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Personal Information

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Education Information

Doctorate, University of Wisconsin-Madison, Eğitim Programları Ve Öğretim, United States Of America 2010 - 2015

Postgraduate, Middle East Technical University, Graduate School Of Social Sciences, Fen Ve Matematik Eğitimi (YI) (Tezli), Turkey 2006 - 2008

Undergraduate Minor, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Mathematics, Turkey 2003 - 2006

Undergraduate, Middle East Technical University, Faculty Of Education, Matematik Ve Fen Bilimleri Eğitimi Bölümü, Turkey 2003 - 2006

Dissertations

Doctorate, An investigation of elementary teachers' proving eyes and ears, University Of Wisconsin-Madison, Eğitim Programları Ve Öğretim, 2015

Postgraduate, Teachers' perceived efficacy beliefs and perceptions regarding the implementation of the 2004 primary mathematics curriculum, Middle East Technical University, Graduate School of Social Sciences, Fen Ve Matematik Eğitimi (YI) (Tezli), 2008

Research Areas

Elementary School Education, Teacher Training in Science and Math. at Second. Sch. Lev.

Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty Of Education, Mathematics And Science Education, 2016 - Continues

Courses

Independent Study in Mathematics Education, Postgraduate, 2018 - 2019

Advising Theses

İŞLER BAYKAL I., The effects of a functional thinking intervention on fifth grade students' functional thinking skills, Postgraduate, G.Akın(Student), 2020

İŞLER BAYKAL I., Investigating middle school preservice mathematics teachers' conceptions of algebra and knowledge of

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- I. **Does Early Algebra Matter? The Effectiveness of an Early Algebra Intervention in Grades 3 to 5**
Blanton M., Stroud R., Stephens A., Gardiner A. M. , Stylianou D. A. , Knuth E., İŞLER BAYKAL I., Strachota S.
AMERICAN EDUCATIONAL RESEARCH JOURNAL, vol.56, no.5, pp.1930-1972, 2019 (Journal Indexed in SSCI)
- II. **Growth in children's understanding of generalizing and representing mathematical structure and relationships**
Blanton M., İŞLER BAYKAL I., Stroud R., Stephens A., Knuth E., Gardiner A. M.
EDUCATIONAL STUDIES IN MATHEMATICS, vol.102, no.2, pp.193-219, 2019 (Journal Indexed in SSCI)
- III. **Implementing a Framework for Early Algebra**
Blanton M., Brizuela B. M. , Stephens A., Knuth E., Isler I., Gardiner A. M. , Stroud R., Fonger N. L. , Stylianou D.
TEACHING AND LEARNING ALGEBRAIC THINKING WITH 5- TO 12-YEAR-OLDS: THE GLOBAL EVOLUTION OF AN EMERGING FIELD OF RESEARCH AND PRACTICE, pp.27-49, 2018 (Journal Indexed in SSCI)
- IV. **Developing a Learning Progression for Curriculum, Instruction, and Student Learning: An Example from Mathematics Education**
Fonger N. L. , Stephens A., Blanton M., İşler Baykal I., Knuth E., Gardiner A. M.
COGNITION AND INSTRUCTION, vol.36, pp.30-55, 2018 (Journal Indexed in SSCI)
- V. **A Learning Progression for Elementary Students' Functional Thinking**
Stephens A. C. , Fonger N., Strachota S., İŞLER BAYKAL I., Blanton M., Knuth E., Gardiner A. M.
MATHEMATICAL THINKING AND LEARNING, vol.19, no.3, pp.143-166, 2017 (Journal Indexed in SSCI)
- VI. **The Development of Children s Algebraic Thinking The Impact of a Comprehensive Early Algebra Intervention in Third Grade**
Blanton M., Stephens A., Knuth E., Gardiner A., İşler I., Kim J.
Journal For Research In Mathematics Education, vol.46, pp.39-87, 2015 (Journal Indexed in SSCI)

