

CURRICULUM VITAE



SERKAN ARIKAN

serkan.arikan1@bogazici.edu.tr

<https://sced.boun.edu.tr/people/serkan-arikan>

<https://bounadaptivetestlab.bogazici.edu.tr/>

Personal Information:

Citizenship: Turkish

Employment History:

- 2019- Faculty Member. Faculty of Education. Bogazici University, Istanbul, Turkey
 - 2021- The principal investigator of BounAdaptiveTestLab, Bogazici University, Istanbul, Turkey.
 - 2025-2026 Visiting Scholar. Comillas Pontifical University, Madrid, Spain
 - 2018-2019 Visiting Scholar. Faculty of Education, Bogazici University, Istanbul, Turkey
 - 2015-2018 Vice Director: Graduate School of Educational Sciences, Mugla Sitki Kocman University, Mugla, Turkey
 - 2012-2019 Faculty Member. Faculty of Education, Mugla Sitki Kocman University, Mugla, Turkey
 - 2008-2015 Science Committee Member: Cito Turkey, Ankara, Turkey
 - Psychometrician
 - General Semester Examinations Content Coordinator
 - Pupil Monitoring System Administration Coordinator
 - Head of Mathematics item writing committee
 - Editorial Board Member of Cito Turkey: Theory and Application
 - 2004-2008 Test Researcher: Student Selection and Placement Center (OSYM), Ankara, Turkey
 - Psychometrician
 - Mathematics item writer
 - 2000-2002 Mathematics Teacher: Feyziye Mektepleri Vakfi Nisantasi Private Isik High School, Istanbul, Turkey
 - 1999-2000 Student assistant: Bogazici University, Istanbul, Turkey
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Education:

- 2014-2015 Post-Doc: Tilburg University; Tilburg, The Netherlands; Social and Behavioral Sciences. (in cooperation with Prof. Dr. Fons van de Vijver)
- 2004-2010 PhD Degree: Middle East Technical University; Ankara, Turkey; Secondary Science and Mathematics Education.
(Construct Validity and Factor Structure of Student Selection Examination across Subgroups. Advisor: Prof. Dr. Giray Berberoğlu)
- 2002-2004 Master's degree: The Ohio State University; Columbus, Ohio, USA; Quantitative Research, Evaluation, and Measurement in Education.
(The relationship between high school and college quantitative and verbal aptitude test scores of students in Turkey. Advisor: Prof. Dr. Ayres D'Costa)
- 1995-2000 Undergraduate Degree: Bogazici University; Istanbul, Turkey; Teaching Mathematics.

Selected Publications:

- **SSCI**
 - Buyukoksuz, E., Tekin, I., **Arikan, S.**, Ilkay, S., & Erozkay, A. (2025). Psychometric validation and measurement invariance of the Self-Compassion Scale-Short Form (SCS-SF) across gender, clinical population, and cultures, *BMC Psychology*, 13, 716. <https://doi.org/10.1186/s40359-025-03070-8>
 - **Arikan, S.**, & Aybek, E. C. (2022). A special case of Brennan's index for tests that aim to select a limited number of students: A Monte Carlo simulation study, *Educational Measurement: Issues and Practice*, 41(4), 35-49. <https://doi.org/10.1111/emip.12528>
 - Sen Akbulut, M., Umutlu, D., & **Arikan, S.** (2022). Extending the Community of Inquiry framework: Development and validation of technology sub-dimensions. *The International Review of Research in Open and Distributed Learning*, 23(3), 61-81. <https://doi.org/10.19173/irrodl.v23i2.6022>
 - **Arikan, S.**, Erkin, E., & Pesen, M. (2022). Development and validation of a STEM competencies assessment framework. *International Journal of Science and Mathematics Education*, 20(1), 1-24. <https://doi.org/10.1007/s10763-020-10132-3>
 - Arpaci, S., Mercan, F. C., & **Arikan, S.** (2021). The differential relationships between PISA 2015 science performance and, ICT availability, ICT use and attitudes toward ICT across regions: Evidence from 35 countries. *Education and Information Technologies*, 26, 6299-6318. <https://doi.org/10.1007/s10639-021-10576-2>
 - **Arikan, S.**, van de Vijver, F., & Yagmur, K. (2020). Mainstream and immigrant students' primary school mathematics achievement differences in European countries. *European Journal of Psychology of Education*, 35(4), 819-837. <https://doi.org/10.1007/s10212-019-00456-2>
 - Kilmen, S., & **Arikan, S.** (2020). The Big Three Perfectionism Scale: Factor structure and measurement invariance in Turkish sample. *Journal of Psychoeducational Assessment*, 38(1), 53-68. <https://doi.org/10.1177/0734282919846030>

