zazkis, D.** (2012). Do students flip over the "Flipped Classroom" model for learning college calculus? *Proceedings of the Conference for Psychology of Mathematics Education - North American Chapter*, (pp. 849-852). Kalamazoo, Michigan.
4. **Zazkis, D.** & Rasmussen, C. (2012). Prospective elementary school teachers reinventing integration using means. *Proceedings of the Conference for Psychology of Mathematics Education - North American Chapter*, (pp. 258-261). Kalamazoo, Michigan.
3. Strand, S., Redmond, S. & **Zazkis, D.** (2012). Summing up students' understandings of sigma notation. In S. Brown, S. Larsen, K. Marrongelle & M. Oehrtman (Eds). *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp. 134-147). Portland, OR.
2. **Zazkis, D.** (2011). Redefining integral: Preparing for a new approach to undergraduate calculus. *Proceedings of the Conference for Research in Undergraduate Mathematics Education*, (pp. 243-245). Portland, OR.
1. Simon, B., Kinnunen, P., Porter, L., & **Zazkis, D.** (2010). Experience Report: CS1 for Majors with Media Computation. *Proceedings of the 15th Conference on Innovation and Technology in Computer Science Education (ITiCSE)*, (pp. 214-218).

#### **Research Presentations at International and National Conferences**

21. Dawkins, P.C., & **Zazkis, D.** (2018). Computational and Inferential Orientations: Lessons from observing undergraduates read mathematical proofs. *Psychology of Mathematics Education - North American Chapter*. Greenville, South Carolina.

20. \*Lew, K.M., & **Zazkis, D.** (2018). An Undergraduate Mathematics Student's Counterexample Generation Process. *Research in Undergraduate Mathematics Education*. San Diego, CA.
19. \*David, E.J., & **Zazkis, D.** (2017). Characterizing the Nature of Introduction to Proof Courses: A Survey of R1 and R2 Institutions across the U.S. *Research in Undergraduate Mathematics Education*. San Diego, CA.
18. **Zazkis, D.**, & Mamolo, A. (2016). Personification as a lens into relationships with mathematics. *Research in Undergraduate Mathematics Education*. Pittsburgh, PA.
17. Mills, M., & **Zazkis, D.** (2016). Students' formalization of pre-packaged informal arguments. *Research in Undergraduate Mathematics Education*. Pittsburgh, PA.
16. **Zazkis, D.**, & \*Villanueva, M. (2015). Student Conceptions of What It Means to Base a Proof on an Informal Argument. *Psychology of Mathematics Education*. Lansing, Michigan.
15. **Zazkis, D.**, & \*Villanueva, M. (2015). Can mathematics majors make connections between informal arguments and formal proofs? *Joint Mathematics Meetings*, San Antonio, TX.
14. **Zazkis, D.**, Weber, K., & Mejia-Ramos, J.P. (2015). How do mathematics majors translate informal arguments into formal proofs? *Research in Undergraduate Mathematics Education*, (pp. 16-30). Pittsburgh, PA. [Runner-up, best paper award]
13. **Zazkis, D.**, Weber, K., & Mejia-Ramos, J.P. (2015). Variation in Successful Mathematics Majors Proving. *Research in Undergraduate Mathematics Education*, (pp.1086-1094). Pittsburgh, PA.
12. **Zazkis, D.**, Weber, K., & Mejia-Ramos, J.P. (2014). Activities that mathematics majors use to bridge the gap between informal arguments and proofs. *Psychology of Mathematics Education*. Vancouver, Canada.
11. Zazkis, R. & **Zazkis, D.** (2014). Proof Scripts as a Lens For Exploring Proof Comprehension. *Research in Undergraduate Mathematics Education*. Denver, CO.
10. **Zazkis, D.** (2014). Comparing Calculus Students' Representation Use Across Different Settings. *Research in Undergraduate Mathematics Education*. Denver, CO.
9. **Zazkis, D.** (2013). Prompted and unprompted transitions between representational modes in calculus. *Psychology of Mathematics Education - North American Chapter*. Chicago, Illinois.
8. **Zazkis, D.** (2013). Odd dialogues on odd and even functions. *Research in Undergraduate Mathematics Education*. Denver, CO.
7. **Zazkis, D.** (2013). Fostering Students' Understanding of The Connection Between Function and Derivative: A Dynamic Geometry Approach. *Research in Undergraduate Mathematics Education*. Denver, CO.
6. **Zazkis, D.** (2013). GSP-Based Applets and Students' Understanding of Graphical Calculus Concepts. *Joint Mathematics Meetings*, San Diego, CA.

