

*Curriculum Vitae*  
**Ismail Özgür Zembat**

**General Information**

*Address:* University of Glasgow, School of Education, 11 Eldon St., Office 333,  
Glasgow, G3 6NH, United Kingdom

*E-mail:* ismail.zembat@glasgow.ac.uk

*Phone:* +44 141 330 24 03 (office)

*Marital Status:* Married with two children

*WWW:* <https://www.gla.ac.uk/schools/education/staff/ismailzembat/>  
<https://scholar.google.com.tr/citations?user=ZoRbd4YAAAAJ&hl=en>  
[https://www.researchgate.net/profile/Ismail\\_Zembat](https://www.researchgate.net/profile/Ismail_Zembat)

**Education**

PhD	1999-2004	The Pennsylvania State University	<i>Major:</i> Curriculum & Inst. – Mathematics Education
MSc	1996-1998	Ankara University, Graduate School of Natural and Applied Sciences (Completed 21 credit hours of coursework without the thesis – no degree awarded)	<i>Major:</i> Mathematics
BSc	1992-1996	Ankara University, Faculty of Sciences	<i>Major:</i> Mathematics

**Work Experience**

Oct 1, 2018–cont.	Senior Lecturer, School of Education, University of Glasgow, UK; Deputy Leader for Research and Teaching Group - Pedagogy, Praxis and Faith (2019-...); Programme Leader for Middle Years (Mathematics/Science) Education (2018-2021)
Jan 2016–July 2016	Prof., Head of School of the Graduate Institute for the Social Sciences, Elementary Education Dept. Head (from Sept. 2016-July 2016), Mevlana University, Konya, Turkey
Aug 2012–Jan 2016	Associate Prof., Head of School of the Graduate Institute for the Social Sciences, Elementary Education Dept. Head (from Sept. 2014-2015), Mevlana University, Konya, Turkey
Aug 2007-Aug 2012	Asst. Prof., United Arab Emirates University, Al Ain, Abu Dhabi, UAE
Sep 2004 – Aug 2007	PhD Lecturer - Mathematics Educator, Hacettepe University, Ankara, Turkey
Sept. 2005 – June 07	Mathematics Teacher, Hacettepe University School of Conservatory Middle School (Grades 5-8)
Fall 2002 - Sp 2003	Lecturer, Pennsylvania State University, PA, USA

Spring 2001	Teacher for the doctoral internship, Boalsburg Elementary School, State College, PA – USA [January-June, 2001]
Fall 2000	Teacher for the doctoral internship, Mount-Nittany Middle School, State College, PA – USA [September-December, 2000]
Summer 2000-2004	Research Associate/Assistant, The Pennsylvania State University
Fall-1997	Lecturer, Gazi University Faculty of Commercial and Tourism Training, Ankara - Turkey
Spring-1997	Lecturer, Gazi University Faculty of Technical Training, Ankara - Turkey
Fall-1996	Teacher, Tevfik İleri High School, Ankara-Turkey

### ***Publications (Articles + Books + Book Chapters + Editorials)***

- Zembat, I. Ö., & Gürhan, S. (2023, December). Constructing quadrilateral hierarchy using dynamic geometry environments. *The Scottish Mathematical Council Journal*, 52, 47-51.
- Zembat, I. Ö., & Gürhan, S. (2023). Fostering a student's abstraction of the relationship between parallelogram and trapezoid within quadrilateral hierarchy. *Investigations in Mathematics Learning*. <https://doi.org/10.1080/19477503.2023.2209430>
- Zembat, I. O., Marshall, S., Mio, C., Ward, R., & Leitch, M. (2023, April). Improving established maths teaching practices. *Teaching Scotland*, 96, 44-45. The General Teaching Council for Scotland.
- Zembat, I. O., Mio, C., Evans, G., Elliot, L., & Kabaca, T. (2023, Spring). *Teaching place value conceptually – Part II. Primary Mathematics*, 27(1), 7-10.
- Akar, G. K., Zembat, İ. Ö., Arslan, S., & Thompson, P. (Eds.) (2023). *Quantitative Reasoning in Mathematics and Science Education*. Springer.
- Akar, G.K., Zembat, İ. Ö., Arslan, S., & Belin, M. (2023). *Geometric transformations through quantitative reasoning*. In G. K. Akar, I. O. Zembat, S. Arslan & P. Thompson (Eds.), *Quantitative Reasoning in Mathematics and Science Education* (Vol.21, pp.199-219). Springer.
- Akar, G.K., Zembat, İ. Ö., Arslan, S., & Thompson, P. (2023). *Introduction: Quantitative reasoning in mathematics and science education in the digital era*. In G. K. Akar, I. O. Zembat, S. Arslan & P. Thompson (Eds.), *Quantitative Reasoning in Mathematics and Science Education* (Vol.21, pp. v-viii). Springer.
- Zembat, I. O., Mio, C., Evans, G., Elliot, L., & Kabaca, T. (2022, Summer). *Teaching place value conceptually – Part I. Primary Mathematics*, 26(2), 7-11.
- Zembat, I. O. (2017, May). *Fostering remainder understanding in fraction division. Primary Mathematics*, Summer Issue, 22-27.
- Bingölbali, E., Arslan, S., & Zembat, İ. Ö. (Eds.) (2016). *Mathematics education theories* [in Turkish]. Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. (2016). A comparison of the 1926-2005 Turkish elementary school unified mathematics curricula in the context of measurement [in Turkish]. M. F. Özmantar, A. Öztürk & E. Bay (Eds.), *Elementary school mathematics curricula in the context of reform and change* (pp.211-236). Ankara: Pegem Academy Publishing.
- Bingölbali, E., Arslan, S., & Zembat, İ. Ö. (Eds.) (2016). Theory, theoretical framework and conceptual framework in mathematics education [in Turkish]. In E. Bingölbali, S. Arslan & İ. Ö. Zembat (Eds.), *Mathematics education theories* (pp.1-16). Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. (2016). Types of abstractions according to Piaget [in Turkish]. In E. Bingölbali, S. Arslan & İ. Ö. Zembat (Eds.), *Mathematics education theories* (pp.447-458). Ankara: Pegem Academy Publishing.