- **Arikan, S.** (2018). Factors predicting creative problem-solving competence in PISA 2012: Evidence from six countries. *Croatian Journal of Education*, 20(2), 361-397. <https://doi.org/10.15516/cje.v20i2.2419>
- **Arikan, S.**, van de Vijver, F., & Yagmur, K. (2017). PISA mathematics and reading performance differences of mainstream European and Turkish immigrant students. *Educational Assessment Evaluation and Accountability*, 29(3), 229-246. <https://doi.org/10.1007/s11092-017-9260-6>
- **Arikan, S.**, van de Vijver, F., & Yagmur, K. (2016). Factors contributing to mathematics achievement differences of Turkish and Australian students in TIMSS 2007 and 2011. *Eurasia Journal of Mathematics, Science and Technology Education*, 12(8), 2039-2059. <https://doi.org/10.12973/eurasia.2016.1268a>
- Topcu, M. S., Erbilgin, E., & **Arikan, S.** (2016). Factors predicting Turkish and Korean students' science and mathematics achievement in TIMSS 2011. *Eurasia Journal of Mathematics, Science and Technology Education*, 12(7), 1711-1737. <https://doi.org/10.12973/eurasia.2016.1530a>
- Topcu, M. S., **Arikan, S.**, & Erbilgin, E. (2015). Turkish students' science performance and related factors in PISA 2006 and 2009. *Australian Educational Researcher*, 42(1), 117-132. <https://doi.org/10.1007/s13384-014-0157-9>
- **Other International**
 - Altiner Sert, M., & **Arikan, S.** (2025). Investigating the differential relationship between the big five domains of social and emotional skills and mathematics achievement. *International Electronic Journal of Elementary Education*, 17(2), 267-277. <https://doi.org/10.26822/iejee.2025.377> (SCOPUS)
 - Aybek, E. C., **Arikan, S.**, & Ertaş, G. (2024). A practical guide to item bank calibration with multiple matrix sampling. *International Journal of Assessment Tools in Education*, 11(4), 647-659. <https://doi.org/10.21449/ijate.1440316> (ESCI)
 - **Arikan, S.** (2024). Investigating differential item functioning of an international mathematics competition items across gender groups. *Bogazici University Journal of Education*, 41(1), 53-69. <https://doi.org/10.52597/buje.1411656> (ERIH-PLUS)
 - Bulut, H.C., Bulut, O., & **Arikan, S.** (2023). Evaluating group differences in online reading comprehension: The impact of item properties. *International Journal of Testing*, 23(1), 10-33. <https://doi.org/10.1080/15305058.2022.2044821> (ESCI)
 - Sen Akbulut, M., Umutlu, D., Oner, D., & **Arikan, S.** (2022). Exploring university students' learning experiences in the COVID-19 semester through the Community of Inquiry framework. *Turkish Online Journal of Distance Education*, 23(1), 1-18. <https://doi.org/10.17718/tojde.1050334> (SCOPUS)
 - Erbilgin, E., & **Arikan, S.** (2021). Using lesson study to support preservice elementary teachers' learning to teach mathematics. *Mathematics Teacher Education and Development*, 23(1), 113-134 (ERIC)
 - Tosun, D., **Arikan, S.**, & Babur, N. (2021). Teachers' knowledge and perception about dyslexia: Developing and validating a scale. *International Journal of Assessment Tools in Education*, 8(2), 342-356. <https://doi.org/10.21449/ijate.684672> (ESCI)