Articles Published in Other Journals

- I. **Middle School Pre-Service Mathematics Teachers' Opinions related to Mathematics Education for Sustainability**
SEMİZ G. K. , İŞLER BAYKAL I.
EURASIAN JOURNAL OF EDUCATIONAL RESEARCH, no.89, pp.111-136, 2020 (Journal Indexed in ESCI)
- II. **Just Say Yes to Early Algebra**
Stephens A., Blanton M., Knuth E., İŞLER I., Murphy Gardiner A.
Teaching Children Mathematics, vol.22, no.2, pp.92, 2015 (Refereed Journals of Other Institutions)
- III. **The String Task Not Just for High School**
İŞLER I., Marum T., Stephens A., Blanton M., Knuth E., Murphy Gardiner A.
Teaching Children Mathematics, vol.21, no.5, pp.282-292, 2015 (Refereed Journals of Other Institutions)
- IV. **Equation structure and the meaning of the equal sign: The impact of task selection in eliciting elementary students' understandings**
Stephens A. C. , Knuth E. J. , Blanton M. L. , Isler I., Gardiner A. M. , Marum T.
JOURNAL OF MATHEMATICAL BEHAVIOR, vol.32, no.2, pp.173-182, 2013 (Journal Indexed in ESCI)

Books & Book Chapters

- I. **İspat Etkinlikleri ve Sınıf İçi Uygulamaları**
Özgür Z., İşler Baykal I., Doğan M. F.

in: Matematik Eğitiminde Etkinlikler Ve Uygulamaları, Yüksel DEDE, Muhammed Fatih DOĞAN, Fatma ASLAN-TUTAK, Editor, Pegem A Yayıncılık, Ankara, pp.415-438, 2020

II. İlkokulda cebir öğretimi

İşler Baykal I.

in: İlkokul Matematik Öğretimi, Kamuran Tarım, Güney Hacıömeroğlu, Editor, Anı Yayıncılık, Ankara, pp.245-261, 2019

III. İlkokulda Cebir Öğretimi

İŞLER BAYKAL I.

in: Matematik Öğretiminin Temelleri İlkokul, Kamuran Tarım, Güney Hacıömeroğlu, Editor, Anı Yayıncılık, Ankara, pp.245-261, 2019

IV. Implementing a Framework for Early Algebra

Blanton M., Brizuela B., Stephens A., Knuth E., İşler Baykal I., Gardiner A. M. , Stroud R., Fonger N., Stylianou D.

in: Teaching and Learning Algebraic Thinking with 5- to 12-Year-Olds, ICME-13 Monographs, C. Kieran, Editor, Springer, London/Berlin , Zug, pp.27-49, 2018

