

STACK publications

This document contains publications relating to the STACK computer aided assessment system.
For more information about STACK please see <https://stack.maths.ed.ac.uk/demo>
The original BiBTeX entries are available from

https://github.com/mathsmoodle-qtype_stack/tree/master/doc/content/stack.bib

Suggestions of where to start

- [1] G. Kinnear. Delivering an online course using STACK. In *Contributions to the 1st International STACK conference 2018 in Fürth, Germany*. Zenodo, 2019.
- [2] C. J. Sangwin and I. Jones. Asymmetry in student achievement on multiple choice and constructed response items in reversible mathematics processes. *Educational Studies in Mathematics*, 94:205–222, 2017.
- [3] C. J. Sangwin. *Computer Aided Assessment of Mathematics*. Oxford University Press, Oxford, UK, 2013.

Books

- [1] C. J. Sangwin. *Computer Aided Assessment of Mathematics*. Oxford University Press, Oxford, UK, 2013.
- [2] Y. Nakamura. *The STACK e-Learning and Assessment System for mathematics, science and engineering education through Moodle*. Tokyo Denki University Press, 2010. (In Japanese).

Specific issues

- [1] C. J. Sangwin and P. Ramsden. Linear syntax for communicating elementary mathematics. *Journal of Symbolic Computation*, 42(9):902–934, 2007.
- [2] Y. Nakamura and T. Takahara. Development of a math input interface with flick operation for mobile devices. In *12th International Conference on Mobile Learning, 9–11 April, Vilamoura, Algarve, Portugal*, 2016.
- [3] C. J. Sangwin and M. Harjula. Online assessment of dimensional numerical answers using STACK in science. *European Journal of Physics*, 2017.
- [4] C. J. Sangwin. *Proof Technology in Mathematics Research and Teaching*, chapter Reasoning by equivalence: the potential contribution of an automatic proof checker. Mathematics education in the digital era. Springer International, 2019.
- [5] C. J. Sangwin. Inequalities, assessment and computer algebra. *International Journal of Mathematical Education in Science and Technology*, 46(1):76–93, 2015.

STACK and Examinations

- [1] C. J. Sangwin and N. Köcher. Automation of mathematics examinations. *Computers and Education*, 94:215–227, 2016.
- [2] C. J. Sangwin. Developing and evaluating an online linear algebra examination for university mathematics. In *Proceedings of CERME 11*, number TWG 21: Mssessment in Mathematics Education, 2019.
- [3] C. J. Sangwin. High stakes automatic assessments: developing an online linear algebra examination. In *Proceedings of 11th Conference on Intelligent Computer Mathematics*, Hagenberg, Austria, 2018.

Research and conference papers

- [1] T. Pelkola, A. Rasila, and C. J. Sangwin. Investigating Bloom’s learning for mastery in mathematics with online assessment. *Informatics in Education*, 2018.
- [2] K. Yoshitomi. Generation of abundant multi-choice or STACK type questions using cas for random assignments. In J.H. Davenport, M. Kauers, G. Labahn, and J. Urban, editors, *Proc. Mathematical Software — ICMS 2018*, number 10931 in Springer Lecture Notes in Computer Science, pages 492–497, 2018.
- [3] H. Barbas and T. Schramm. The Hamburg online math test MINTFIT for prospective students of STEM degree programmes. In *Proceedings of SEFI, Tampere, Finland*, 2016.
- [4] Y. Nakamura, T. Taniguchi, K. Yoshitomi, S. Shirai, Fukui T., and T. Nakahara. STACK project in Japan; item bank system, math input interface and question specification. In *Proceedings of the 13th International Congress on Mathematical Education*, 2016. TSG-44.
- [5] C. J. Sangwin. Undergraduates’ attempts at reasoning by equivalence in elementary algebra. In *Didactics of Mathematics in Higher Education as a Scientific Discipline: Conference Proceedings*, khdm-Report 16-05, pages 335–341, Universität Kassel, Leuphana Universität Lüneburg, Universität Paderborn, 2016.
- [6] A. Rasila, J. Malinen, and H. Tiitu. Automatic assement and conceptual understanding. *Teaching Mathematics and its Applications*, 34(3):149–159, 2015.
- [7] A. Rasila. E-assessment material bank abacus. In *Proceedings of EDILEARN16, 8th Annual International Conference on Education and New Learning Technologies*, July 2016.
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- [9] S. Shirai and T. Fukui. Improving the math input method for matrices for use in linear algebra on STACK. *IP SJ Transactions on Computers and Education*, 1(3):22–29, March 2015. (In Japanese).
- [10] S. Shirai, Y. Nakamura, and T. Fukui. An interactive math input method for computer aided assessment systems in mathematics. *IP SJ Transactions on Computers and Education*, 1(3):11–21, March 2015. (In Japanese).