- Demirbag, C., **Arikan, S.**, & Mugaloğlu, E. Z. (2020). Adaptation of the self-efficacy beliefs in STEM education scale and testing measurement invariance across groups. *Journal of Measurement and Evaluation in Education and Psychology*, 11(2), 163-179. <https://doi.org/10.21031/epod.675240> (ESCI)
 - **Arikan, S.**, Ozer, F., Seker, V., & Ertas, G. (2020). The importance of sample weights and plausible values in large-scale assessments. *Journal of Measurement and Evaluation in Education and Psychology*, 11(1), 43-60. <https://doi.org/10.21031/epod.602765>. (ESCI)
 - **Arikan, S.**, Kilmen, S., Abi, M., & Ustunel, E. (2019). An example of empirical and model-based methods for performance descriptors: English proficiency test. *Journal of Measurement and Evaluation in Education and Psychology*, 10(3), 219-234. <https://doi.org/10.21031/epod.477857> (ESCI)
 - **Arikan, S.** (2019). Are differentially functioning mathematics items reason of low achievement of Turkish students in PISA 2015? *Journal of Measurement and Evaluation in Education and Psychology* 10(1), 49-67. <https://doi.org/10.21031/epod.466860> (ESCI)
 - **Arikan, S.**, van de Vijver, F., & Yagmur, K. (2018). Propensity score matching helps to understand sources of DIF and mathematics performance differences of Indonesian, Turkish, Australian, and Dutch students in PISA. *International Journal of Research in Education and Science*, 4(1), 69-81. <https://doi.org/10.21890/ijres.382936> (ERIC)
 - **Arikan, S.**, Yildirim, K., & Erbilgin, E. (2016). Exploring the relationship among new literacies, reading, mathematics and science performance of Turkish students in PISA 2012. *International Electronic Journal of Elementary Education*, 8(4), 573-588. (ERIC)
 - **Arikan, S.** (2015). Construct validity of TIMSS 2011 mathematics cognitive domains for Turkish students. *International Online Journal of Educational Sciences*, 7(1), 29-44. <https://doi.org/10.15345/iojes.2015.01.003> (H.W. Wilson)
- **Keynotes**
 - **Arikan, S.** (2021, September). *Data Analysis of Large-Scale Assessment Data like PISA and TIMSS*, 7th International Congress on Measurement and Evaluation in Education and Psychology (CMEEP-2021), Virtual.
- **International Conference Presentations**
 - Demir Ertugrul, G., & **Arikan, S.** (2025, October). *Investigating the differential factors predicting adaptive problem-solving in the second cycle of PIAAC*, International PIAAC Research Conference, Mannheim, Germany.
 - Eriz, B., **Arikan, S.**, & Aybek, E. C. (2025, October). *Developing a multistage test for measuring assessment literacy*, European Conference on Educational Research (ECER), Belgrade, Serbia.
 - Karabacak, H., **Arikan, S.**, Karakuzu, U., & Aybek, E. C. (2025, October). *Investigating the effect of AI-based weekly study plans on high school students' mathematics achievement*, European Conference on Educational Research (ECER), Belgrade, Serbia.