- Zembat, İ. Ö. (2016). Constructivism and schemes through Piagetian lenses [in Turkish]. In E. Bingölbali, S. Arslan & İ. Ö. Zembat (Eds.), *Mathematics education theories* (pp.475-488). Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. (2016). Hypothetical learning trajectories and mathematics education [in Turkish]. In E. Bingölbali, S. Arslan & İ. Ö. Zembat (Eds.), *Mathematics education theories* (pp.509-518). Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. & Aslan, M. (2016). Prescriptions guiding prospective teachers in teaching mathematics. *Educational Sciences: Theory & Practice*, 16(3), 735-769.
- Zembat, İ. Ö., Özmantar, M. F., Bingölbali, E., Sandır, H., & Delice, A. (Eds.) (2015). *Mathematical concepts with their definitions and historical development* (2<sup>nd</sup> Ed.) [in Turkish]. Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. (2015). An alternative route to teaching fraction division: Abstraction of common denominator algorithm. *International Electronic Journal of Elementary Education*, 7(3), 399-422.
- Zembat, I. O., & Yasa, S. A. (2015). Using classroom scenarios to reveal mathematics teachers' understanding of sociomathematical norms. *International Journal of Education in Mathematics, Science and Technology*, 3(3), 241-262.
- Zembat, İ. Ö. (2013, 2015). Concept of measurement with its mathematical analysis and the attributes of length, area and volume [in Turkish]. In I. O. Zembat, M. F. Özmantar, E. Bingölbali, H. Şandır, & A. Delice (Eds.), *Mathematical concepts with their definitions and historical development* (2<sup>nd</sup> Ed.) (pp.175-188). Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. (2013, 2015). Translations as part of geometric transformations and its different meanings [in Turkish]. In I. O. Zembat, M. F. Özmantar, E. Bingölbali, H. Şandır, & A. Delice (Eds.), *Mathematical concepts with their definitions and historical development* (2<sup>nd</sup> Ed.) (pp.665-680). Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. (2013, 2015). Rotations as part of geometric transformations and its properties [in Turkish]. In I. O. Zembat, M. F. Özmantar, E. Bingölbali, H. Şandır, & A. Delice (Eds.), *Mathematical concepts with their definitions and historical development* (2<sup>nd</sup> Ed.) (pp.681-694). Ankara: Pegem Academy Publishing.
- Sunker, S., & Zembat, I. O. (2012). Teaching of translations through use of vectors in Wingeom-tr environment. *Elementary Education Online*, 11(1), 173-194.
- Simon, M. A., Saldanha, L., McClintock, E., Akar, G. K., Watanabe, T., & Zembat, I. O. (2010). A developing approach to studying students' learning through their mathematical activity. *Cognition and Instruction*, 28(1), 70-112. doi:10.1080/07370000903430566
- Zembat, I. O. (2010). A micro-curricular analysis of unified mathematics curricula in Turkey. *ZDM - The International Journal on Mathematics Education*, 42(5), 443-455. doi: 10.1007/s11858-010-0236-y
- Zembat, İ. Ö. (2009, 2010, 2012, 2014, 2015). Measurement, main tenets of it and well-known misconceptions [in Turkish]. In E. Bingölbali & M. F. Özmantar (Eds.), *Mathematical difficulties of elementary school students and suggested solutions* (5<sup>th</sup> Ed.) (pp. 127-154). Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. (2008, 2010, 2013, 2015). What is misconception? [in Turkish] In M. F. Özmantar, E. Bingölbali, & H. Akkoç (Eds.), *Mathematical misconceptions and suggested solutions* (4<sup>th</sup> Ed.) (pp. 1-8). Ankara: Pegem Academy Publishing.
- Zembat, İ. Ö. (2008, 2010, 2013, 2015). Different conceptualizations of numbers – Is the problem on numbers, students, or teachers? [in Turkish] In M. F. Özmantar, E. Bingölbali, & H. Akkoç (Eds.), *Mathematical misconceptions and suggested solutions* (4<sup>th</sup> Ed.) (pp. 41-60). Ankara: Pegem Academy Publishing.

- Zembat, I. O. (2008). Pre-service teachers' use of different types of mathematical reasoning in paper-and-pencil versus technology-supported environments. *International Journal of Mathematical Education in Science and Technology*, 39(2), 143-160.
- Zembat, I. O. (2007). The main tenets of direct instruction and constructivism: The case of translations. *Gazi University - Journal of Gazi Faculty of Education*, 27, 195-213.
- Zembat, I. O. (2007). Conceptualization and appreciation of the meaning of assimilation principle by prospective elementary teachers. *Hacettepe University Journal of Education*, 32, 306-318.
- Zembat, I. O. (2007). Understanding the volume formula for rectangular right prisms: A different perspective. *Eurasian Journal of Educational Research*, 27, 205-217.
- Zembat, I. O. (2007). Working on the same problem – concepts; With the usual subjects – prospective elementary teachers. *Elementary Education Online*, 6(2), 305-312.
- Zembat, I. O. (2000). Al-Khwarizmi's contributions to algebra. In M. K. Heid, M. S. Smith, G. W. Blume (Eds.), *Algebra Across the Grades, Part I: 1999 Yearbook* (pp. 37-50). University Park, PA: Pennsylvania Council of Teachers of Mathematics.