5. Bowers, J. & **Zazkis, D.** (2012). Do students flip over the “Flipped Classroom” model for learning college calculus? *Psychology of Mathematics Education - North American Chapter*. Kalamazoo, MI.
4. **Zazkis, D.** (2012). Prospective elementary school teachers reinventing integration using means. *Psychology of Mathematics Education - North American Chapter*. Kalamazoo, MI.
3. **Zazkis, D.** (2012). Summing up students' understandings of sigma notation. *Research in Undergraduate Mathematics Education*. Portland, OR.
2. **Zazkis, D.** (2011). Redefining integral: Preparing for a new approach to undergraduate calculus. *Research in Undergraduate Mathematics Education*. Portland, OR.
1. **Zazkis, D.** (2009). Considering symmetries of the middle levels problem: An interesting approach to a special case. *MathFest*. Portland, OR.

### **Awards and Honors**

2015 Runner-up for *best paper award* at Conference for Research in Undergraduate Mathematics Education, Pittsburgh, PA.

2014 Chapter “Wondering about wonder in mathematics” republished in *The Best Writing on Mathematics*.

### **Invited talks**

4. **Zazkis, D.** (October, 2018). Using lesson plays to document changes in preservice teachers' conceptions of teaching. *Mathematics Education Seminar Series*. Middle Tennessee State University.
3. **Zazkis, D.** (2016). Form correct idea to correct proof: students' formalization processes. *Mathematics Education Seminar Series*. University of Haifa. Israel.
2. **Zazkis, D.** (2014). Bridging Informal Arguments and Formal Proofs. *Oklahoma Research in Undergraduate Mathematics Education Conference*. University of Oklahoma, Norman, OK.
1. **Zazkis, D.** (2014). The Role of Informal Arguments in Proving: A Tale of Two Studies with Mathematics Majors. *Mathematics Education Seminar Series*. Texas State University, San Marcos, TX.

### **Grants**

Spencer Research foundation (To be submitted Nov 1, 2018): D. Moss and D. Zazkis.

NSF EHR CORE (To be submitted Dec 3, 2018): InSURE Proofs: Increasing Student Understanding in Reading Mathematical Proofs, P.C. Dawkins (PI), & D. Zazkis (Co-PI).

### **University Teaching**

#### Arizona State University

Mathematical Structures (intro to proof) (MAT 300) [Instructor]

Discrete Mathematics for Secondary Education (MAT 208) [Instructor]

Curriculum and Assessment (MTE 320) [Instructor]

Oklahoma State University  
Calculus I (Math 2144) [Instructor]

San Diego State University  
Number Systems in Elementary Mathematics (Math 210) [Instructor]  
Selected topics in Elementary Mathematics (Math 313) [Instructor]  
Topics in Elementary Mathematics (Math 315) [Instructor]  
Calculus I (Math 150) [Teaching Assistant]

University of Northern British Columbia  
Calculus I (Math 100) [Teaching Assistant]  
Statistics for the Social and Health Sciences (Math 242) [Instructor]

### **Editorial Board Member**

- Canadian Journal of Science, Mathematics and Technology Education (2014- to date)
- Journal of Mathematical Behavior (2017-to date)

### **External Reviewer for Journals**

- Canadian Journal of Science, Mathematics and Technology Education (2012- to date)
- International Journal of Mathematical Education in Science and Technology (2012- to date)
- Journal of Mathematical Behavior (2014- to date)
- Problems, Resources, and Issues in Mathematics Undergraduate Studies (2015- to date)
- International Journal of Research in Undergraduate Mathematics Education (2015- to date)
- International Journal of Science and Mathematics Education (2017 - to date)
- Educational Studies in Mathematics (2018-to date)
- International Journal of Research in Undergraduate Mathematics Education (2018-to date)

### **Supervision**

- Doctoral dissertation advisor: Alison Mirin
- Doctoral committee member: Erika J. David, Ashely Duncan, Emily Kuper-Flores and Janet Sipes.
- Post-Doctoral supervisor: Kristen M. Lew

### **Local Leadership and Service**

- ASU Graduate committee Fall 2018-Present.

### **National Leadership and Service**

- Organized and led a Targeted Session (Working-group) with Rina Zazkis at the Transforming Research in STEM Education conference, 2017. The group called, “Scripting Approaches in STEM Education Research,” introduced physics, chemistry and biology education researchers, to novel research approaches that underpin some of my research.
- NSF grant panel reviewer EHR 2018.

### **Professional and Academic Association Memberships**



- Mathematical Association of America (MAA) and the Special Interest Group of the MAA on Research in Undergraduate Mathematics Education
- Canadian Mathematics Education Study Group (CMESG/GCEDM)
- International Group for the Psychology of Mathematics Education (PME)
- North American Chapter of the International group for the Psychology of Mathematics Education (PME-NA)