- Ucak Ersizer, G., & **Arikan, S.** (2025, October). *An online learning environment design for quantitative research methods for graduate students*, European Conference on Educational Research (ECER), Belgrade, Serbia.
- Tastan Mengi, Z., & **Arikan, S.** (2025, October). *Examining the proficiency of fourth grade students in routine and non-routine problem-solving abilities through cognitive diagnostic models*, European Conference on Educational Research (ECER), Belgrade, Serbia.
- **Arikan, S.**, Aybek, E. C. & Ertas, Gunes (2024, July). *The effect of starting with easy items on SEM in a CAT*. The ITC Conference, Granada, Spain
- Akkir, A., & **Arikan, S.** (2023, August). *Investigation of factors related to immigrant students' mathematics performance in PISA 2018*. The European Conference on Educational Research (ECER 2023), Glasgow, Scotland.
- **Arikan, S.**, & Aybek, E. C. (2023, July). *Proposing an item discrimination index for the tests that select top students*, The European Congress of Methodology (EAM 2023), Gent, Belgium.
- Sen Akbulut, M., Umutlu, D., Oner, D., & **Arikan, S.** (2021, August). *Validating the Community of Inquiry framework in the COVID-19 semester: A mixed-method study*, EARLI, Virtual.
- Bulut, H. C., **Arikan, S.**, & Bulut, O. (2021, June). *Student and item characteristics in online reading comprehension: Polytomous explanatory IRT modeling*, NCME, Virtual.
- **Arikan, S.**, Erktin, E., & Pesen, M. (2019, September). *Developing non-routine mathematics problem solving tests using a STEM framework*. The European Conference on Educational Research (ECER 2019), Hamburg, Germany.
- **Arikan, S.** (2018, September). *Investigating DIF as a source of very low mathematics performance of Turkish students in PISA 2015*. The European Conference on Educational Research (ECER 2018), Bolzano, Italy.
- **Arikan, S.**, van de Vijver, F., & Yagmur, K. (2018, September). *Mathematics achievement differences of mainstream and immigrant students in European countries*. The European Conference on Educational Research (ECER 2018), Bolzano, Italy.
- Kilmen, S., & **Arikan, S.** (2018, September). *Factor structure and measurement invariance of the Big Three Perfectionism Scale in Turkish sample*. The European Conference on Educational Research (ECER 2018), Bolzano, Italy.
- **Arikan, S.**, van de Vijver, F., & Yagmur, K. (2018, July). *Toward an interpretation of the TIMSS and PISA performance gap of mainstream and immigrant students in Europe*. International Association for Cross-Cultural Psychology 24th International Congress, Guelph, Canada.
- **Arikan, S.** (2017, August). *Problem solving competence and related factors in PISA*. The European Conference on Educational Research (ECER 2017), Copenhagen, Denmark.
- **Arikan, S.**, van de Vijver, F., & Yagmur, K. (2017, August). *Understand sources of DIF via propensity score matching*. The European Conference on Educational Research (ECER 2017), Copenhagen, Denmark.

- **Arikan, S.**, van de Vijver, F., & Yagmur, K. (2016, July). *PISA mathematics and reading performance differences of mainstream and Turkish immigrant students*. International Association for Cross-Cultural Psychology 23rd International Congress, Nagoya, Japan.
 - Topcu, M. S., Erbilgin, E., & **Arikan, S.** (2013, September). *A model to compare Turkish students' science achievement and related factors in PISA 2006 and 2009*. The European Conference on Educational Research (ECER 2013), Istanbul, Turkey.
 - **Arikan, S.**, Konak, O., & Berberoglu, G. (2012, July). *The cross-cultural comparison of the Cognitive Development Assessment (CDA) test items across Turkish and German students*. The 8th Conference of the International Test Commission, Amsterdam, Netherlands.
 - Is Guzel, C., Berberoglu, G., & **Arikan, S.** (2012, July). *Score alignment and vertical articulation in mathematics in the Turkish Pupil Monitoring System (TPMS)*. The 8th Conference of the International Test Commission, Amsterdam, Netherlands.
 - **Arikan, S.**, & D'Costa, A. (2012, February). *Stability of scholastic aptitude over years*. Cyprus International Conference on Educational Research, North Cyprus, Virtual.
 - Berberoglu, G., Demirtasli, N., Is Guzel, C., & **Arikan, S.** (2009, September). *Affective characteristics related to student cognitive development in the Turkish Pupil Monitoring System (PMS)*, Second ENSEC Conference, Izmir, Turkey.
- **Books**
 - **Arikan, S.** (2024). Grading based on classroom assessment. Çıkrıkçı N. (Ed.), In *Educational Measurement and Evaluation* (7th edition) (349-377). Ankara: Anı Yayıncılık
 - **Arikan, S.** (2023). *Non-routine problems and how to develop them*. İstanbul: Kanguru Matematik Derneği Yayınevi
- **Technical Reports**
 - **Arikan, S.**, Eriz, B. & Özdemir, Ö. (2024). Kangaroo Mathematics 2023 Technical Report
 - **Arikan, S.** & Özdemir, Ö. (2022). Kangaroo Mathematics 2022 Technical Report
- **Projects**
 - TUBİTAK 3005, Advisor, 2025-Current. *The Effects of an Innovative Learning Environment Design for Educational Statistics on Graduate Students' Achievement Mediated by Statistics Anxiety and Self-Efficacy*
 - TUBİTAK 2219, Project Director, 2025-current. *Developing a Cognitive Diagnostic Multistage Test for Assessing 4th Grade Mathematics Skills of Turkish and Spanish Students*
 - TUBİTAK-2237-A, Education Leader, 2024. *How to Develop Non-Routine Problems - Technology Assisted Problem Development*