### *Published Conference Proceedings*

- Zembat, I. Ö. , Yaşa, S. A., & Aslan, M. (2022). [Teacher knowledge in the context of articulating arithmetic operations and place value](#). In J. Hodgen, E. Geraniou, G. Bolondi, & F. Ferretti (Eds.), *Proceedings of the Twelfth Congress of European Research in Mathematics Education (CERME12)*. (pp. 3735-3742). ERME / Free University of Bozen-Bolzano.
- Zembat, I. O. & Bayram, E. (2016, July). [What it means to have a specialized content knowledge of measurement concepts](#). Paper presented at 13<sup>th</sup> International Congress on Mathematical Education (ICME), Hamburg, Germany.
- Bingölbalı, E., Arslan, S., & Zembat, İ. Ö. (2015, May). Turkish mathematics education research from the perspective of mathematics education theories [in Turkish]. *Turkish Computer and Mathematics Education Symposium-2*. Adıyaman, Turkey: Adıyaman University.
- Yaşa, S. A., & Zembat, İ. Ö. (2015, May). The role of classroom scenarios in revealing teachers' understandings of norms [in Turkish]. *Turkish Computer and Mathematics Education Symposium-2*. Adıyaman, Turkey: Adıyaman University.
- Aslan, M., & Zembat, İ. Ö. (2015, May). Teaching prescriptions guiding mathematics teachers' teaching and the related activities that teachers use [in Turkish]. *Turkish Computer and Mathematics Education Symposium-2*. Adıyaman, Turkey: Adıyaman University.
- Yaşa, S. A., & Zembat, İ. Ö. (2015, April). Levels of mathematics teachers norm perceptions [in Turkish]. 24<sup>th</sup> National Educational Sciences Congress. Niğde, Turkey: Niğde University.
- Zembat, İ. Ö., & Aslan, M. (2014). Prospective middle school teachers' and their conceptions of mathematics teaching [in Turkish]. 11<sup>th</sup> National Science and Mathematics Education Congress. Adana, Turkey: Çukurova University.
- Zembat, İ. Ö., & Aslan, M. (2014). Teaching models prospective middle school teachers use as guides in mathematics teaching [in Turkish]. In I. Şahin, A. Kırar, & S. Alan (Eds.), *International Conference on Education in Mathematics, Science and Technology* (Vol.1, pp.1304). Konya, Turkey: Necmettin Erbakan University.
- Zembat, I. O. (2013). Specialized content knowledge of mathematics teachers in UAE context. In B. Ubuz, Ç. Haser, & M. A. Mariotti (Eds.), *Proceedings of Eighteenth Congress of European Society for Research in Mathematics Education - CERME 8* (Vol.1, pp.3307-3316). Antalya, Turkey: Middle East Technical University.
- Zembat, I. O. (2012). Editorial: How international is IEJME? *International Electronic Journal of Mathematics Education*, 7(2), 42-44.

- Zembat, I. O. (2011). Teachers' subject matter knowledge: UAE Context. In B. Ubuz (Ed.), *Thirty Fifth Annual Meeting of the International Group for the Psychology of Mathematics Education* (Vol.1, pp.412). Ankara, Turkey: Middle East Technical University.
- Zembat, I. O. (2011). Editorial: Reflections on the Continuing Efforts on Restructuring of IEJME. *International Electronic Journal of Mathematics Education*, 6(1), 3-4.
- Zembat, I. O., Alacacı, C., & Argün, Z. (2010). Editorial: Reflections on restructuring of IEJME. *International Electronic Journal of Mathematics Education*, 5(1), 3-4.
- Zembat, I. O. (2010). Prospective elementary teachers' conceptions of volume. *Procedia Social and Behavioral Sciences*, 2, 2111–2115.
- Zembat, I. O. (2010). Closing the gap between current knowledge level of UAE mathematics teachers and the ideal level. *Procedia Social and Behavioral Sciences*, 2, 2116–2120.
- Simon, M. A., Saldanha, L., McClintock, E., Karagoz-Akar, G., Watanabe, T., **Zembat, I. O.** (2007). Understanding students' learning through their activity: Toward a basis for a scientific approach to task design and sequencing. In Lamberg, T., & Wiest, L. R. (Eds.), *Proceedings of the Twenty Ninth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (Vol. 1, 55-62). Stateline (Lake Tahoe), NV: University of Nevada, Reno, USA.
- Heid, M. K., Lunt, J., Portnoy, N., & **Zembat, I. O.** (2006). Ways in which prospective secondary mathematics teachers deal with mathematical complexity. In S. Alatorre, J. L. Cortina, M. Sáiz & A. Méndez (Eds.), *Proceedings of the Twenty Eighth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (Vol. 2, pp. 2-9). Mérida, Mexico: Universidad Pedagógica Nacional.
- Portnoy, Neil, Heid, M. K., Lunt, J., **Zembat, I. O.** (2005). Prospective secondary mathematics teachers unravel the complexity of covariation through structural and operational perspectives. In G. M. Lloyd, M. R. Wilson, J. L. M. Wilkins, & S. L. Behm (Eds.), *Proceedings of the 27th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* [CD-ROM]. Eugene, OR: All Academic.
- Heid, M. K., Blume, G. W., **Zembat, I. O.**, Seaman, W., MacCullough, D., MacDonald, B. (2002). Understanding of function as seen in understanding of multivariate function: The case of prospective secondary mathematics teachers. In D. S. Mewborn & P. Sztajn & D.Y. White & H. G. Wiegel & R. L. Bryant & K. Nooney (Eds.), *Proceedings of the Twenty-fourth Annual Meeting, North American Chapter of the International Group for the Psychology of Mathematics Education* (Vol. 1, pp. 283-293). Athens, GA: ERIC Clearinghouse of the Science, Mathematics and Environmental Education.