Refereed Congress / Symposium Publications in Proceedings

- I. **Bir Erken Cebir Uygulamasının Üçüncü Sınıf Öğrencilerin Fonksiyonel Düşünme Becerilerine Etkisi**
Öztürk N., Güzeller G., Saygılı İ., İşler Baykal I.
EJERCONGRESS 2020, Eskişehir, Turkey, 10 - 13 September 2020, pp.591-600
- II. **Üçüncü, Dördüncü ve Beşinci Sınıf Öğrencilerinin Eşit İşaretine Yönelik Algıları**
İşler Baykal I., Öztürk N., Yıldız İ., Güzeller G.
4. Uluslararası Türk Bilgisayar ve Matematik Eğitimi Sempozyumu, İzmir, Turkey, 26 - 28 September 2019, pp.1172-1178
- III. **The Effects Of Problem Solving Strategies On 5Th Grade Students' Problem Solving Achievement**
Kantar Ö., İşler Baykal I.
4. Uluslararası Türk Bilgisayar ve Matematik Eğitimi Sempozyumu, İzmir, Turkey, 26 - 28 September 2019, pp.665-667
- IV. **Teachers' Conceptions of Algebra and Knowledge of Task Purposes**
Alapala B., İşler Baykal I.
Eleventh Congress of the European Society for Research in Mathematics Education, Utrecht, Netherlands, 6 - 11 February 2019, pp.532-533
- V. **Elementary pre-service mathematics teachers' conceptions of algebra**
Alapala B., İşler Baykal I.
Proceedings of the 42nd Conference of the International Group for the Psychology of Mathematics Education, Umea, Sweden, 3 - 08 July 2018, vol.5, pp.6
- VI. **İlköğretim Matematik Öğretmen Adaylarının Sürdürülebilirlik için Matematik Eğitimi Üzerine Görüşleri**
Karaarslan Semiz G., İşler Baykal I.
EJER, Antalya, Turkey, 2 - 05 May 2018, pp.1116-1117
- VII. **Fostering Generalizations: a classroom discourse analysis**
Prough S., Strachota S., Veltri R., İŞLER I., Blanton M., Gardiner A. M. , Knuth E., Stephens A.
39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics (PMENA), Indianapolis, United States Of America, 5 - 08 October 2017, pp.287-290
- VIII. **The interplay between students' understandings of proportional and functional relationships**
Stephens A., Strachota S., Knuth E., Blanton M., İŞLER I., Gardiner A. M.
39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics (PMENA), Indianapolis, United States Of America, 5 - 08 October 2017, pp.251-258
- IX. **Matematik performansında 4. sınıftan 8. sınıfa olan değişimler: TIMSS Türkiye verilerinin başarı ve bilişsel derinlik açısından incelenmesi**

ÇELİKDEMİR K., KAPLAN CAN G., İŞLER BAYKAL I., ÇAKIROĞLU E.

3. Türk Bilgisayar ve Matematik Eğitimi Sempozyumu, Turkey, 17 - 19 May 2017

- X. **Grade 6 students' abilities to represent functional relationships**
İsler I., Strachota S., Stephens A., Fonger N., Blanton M., Gardiner A., Knuth E.
10th Congress of the European-Society-for-Research-in-Mathematics-Education (CERME), Dublin, Ireland, 1 - 05 February 2017, pp.432-439
- XI. **Tracing mathematics-related belief change in teacher education programs**
Haser C., Isler I.
10th Congress of the European-Society-for-Research-in-Mathematics-Education (CERME), Dublin, Ireland, 1 - 05 February 2017, pp.1106-1113
- XII. **Analyzing generalizations through discourse**
Strachota S., İŞLER I., Fonger N., Blanton M., Gardiner A. M.
38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, 3 - 06 November 2016
- XIII. **A longitudinal study of elementary students use of variable notation to represent mathematical generalizations**
Blanton M., Gardiner A., İŞLER I., Stephens A., Knuth E.
Annual Meeting of the American Education Research Association, 8 - 12 April 2016
- XIV. **Arithmetic Properties as a Route into Algebraic Reasoning**
Strachota S., İŞLER I., Kang H.
37th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, 5 - 08 November 2015, pp.263
- XV. **A comparison of elementary and middle grades students algebraic reasoning**
İŞLER I., Blanton M., Murphy Gardiner A., Knuth E., Stephens A., Kang H.
Joint Meeting of PME 38 and PME-NA 36, 15 - 20 July 2014, vol.6, pp.110
- XVI. **Third graders generalizations about even numbers and odd numbers The impact of an early algebra intervention**
İŞLER I., Stephens A., Murphy Gardiner A., Knuth E., Blanton M.
35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, 14 - 17 November 2013, pp.140-143
- XVII. **Preservice teachers conceptions of algebra and knowledge of student thinking**
İŞLER I., Knuth E.
37th Conference of the International Group for the Psychology of Mathematics Education, 28 July - 02 August 2013, vol.5, pp.77
- XVIII. **Fourth grade students abilities to write algebraic expressions and equations**
İŞLER I., Marum T., Stephens A.
National Council of Teachers of Mathematics Research Presession, 15 - 17 April 2013
- XIX. **From recursive pattern to correspondence rule Developing students abilities to engage in functional thinking**
Stephens A., İŞLER I., Marum T., Blanton M., Knuth E., Murphy Gardiner A.
Thirty-Fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, 1 - 04 November 2012, pp.821-828
- XX. **Aligning early algebra learning progressions and assessments in grades 3 8**
Stephens A., Blanton M., Knuth E., Murphy Gardiner A., Marum T., İŞLER I.
National Council of Teachers of Mathematics Research Presession, 23 - 25 April 2012
- XXI. **Elementary students recognition of algebraic structure Not all tasks are created equal**
İŞLER I., Stephens A., Maria B., Knuth E., Marum T., Gardiner A.
Annual Meeting of the American Education Research Association, 13 - 17 April 2012
- XXII. **From specific value to variable Developing students abilities to represent unknowns**
Marum T., İŞLER I., Stephens A., Gardiner A., Blanton M., Knuth E.
33rd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics

Education, 20 - 23 October 2011, pp.106-113

XXIII. DEVELOPING PRESERVICE TEACHERS KNOWLEDGE ON PATTERNS: CREATIVE DRAMA AS AN ALTERNATIVE APPROACH

İŞLER BAYKAL I., İŞIKSAL BOSTAN M.

34th Conference of the International-Group-for-the-Psychology-of-Mathematics-Education, Belo Horizonte, Brazil, 18 - 23 July 2010, pp.47

XXIV. Analysis of primary education between England and Turkey

İŞLER I., HASER Ç.

XIV. World Congress of Comparative Education Societies, 16 - 18 June 2010

XXV. Understanding preservice mathematics teachers beliefs The influence of initial teaching related courses

İŞLER I., HASER Ç.

European Conference on Educational Research., 25 - 26 September 2009

XXVI. Pre service teachers perceptions about the quality of their teacher education program

ÇAKIROĞLU E., ÇAPA AYDIN Y., ÇAKIROĞLU J., İŞLER I.

16th International Conference on Learning, Barcelona, Spain, 1 - 04 July 2009

XXVII. Teachers efficacy beliefs and perceptions about a new curriculum based on their area of certification job satisfaction gender and participation of an in service training

İŞLER I., ÇAKIROĞLU E.

16th International Conference on Learning, 1 - 04 July 2009

XXVIII. TEACHERS' EFFICACY BELIEFS AND PERCEPTIONS REGARDING THE IMPLEMENTATION OF NEW PRIMARY MATHEMATICS CURRICULUM

İŞLER BAYKAL I., ÇAKIROĞLU E.

6th Congress of the European-Society-for-Research-in-Mathematics-Education (CERME), Lyon, France, 28 January - 01 February 2009, pp.1704-1713

Supported Projects

İŞLER BAYKAL I., ÖZTÜRK N., YILDIZEL İ., GÜZELLER G., Project Supported by Higher Education Institutions, Üçüncü, Dördüncü ve Beşinci Sınıf Öğrencilerinin Erken Cebir Alanında Hazır Bulunuşluklarının Belirlenmesi ve Erken Cebir Eğitiminin Etkisi, 2018 - 2021

Akkaş S. B. , Eryılmaz A., Şentürk E., Koç İ., Demircan H. Ö. , İşler Baykal I., H2020 Project, StART: Science through ART, 2019 - 2019

Scientific Refereeing

İNÖNÜ ÜNİVERSİTESİ EĞİTİM FAKÜLTESİ DERGİSİ, National Scientific Refreed Journal, June 2020

MATHEMATICAL THINKING AND LEARNING, Journal Indexed in SSCI, May 2020

IOJET, National Scientific Refreed Journal, March 2019

International Journal of Education in Mathematics, Science and Technology, Journal Indexed in ESCI, December 2018

Project Supported by Higher Education Institutions, BAP Research Project, Middle East Technical University, Turkey, December 2018

Citations

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