- TUBITAK 1711. Project Director. 2024-2025. *Artificial Intelligence Based Weekly Work Plan Preparation Engine with Applicable Test Measurements*
- TUBITAK 3501. Advisor. 2024-2025. *Design and Implementation of Climate Education Program with Systems Thinking Approach*
- TUBİTAK-1002A, Project Director, 2023-2024. *Developing Assessment-literacy Assessment Framework and Measuring via Multi-stage Testing*
- TUBITAK-2237-A, Education Leader, 2022. *How to develop a CAT? A Workshop on CAT development*
- BAP, Project Director, 2021-2023. *Developing a Computerized Adaptive Mathematics Test and the Effect of Test State Anxiety on the Results*
- BAP, Researcher, 2020-2021. *Investigating Remote Learning Experiences of Students during Pandemic*
- BAP, Project Director, 2018-2019. *Developing a Mathematics Test Measuring Higher Order Thinking Skills of Elementary School Students*
- BAP, Project Director, 2016-2017. *The relationships among New Literacies, Mathematics and Science abilities*
- TUBİTAK-4005, Researcher, 2014. *Integration of Technology to Teaching Algebra*

Courses Taught:

- Advanced Assessment in Learning Sciences (PhD Course)
- Advanced Quantitative Research in Learning Sciences (PhD Course)
- Quantitative Research in Science and Mathematics Education (PhD Course)
- Differential Item Functioning (PhD Course)
- Special Topics in Math Education: Large Scale Assessment in Mathematics and Science Education (MA Course)
- Test Construction in Science and Mathematics Education (MA Course)
- Educational Statistics for Language Teachers (MA Course)
- Statistics (MA Course)
- Assessment and Evaluation of Learning in Science and Mathematics (Undergraduate Course)
- Test Development (Undergraduate Course)
- Inferential Statistics (Undergraduate Course)