#### *Published Translations (from English to Turkish)*

- Van de Walle, J. A., Karp, K. S., & Bay-Williams, J. M. (2012, 2021). Chapter 2 – Exploring what it means to know and do mathematics (**I. O. Zembat, Trans**). In J. A. Van de Walle, K. S. Karp, J. M. Williams (Eds., S. Durmuş, Trans. Editor), *Elementary and Middle School Mathematics: Teaching Developmentally* (10<sup>th</sup> Edition). Ankara: Nobel Yayınevi (on behalf of Pearson Education). (Original work published 2020).
- Van de Walle, J. A., Karp, K. S., & Bay-Williams, J. M. (2012, 2021). Chapter 9 – Developing meanings for the operations (**I. O. Zembat, Trans**). In J. A. Van de Walle, K. S. Karp, J. M. Williams (Eds., S. Durmuş, Trans. Editor), *Elementary and Middle School Mathematics: Teaching Developmentally* (10<sup>th</sup> Edition). Ankara: Nobel Yayınevi (on behalf of Pearson Education). (Original work published 2020).



### *Unpublished Translations [English to Turkish]*

- Erlwanger, S. H. (1973). Benny's conception of rules and answers in IPI mathematics. *The Journal of Children's Mathematical Behavior*, 1(2), 7-26. [This article was translated into Turkish and used for instructional purposes]
- Parris, R. (2008-2012). *Winggeom-tr*. Peanut Software. [Translated into Turkish – Since the developer Prof. Rick Parris passed away, a version of this software is not online anymore but can be shared upon request]

### **(Research) Projects**

- 1. Project name:** Improving Mathematics Teaching Practice in Primary School Settings Using Pupil-centred Pedagogy  
*Funded by:* PPF RTG - School of Education, University of Glasgow, UK (Small Grants)  
*About:*  
*Period:* January 2024 – June 2024  
*Funded for:* £1,300  
*Project Coordinators:* Ismail O. Zembat, Cristina Mio
- 2. Project name:** Enhancing the provision of mathematics education courses - 2  
*Funded by:* School of Education, University of Glasgow, UK (Small Grants)  
*About:* Enhancing the provision of mathematics education courses and improving pre-service teachers' understanding of teaching and learning through the use of hands-on/online manipulatives and supporting materials  
*Period:* January 2022 – June 2022  
*Funded for:* £3,000  
*Project Coordinators:* Cristina Mio, Ismail O. Zembat, Susie Marshall
- 3. Project name:** Enhancing the provision of mathematics education courses - 1  
*Funded by:* School of Education, University of Glasgow, UK  
*About:* Enhancing the provision of mathematics education courses and improving pre-service teachers' understanding of teaching and learning through the use of hands-on/online manipulatives and supporting materials  
*Period:* January 2020 – June 2020  
*Funded for:* £5,000  
*Project Coordinators:* Cristina Mio, Ismail O. Zembat, Susie Marshall, Evelyn McLaren
- 4. Project name:** *School-University Collaboration to Cultivate the Experiences of Students and Schoolteachers in Mathematics (SUCCESS – M)*  
*Funded by:* Pupil Equity Funding (PEF) Grant, Falkirk - Scotland  
*About:* Enriching teaching and learning through a mathematics curriculum development for topics in Primary 5-Primary 7.  
*Period:* March 2019 - March 2020  
*Funded for:* £19,627  
*Project Coordinators:* Ismail O. Zembat & Cristina Mio
- 5. Project name:** Closing the gap between current knowledge level of UAE mathematics teachers and the ideal level;  
*Funded by:* UAE University [previously accepted to be funded by *UAE National Research Foundation* but later transferred to UAE University because of economic/politic conditions in UAE];  
*About:* Investigating the profile of UAE mathematics teachers in terms of their mathematics knowledge level to reveal the gap between their current knowledge level and the expected level;  
*Period:* December 10, 2010 – June 20, 2012;  
*Funded for:* 250,000AED [≅ £44,000].

- Principal Investigators:* Ismail O. Zembat
6. *Project name:* Mid-Atlantic Centre for Mathematics Teaching and Learning;  
*Funded by:* National Science Foundation – USA;  
*About:* Secondary teacher education and curriculum development for secondary teachers;  
*Period:* August 2000 - August 2004;  
*Funded for:* 3 million dollars;  
*Principal Investigators:* M. Kathleen Heid, Glen Blume;  
*Research Associates:* Ismail O. Zembat; Debby MacCullough; Barbara McDonald; Gulseren Karagoz Akar (2002-...) – (other research associates joined the project starting from 2004 and onward)

### ***Research Journal Editorships***

2024 - ...	The Electronic Journal for Research in Science & Mathematics Education (Associate Editor; <a href="https://ejrsme.icsrme.com/about/editorialTeam">https://ejrsme.icsrme.com/about/editorialTeam</a> )
2013 - 2016	International Journal of Education in Mathematics, Science and Technology ( <i>Mathematics Education Section Editor</i> )
Feb 2010-Jan 2014	International Electronic Journal of Mathematics Education (IEJME) ( <i>Editor-in-Chief, Co-Editor, Associate Editor</i> )
2005 - 2006	Hacettepe University Journal of Education. (Associate editor)

### ***Editorial Board Memberships for Research Journals***

2023 - ...	The Curriculum Journal - BERA
2009 - 2010	International Journal for Research in Education
2006 - 2009	Eurasian Journal of Educational Research
2006 - 2009	International Electronic Journal of Mathematics Education (IEJME)

### ***Refereeing for Journals and Research Proposals***

2024 - ...	Data and Research in Education - Research Consortium (DARE-RC) Projects / Pakistan
2019 - ...	Journal of Adult & Continuing Education
2018	Refereeing European Union Projects
2015 - 2017	Mathematics Teaching in the Middle School (Reviewer)
2015 - 2016	KUYEB – Educational Sciences: Theory & Practice (Reviewer)
2009 - 2016	Congress of Educational Research (Mathematics Education Division Committee member, manuscript reviewer) [4 article/year]
2009 - 2016	ZDM (Zentralblatt für Didaktik der Mathematik), Manuscript Reviewer [1 so far].
2009 - 2016	Mathematical Thinking and Learning (Reviewer).
2011, Sept	Served on a committee to review applications for Hamdan-UNESCO Award for excellence in teaching.
2008 - 2010	Ondokuz Mayıs University Faculty of Education Journal (Reviewer)
2008 - 2016	International Journal of Mathematical Education in Science and Technology (Reviewer)
2007 - ...	Reviewing research proposals for Qatar National Research Fund (QNRF, <a href="https://www.qf.org.qa/research/qatar-national-research-fund">https://www.qf.org.qa/research/qatar-national-research-fund</a> ) and Qatar Research, Development, and Innovation Council (QRDI, <a href="https://qrdi.org.qa/en-us/">https://qrdi.org.qa/en-us/</a> ).
2007 - 2015	Journal for Research in Mathematics Education (Reviewer) [1 article/year]
2006 - 2015	Teaching Children Mathematics (TCM) (Reviewer) [1-2 articles/year]

2006 - 2012	School Science and Mathematics (SSM) (Reviewer) [1-2 articles/year]
2006 - 2009	Eurasian Journal of Educational Research (reviewer)
2006 - 2009	International Electronic Journal of Mathematics Education (IEJME) (reviewer).
2006 - 2007	Elementary Education Online (Reviewer)
2004 - 2012	North American Chapter of the International Group for the Psychology of Mathematics Education. (Reviewer) [4-5 articles/year]
2002 - 2004	The Pennsylvania Council of Teachers of Mathematics (Reviewer)

### ***Theses***

**Zembat, I. O.** (2004). Conceptual development of prospective elementary teachers: The case of division of fractions. PhD dissertation, The Pennsylvania State University, University Park, Pennsylvania, USA. ProQuest Digital Dissertations database. (Publication No. AAT 3148695).

### ***Supervision of Master's Dissertations to the Completion***

- Griffin, Deirdre (2021). Developing a conceptual understanding of area and perimeter using the pedagogical approach of teaching through problem solving: A literature review. University of Glasgow, UK.
- Wark, Jordan (2021). What impact does technology have on the teaching and learning experience of primary school mathematics? University of Glasgow, UK.
- Wood, Rebecca (2020). What are ways in which mathematical anxiety can be reduced and how can reduction measures be beneficial at primary and secondary level? University of Glasgow, UK.
- Andrews, Allison (2020). To what extent does 'Glasgow Counts' allow for the findings of cognitive load theory? University of Glasgow, UK.
- Rundell, Sarah (2020). What is the role of justification in a secondary mathematics classroom? University of Glasgow, UK.
- Bayram, Ebru (2016). *Mathematics teachers' specialized content knowledge of measurement concepts and its reflection over their teaching*. Mevlana University, Turkey
- Aslan, Mustafa (2015). *The influence of prospective middle school teachers' adopted teaching models on their mathematics teaching*. Mevlana University, Turkey.
- Gürhan, Sümeyye (2015). Middle school students' development of conceptual understanding of classifying quadrilaterals within technology supported environments. Mevlana University, Turkey.
- Yaşa, Seyit Ali (2015). *The relationship between different grade levels and mathematics teachers' perceptions of norms*. Mevlana University, Turkey.

### ***Supervision of Doctoral Theses to the Completion***

- Alshammari, Yousef Salem H. (2023). Understanding the perspectives of mathematics teachers concerning e-learning in Saudi Arabia. PhD Thesis, University of Glasgow, UK.
- Awaji, Bakri Mohammed (2021). Investigating the effectiveness of using GeoGebra on students' mathematical proficiency. PhD Thesis, University of Glasgow, UK.

### ***Serving in the Doctoral Thesis (Screening) and Comprehensive Exam Committees***

- Güven, Dilşad (2016, May – 2016, December). Gazi University Graduate Institute for Educational Sciences, Ankara - Turkey.
- Ölmez, Yusuf (2015, December). *RTI Modelinin özel eğitime gereksinimi olan 5. sınıf öğrencilerinin matematik öğrenmeleri üzerindeki etkililiğinin incelenmesi* [Investigating the effectiveness of RTI



- model on mathematics learning of fifth graders with special needs*]. Gazi University, Ankara, Turkey.
- Kaplan, Hatice Aydan (2015, April). *İlköğretim matematik öğretmenlerinin teşhis yeterliliklerinin belirlenmesi [Determining Diagnostic Competence of Elementary Mathematics Teachers]*. Gazi University, Ankara, Turkey.
- Camci, Faik (2014, December – 2016, December). Anadolu University Graduate Institute for Educational Sciences, Eskişehir - Turkey.
- Özdemir, Nesibe (2015, October 23). Necmettin Erbakan University Graduate Institute for Educational Sciences, Konya - Turkey.

#### ***Serving in the Master's Dissertations Committees***

- Lale, Eralp (2016, Jan 29). *Ortaöğretim matematik öğretmenliği bölümü 4'üncü sınıf öğretmen adaylarının matematiksel modelleme dersindeki yansıtıcı düşünme düzeylerinin incelenmesi*. Gazi Üniversitesi, Ankara, Türkiye.
- Turan, Selva Büşra (2016, Jan 21). Necmettin Erbakan Üniversitesi, Konya, Türkiye.
- Öner, Abdulkadir (2013, July). *The Effects of Computer Assisted Instruction on Preservice Elementary Mathematics Teachers' Concept Images Related to the Trigonometric Functions' Periods*. Master Thesis, Necmettin Erbakan University, Konya, Turkey.
- Marashdi, Hanan (2012). *Investigation of self-regulated learning and motivational beliefs in mathematics achievement of 12<sup>th</sup> scientific section students in Al Ain*. Master Thesis, United Arab Emirates University, Al Ain, UAE.
- Erturan, Derya (2007). *7. sınıf öğrencilerinin sınıf içindeki matematik başarıları ile günlük hayatta matematiği fark edebilmeleri arasındaki ilişki (Relation of 7<sup>th</sup> grade students' mathematics achievement in classroom environment and their perceiving of daily life mathematics)*. Master's Thesis, Hacettepe University, Ankara.