Supervised PhD and Master Thesis

- Ucak Ersizer, G. (In Progress). A Learning Environment Design for Research Methods: Effects of Graduates' Statistics Anxiety, Self-Efficacy and Achievement
- Eriz, B. (2025). Designing A Multistage Test for Assessment Literacy.
- Arpacı, B. (2023). Developing a Scale on Examinees' Attitudes Toward Computerized Adaptive Testing: Applying Technology Acceptance Model
- Oğuzhan, E. E. (2023). A Scale Development for Social and Emotional Learning Skills of Middle School Children
- Akkır, A. (2023). Investigation of Factors Related to Immigrant and Native Students' Mathematics Performance in PISA 2018
- Söylemez, S. Ö. (2023). A Test Development Study to Measure Computational Thinking Skills of 2nd Grade Primary School Students (MA) (Coadvisor)
- Altın Sert, M. (2022). Investigating the Differential Relationship between the Big Five Domains of Social and Emotional Skills and Mathematics Achievement Using OECD'S SSES
- Taştan, Z. (2022). An Analysis of 4th Grade Students' Routine and Non-Routine Problem-Solving Skills using Cognitive Diagnostic Models
- Arpacı, S. (2020). Investigating the role of computerized assessment and other correlates on students' science performance in PISA 2015. (MA) (Coadvisor)
- Tosun, D. (2019). Development of a scale on primary school teachers' knowledge and perception of dyslexia. (MA) (Coadvisor)
- Demirbag, C. (2019). A Turkish adaptation of the STEM competency beliefs instrument (MA) (Coadvisor)

Conferences and Symposiums Organized

- 4th Graduate Student Research Symposium (GSRS), 23 May 2024, Bogazici University
- 1st National Symposium on Adaptive Test Research. 14-15 September 2023, Bogazici University
- 3rd Graduate Student Research Symposium (GSRS), 25 May 2023, Bogazici University
- National Congress on Educational Measurement and Evaluation Applications, 29-30 May 2021, Bogazici University, Virtual

Workshops Taught / Teacher Training:

- Assessing Mathematical Abilities. Kangaroo Mathematics. 2022-2023
- A Teacher Development Project on Measurement and Evaluation, MEB, İstanbul, Turkey, 2020-2021
- Item Analysis in Test Development, İstanbul, Turkey, 2019-2020
- How to analyze PISA and TIMSS data with IDB Analyzer and MPLUS, Ankara, Turkey, 2018
- How to write achievement items to measure higher order thinking skills, Antalya, Turkey, 2017
- How to write constructed response items to measure higher order thinking skills, Ankara, Turkey, 2017

Peer-reviewed Journals:

- International Journal of Educational Research (SSCI)
- Methodology (SSCI)
- Science and Education (SSCI)
- International Migration Review (SSCI)
- The National Council on Measurement in Education (NCME)
- AERA – Measurement and Evaluation Section
- International Journal of Assessment Tools in Education (ESCI)
- Journal of Measurement and Evaluation in Education and Psychology (ESCI)
- International Journal of Mathematical Education in Science and Technology (ERIC)
- International Online Journal of Educational Sciences (HW Wilson)
- International Journal of Research in Education and Science (ERIC)

Participated Workshops:

- Data Mining with R
Okan Bulut
Ankara University, 2019
- Multilevel Modeling (MLM) with MPlus using Large-Scale Assessment Data
Agnes Stancel-Piątak
ECER 2017, Copenhagen
- Measurement Theory and Models
Mark Wilson & Karen Draney,
5th Spring School on Advanced Methods in Educational Research 2015, Dortmund

- Generalizability Theory
Richard Shavelson,
5th Spring School on Advanced Methods in Educational Research 2015, Dortmund
- Using the TIMSS and PIRLS 2011 International Database for Secondary Analysis
Andres Sandoval Hernandez
ECER 2013, Istanbul
- Testing measurement and structural equivalence across culture
Barbara Byrne,
ITC 2012, Amsterdam
- Item response theory
Ron Hambleton,
ITC 2012, Amsterdam

Certificates:

- ANADOLU RESEARCH, November 2013, Applied Educational Statistics: AMOS
- SPSS TURKEY, February 2007, Introduction to AMOS
- SPSS TURKEY, December 2005, Introduction to Statistics with SPSS

Memberships:

- 2018- The Association of Measurement and Evaluation in Education and Psychology, Turkey
 - 2013 - Mugla Bicycle Club, Turkey
 - 2003-2004 Executive Committee of Turkish Student's Association, The Ohio State University, USA
 - 1999-2000 Executive Committee of Mechanics and Technology Club, Bogazici University, Turkey
 - 1996-1998 Field Hockey Team, Bogazici University, Turkey
-