#### ***Serving in Departmental and Faculty/School Level Roles/Committees***

##### ***1. University of Glasgow, UK***

- Deputy Leader for Research and Teaching Group (RTG) - Pedagogy, Praxis and Faith (2019-...)
- Programme Leader for Middle Years (Mathematics/Science) Education (2018-2021)
- Mathematics Subject Lead for PGDE Primary & MEd Educ Programmes

##### ***2. Mevlana University, Turkey***

- Director/Dean/Head of School for The Graduate Institute for the Social Sciences, Mevlana (Rumi) University [August 10, 2012 – July 2016]
- Department Head for the Department of Elementary Education [18.09.2014 – July, 2016]
- Senate Member [August 10, 2012 – July 2016]
- Institute Council and Administrative Council Memberships (Graduate Institute for the Natural and Applied Sciences) [2014 – July 2016]
- Faculty Council Membership (Faculty of Education, Faculty of Engineering) [2012 – Jan. 26, 2016]
- Faculty Administrative Council Membership (Faculty of Education, Faculty of Law, Faculty of Business Administration) [2012 – Jan. 26, 2016]
- Bologna (European Union) Commission Membership [2012 – 2016]
- University Scientific Publications Commission Membership [2012 – 2016]
- Legislation and Regulations Commission for Institutes - Member [Sept. 2014 – July 2016]
- Internal Scientific Research Support Commission Membership [Sept. 2014 – July 2016]

Teaching Assistantship Regulations Commission Membership [Sept. 2014 – July 2016]  
Human Subjects Research Affairs Committee Chair [March 2015- July 2016]

### 3. United Arab Emirates University, UAE

Acting Coordinator for the proposed Secondary Education Program [2010-2012]  
Academic Programs Committee (chair) [2010-2012]  
NCATE Standart 3, 5 Committees (committee member) [2007-2012]  
Research and Scholarship Activities Committee (committee member) [2010-2012]  
Content Exam Committee [2007-2008]  
PhD Program Development Committee [2009-2010]  
Course Content Development for Master and PhD programs [2008-2010]  
FEDU Journal Committee [2009-2010]  
MSTE Conference Organizing Committee [2009-2010]  
Course Coordinator for CURR 366–Teaching Methods of Mathematics [2007-2010]

### ***Presentations at Conferences / Events***

- Zembat, I. O. (2024, May 18). The role of “unit” in understanding area. *The Scottish Mathematics Council (SMC) Conference*. University of Stirling, Stirling-UK.
- Mio, C., Marshall, S. Aydin, U., & **Zembat, I. O.** (2023, November 4). Mathematics makes sense. *The 2023 Festival of Social Science – Exploring Society Together*, University of Glasgow.  
<https://festivalofsocialscience.com/events/mathematics-makes-sense>
- Zembat, I. O., Mio, C., Aydin, U., & McLaren, E. (2023). [\*Exploring preservice teachers' use of definitions for trapezium.\*](#) European Conference on Educational Research (ECER), Glasgow, UK.
- Zembat, I. O. (2023, May 20). Integrating technology into teaching geometry. *The Scottish Mathematics Council (SMC) Conference*. University of Stirling, Stirling-UK.
- Mio, C., McLaren, E., **Zembat, I. Ö.**, & Marshall, S. (2022, November 23-25). [\*Challenging PGDE mathematics students' beliefs and attitudes in the context of curriculum reform.\*](#) Scottish Educational Research Association (SERA) Conference, University of the West of Scotland (UWS).
- Zembat, I. O. (2022, March 5). [\*Conceptualising place value with different bases.\*](#) The Scottish Mathematics Council (SMC) Conference, Online, Glasgow-UK.
- Zembat, I. O., Yasa, S. A., & Aslan, M (2022, February 2-5). *Teacher knowledge in the context of articulating arithmetic operations and place value.* 12<sup>th</sup> Congress of the European Society for Research in Mathematics Education (CERME-12), Online, Bolzano-Italy.
- Zembat, I. O., Yasa, S. A., & Aslan, M (2021, November 6). *Qualified mathematics teachers' knowledge of place value concept.* British Society for Research into Learning Mathematics (BSLRM) Autumn Day Conference, Online, UK.
- Yasa, S. A., Aslan, M, & **Zembat, I. O.** (2021, October 28-30). *Basamak kavramı ve öğretmen bilgisi [Concept of place value and teacher knowledge].* 5<sup>th</sup> International Symposium of Turkish Computer and Mathematics Education, Alanya-Antalya, Turkey.
- Zembat, I. O., & Gurhan, S. (2019, September 10-12). *Fostering development of quadrilateral hierarchy in Geometer's Sketchpad.* BERA, University of Manchester, Manchester, UK.
- Zembat, I. O., & Bayram, E. (2019, September 3-6). *An articulation of specialized content knowledge of mathematics teachers in the context of measurement concepts.* ECER, Hamburg University, Hamburg, Germany.

- Zembat, İ. Ö. (2016, January 30-31). *A brief analysis of fraction multiplication in elementary and middle grade level and in teacher development* (in Turkish). *Model Practices in Teaching Mathematics Conference-I*, Gazi University, Ankara, Turkey.
- Zembat, I. O., & Aslan, M. (2014, September 11-14). Teacher candidates and their conceptions of mathematics teaching (in Turkish). 11<sup>th</sup> National Science and Mathematics Education Congress. Cukurova University, Adana, Turkey.
- Zembat, I. O. (2012, Sept. 12-14). An analysis specialized content knowledge of mathematics teachers. *21<sup>st</sup> National Educational Sciences Congress*. Marmara University, Istanbul, Turkey.
- Zembat, I. O. (2012, Sept. 5-7). Education in Turkey and in the World (Panel): Education system and the mathematics education in United Arab Emirates. Paper presented at the *Contemporary Approaches to Mathematics Teaching Symposium-2*. Denizli, Turkey: Pamukkale University.
- Zembat, I. O. (2011, July 6-9). Analysis and teaching of core concepts in geometry through use of Wingeom. Paper presented at the *Contemporary Approaches to Mathematics Teaching Symposium-1*. Denizli, Turkey: Pamukkale University.
- Zembat, I. O. (2011, April 15). Teaching mathematics with the help of technology. Paper presented at the *Mathematics, Science and Technology Education Conference*. Al Ain: UAE University.
- Zembat, I. O. (February 4-8, 2010). Prospective elementary teachers' conceptions of volume. Paper presented at the *World Conference on Educational Sciences (WCES)*, Bahcesehir University, Istanbul, Turkey.
- Zembat, I. O. (February 4-8, 2010). Closing the gap between current knowledge level of UAE mathematics teachers and the ideal level. Paper presented at the *World Conference on Educational Sciences (WCES)*, Bahcesehir University, Istanbul, Turkey.
- Zembat, I. O. (2009, April 21). Closing the Gap between Current Knowledge Level of UAE Mathematics Teachers and the Ideal Level. Paper presented at the *Fifth Annual Research Forum – Improving Education Practice Through Research*. Al Ain: UAE University.
- Simon, M. A., Saldanha, L., McClintock, E., Karagoz-Akar, G., Wattanabe, T., **Zembat, I. O.** (2007). Understanding students' learning through their activity: Toward a basis for a scientific approach to task design and sequencing. *Paper presented at the Twenty Ninth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Lake Tahoe, Nevada: University of Nevada.
- Olkun, S., Smith, G. G., Gerretson, H. B., **Zembat, I. O.**, Erdem, A., Johnson, G. (2007, 5-7 September). Sınıf öğretmenleri adaylarının uzamsal becerilerinin uluslararası düzeyde karşılaştırılması (An international comparison of preservice elementary school teachers' spatial abilities). Paper presented at the Sixteenth National Educational Sciences Conference, Gaziosmanpasa University Faculty of Education, Tokat, Turkey.
- Heid, M. K., & **Zembat, I. O.** (2007). *Representational and object understanding of mathematical entities: The case of function*. Paper presented at the American Educational Research Association (AERA) Annual Meeting, Chicago, IL, USA.
- Heid, M. K., Lunt, J., Portnoy, Neil, & **Zembat, I. O.** (2006). *Ways in which prospective secondary mathematics teachers deal with mathematical complexity*. Paper presented at the Twenty-eighth Annual Meeting, North American Chapter of the International Group for the Psychology of Mathematics Education. Merida, Mexico.
- Zembat, I. O. (2006). *Working on the same problem – concepts; With the usual subjects – prospective elementary teachers*. Paper presented at the seventh National Science and Mathematics Education Congress, Gazi University, Ankara, Turkey.
- Heid, M. K., **Zembat, I. O.**, Peters, S., Sullivan, P., Portnoy, N., & Wilson, P. (2006). *Prospective Secondary Mathematics Teachers' Ways of Mathematical Thinking (Symposium)*. Paper presented at the NCTM Annual Meeting (SIG/RME) Research Presession, St. Louis, MO - USA.

- Portnoy, Neil, Heid, M. K., Lunt, J., & **Zembat, I. O.** (2005). *Prospective secondary mathematics teachers unravel the complexity of covariation through structural and operational perspectives*. Paper presented at the Twenty-seventh Annual Meeting, North American Chapter of the International Group for the Psychology of Mathematics Education, Virginia - USA.
- Heid, M. K., Blume, G. W., **Zembat, I. O.**, Seaman, W., MacCullough, D., & MacDonald, B. (2002). *Understanding of function as seen in understanding of multivariate function: The case of prospective secondary mathematics teachers*. Paper presented at the Twenty-fourth Annual Meeting, North American Chapter of the International Group for the Psychology of Mathematics Education, Georgia - USA.
- Speight, E., & **Zembat, I. O.** (2002). *How Johnny justifies what Johnny understands*. Paper presented at the National Council of Teachers of Mathematics Annual Meeting, Las Vegas.
- Zembat, I. O., & Speight, E. (2002). *How Johnny justifies what Johnny understands*. Paper presented at the Pennsylvania Council of Teachers of Mathematics Annual Meeting, Philadelphia.

#### ***Other Conferences & Workshops Attended***

- (July 7-11, 2006) International Workshop on Research in Secondary and Tertiary Mathematics Education, Baskent University, Ankara - Turkey
- (June, 2004). Mid-Atlantic Centre for Mathematics Teaching and Learning, The Pennsylvania State University, University Park, PA-USA.
- (May, 2003). Mid-Atlantic Centre for Mathematics Teaching and Learning, The Pennsylvania State University, University Park, PA-USA.
- (June 5-7, 2002). Mid-Atlantic Centre for Mathematics Teaching and Learning, The Pennsylvania State University, University Park, PA-USA.
- (September 7-9, 2001). Conference on Research on Technology and the Teaching and Learning of Mathematics-II, The Pennsylvania State University, University Park, PA-USA.
- (February 2-4, 2001). Conference on Research on Technology and the Teaching and Learning of Mathematics-I, The Pennsylvania State University, University Park, PA-USA.
- Zembat, I. O. (1997). *Simply Connected Spaces and Riemann Mapping Theorem*. Paper presented at Ankara University Faculty of Sciences, Department of Mathematics, Ankara, Turkey.  
[Departmental Seminar for Master's Degree]

#### ***Invited Speeches/Plenaries***

- Zembat, I. O. & Mio, C. (2023, September 7). *University-school collaboration to improve maths teaching practices*. Education Scotland National Numeracy Network and PT FH Mathematics Forum. Scotland, UK.
- Zembat, I. O. (2023, March 25). [Conceptual mathematics teaching and required mathematics teacher knowledge \(in Turkish - Kavramsal matematik öğretimi ve gerekli matematik öğretmen bilgisi\)](#). *Second Mathematics Education Symposium*. Turkish Mathematics Club, Turkey.
- Zembat, I. O. (2007, March). *Importance of technology in mathematics education*. Hacettepe University, Faculty of Education, Department of Elementary Education, Beytepe, Ankara - Turkey.
- Zembat, I. O. (2006, May). *Constructivism in mathematics education*. Hacettepe University, Faculty of Education, Department of Elementary Education, Beytepe, Ankara - Turkey.
- Zembat, I. O. (2005, November). *New approaches in mathematics teaching and learning*. Ankara University, Faculty of Sciences, Department of Mathematics, Ankara - Turkey.
- Zembat, I. O. (2005, May). *A look at division of fractions through a constructivist lens*. Hacettepe University, Faculty of Education, Department of Elementary Education, Beytepe, Ankara - Turkey.

Zembat, I. O. (2005, February). *Unknown dimensions of the concept of division of fractions and the related learning difficulties*. Gazi University, Faculty of Education, Department of Mathematics Education, Ankara - Turkey.

### ***Professional Development Seminars for Teachers***

- Zembat, I. O. & Mio, C. (2023, December 5). Teaching the meaning of fractions through fraction comparison. *St Columba's School*, Kilmacolm, UK.
- Zembat, I. O. & Mio, C. (2023, August 14). Helping pupils construct place value concept. *St Columba's School*, Kilmacolm, UK.
- Zembat, I. O. & Mio, C. (2023, May 31). Understanding and learning mathematical ideas. *St Columba's School*, Kilmacolm, UK.
- Marshall, S., Mio, C., & **Zembat, I. O.** (2022, December 14). Meaning of fractions in the context of fraction comparison. *Croftfoot Primary School*, Glasgow, UK.
- Mio, C., **Zembat, I. O.**, & Marshall, S. (2022, November 16). Empirical versus reflective abstraction in the context of rectangle area. *Croftfoot Primary School*, Glasgow, UK.
- Zembat, I. O., Mio, C., Marshall, S. (2022, September 7). Understanding and learning mathematical ideas. *Croftfoot Primary School*, Glasgow, UK.
- Zembat, I. O. (2012, February 16). Teaching for understanding: The case of fractions. *Al-Yahar United School*, Abu Dhabi, UAE.
- Zembat, I. O. (2011, June 7). Teaching of fraction operations effectively through use of technology. *Emirates National School*, Al Ain, UAE.
- Zembat, I. O. (2011, May 1). Using technology in teaching (multiplying) fractions. *Al-Ajbaan School*, Abu Dhabi, UAE.
- Zembat, I. O. (2010, June 6). Data analysis and interpretation. *Al-Dhafra Professional Development Program*, Al Ain, UAE.
- Zembat, I. O. (2010, May 22). Teaching operations on fractions through use of technology. *2<sup>nd</sup> AlSanawbar School Professional Development Forum*, Al Ain, UAE.
- Zembat, I. O. (2010, May 8). Data analysis and interpretation. *Al-Dhafra Professional Development Program*, Al Ain, UAE.
- Zembat, I. O. (2009). How to improve mathematics instruction through use of technology? *Al-Sanawbar School (K-12)*, Al Ain, UAE.
- Zembat, I. O. (2009, April 25). A contemporary approach to teaching mathematics with(out) technology (for teachers). *UAE University*, Al Ain, UAE.
- Zembat, I. O. (2009, April 2). Integration of technology into teaching mathematics. *Oasis School (grades K-10)*, Al Ain, UAE.
- Zembat, I. O. (2009, February 11). A different perspective to look into teaching and learning of mathematical concepts. *Al Hemma Primary School (for girls cycle 2)*, Al Ain, UAE.
- Zembat, I. O. (2008, October 30). *Use of technology in teaching geometry*. *Our Own English High School*, Al Ain, UAE.
- Zembat, I. O. (June 19-23, 2006). *Project development seminars*. *Mersin Professional Development Institute*, Ministry of Education, Turkey.
- Zembat, I. O. (June 26-28, 2006). *Introduction of the new national mathematics curriculum*. Ministry of Education, Keçiören-Ankara, Turkey.
- Zembat, I. O. (July 31 - August 4, 2006). *The best curriculum samples workshop*. Ministry of Education, Ankara, Turkey.



### ***Scholarships and Awards***

- Scholarship from Ministry of Education of Turkey, 53000 USD, (Jan 1999 - Aug 2000)
- Tait Scholarship, Pennsylvania State University, USA (Spring 2002)
- Educator of the Year (2013-2014 academic year) – Mevlana University, Turkey
- Hamdan Bin Rashid Al Maktoum Award for Distinguished Academic Performance Panel Membership (2011-2012 academic year), UAE University

### ***Professional Memberships***

British Educational Research Association (2019-...)  
British Society for Research into Learning Mathematics (2021-...)  
The Research Council on Mathematics Learning – USA (2023- ...)  
National Council of Teachers of Mathematics (1999 - 2015)  
International Group for the Psychology of Mathematics Education (2002 - 2015)

### ***Languages Spoken***

English (advanced)  
Turkish (mother tongue)  
Arabic (very basic level, daily routines)

### ***Computer Skills***

Computer skills (Windows, Office, etc.); Statistical and qualitative data analysis software (Minitab, SPSS, Atlas.ti); Mathematics education computer programs (Geometer's Sketchpad, Wingeom, JavaBars, Geogebra, Euclidraw, Fathom, Cabri)

### ***Certificates***

- Certificate for computer literacy (May 7, 2007), Hacettepe University, Turkey
- Certified instructional technology expert level 1 (CITE Professional Development Program) (September 28, 2011), UAE University

### ***Research Interests***

Mathematical concepts, and teaching and learning of them  
Teaching mathematics in technology-assisted environments  
Curriculum development  
Teacher knowledge and development