- [11] R. C. Paiva, M. S. Ferreira, A. G. Mendes, and A. M. J. Eusébio. Interactive and multimedia contents associated with a system for computer-aided assessment. *Journal of Educational Computing Research*, 52(2):224–256, 2015.
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- [14] Y. Nakamura, K. Fukazawa, and T. Takahara. Development of portable STACK: Packaged math e-learning system. In *Proceedings of World Conference on E-Learning*, 2013.
- [15] C. J. Sangwin. Computer aided assessment of mathematics using STACK. In *Selected Regular Lectures from the 12th International Congress on Mathematical Education*, pages 695–715, 2012.
- [16] P. Butcher, C. . Sangwin, and T. Hunt. Embedding and enhancing eassessment in the leading open source VLE. In *Proceedings of the Higher Education Academy Conference, Birmingham*, 2013.
- [17] T. Lowe. e-Assessment using Symbolic Manipulation Tools. Technical report, Centre for Open Learning of Mathematics, Science, Computing and Technology, The Open University, 2010.
- [18] R. Bradford, J. H. Davenport, and C. J. Sangwin. A comparison of equality in computer algebra and correctness in mathematical pedagogy (ii). *The International Journal for Technology in Mathematics Education*, 17(2):93–98, 2010.
- [19] M. Badger and C.J. Sangwin. My equations are the same as yours!: computer aided assessment using a Gröbner basis approach. In A. A. Juan, M. A. Huertas, and C. Steegmann, editors, *Teaching Mathematics Online: Emergent Technologies and Methodologies*, pages 259–273. IGI Global, 2011.
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- [30] T. W. Lowe and B. D. Mestel. Using STACK to support student learning at masters level: a case study. *Teaching Mathematics and its Applications: An International Journal of the IMA*, 03 2019.
- [31] G. Erskine and B. Mestel. Developing STACK practice questions for the Mathematics Masters Programme at the OU. *MSOR Connections*, 17(1), 2018.
- [32] R. C. Paiva, M. S. Ferreira, and M. M. Frade. Intelligent tutorial system based on personalized system of instruction to teach or remind mathematical concepts. *Journal of Computer Assisted Learning*, 33(4):370–381, 2017.

Theses

- [1] M. Badger. *Problem-solving in undergraduate mathematics and computer aided assessment*. Phd, University of Birmingham, 2013.
- [2] H. Majander and A. Rasila. *Tutkimus suuntaamassa 2010-luvun matemaattisten aineiden opetusta*, chapter Experiences of continuous formative assessment in engineering mathematics, pages 197–214. Tampereen yliopistopaino Oy - Juvenes Print, 2011.
- [3] H. Majander. Tietokoneavusteinen arviointi kurssilla diskreetin matematiikan perusteet. Master’s thesis, University of Helsinki, 2010.
- [4] J. Ruokokoski. Automatic assessment in university-level mathematics. Master’s thesis, Helsinki University of Technology, 2009.
- [5] M. Harjula. Mathematics exercise system with automatic assessment. Master’s thesis, Helsinki University of Technology, 2008.

- [6] E. R. Cerval-Peña. Automated computer-aided formative assessment with ordinary differential equations. Master's thesis, University of Birmingham, 2008.
- [7] H. Tanskanen. Dynaamista geometriaa moodle-ympristn - stack- ja jsxgraph-jrjestelmien testaamista monimuotoisten kysymysten laatimiseksi. Master's thesis, University of Eastern Finland, 2010.

For copies of the proceedings of the first STACK conference see <https://zenodo.org/communities/stack>

Proceedings of the first STACK conference, 2018

- [1] J. Härterich. Using randomized quizzes in undergraduate linear algebra and multivariable calculus. In *Contributions to the 1st International STACK conference 2018 in Fürth, Germany*. Zenodo, 2019.
- [2] T. Mai and A. Meyer. Sketching functions as a digital task with automated feedback. In *Contributions to the 1st International STACK conference 2018 in Fürth, Germany*. Zenodo, 2019.
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- [4] G. Kinnear. Delivering an online course using STACK. In *Contributions to the 1st International STACK conference 2018 in Fürth, Germany*. Zenodo, 2019.
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- [6] A. Bird and W. Rathmann. Ein Online-Trainingscenter zur Stärkung der Rechenfähigkeiten. In *Contributions to the 1st International STACK conference 2018 in Fürth, Germany*. Zenodo, 2019.
- [7] J. Fath, P. Hansen, C. Scheicher, and T.; Umbach. E-homework with individual feedback for large lectures. In *Contributions to the 1st International STACK conference 2018 in Fürth, Germany*. Zenodo, 2019.
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- [10] M. Weigel, R. Hübl, K. Derr, and T. Podgayetskaya. STACK-Aufgaben im formativen eAssessment: Einsatzmöglichkeiten des Feedbacks. In *Contributions to the 1st International STACK conference 2018 in Fürth, Germany*. Zenodo, 2019.
- [11] M. Eckhoff and K. Landenfeld. GoMaxima - Eine performante Verwendung von STACK und Maxima in Lernmanagementsystemen. In *Contributions to the 1st International STACK conference 2018 in Fürth, Germany*. Zenodo, 2019.

Legacy Reports

- [1] C. J. Sangwin. Who uses STACK? a report on the use of the STACK CAA system. Technical report, The Maths, Stats and OR Network, School of Mathematics, The University of Birmingham, 2010.

- [2] C. J. Sangwin and D. F. M. Hermans. A report on the use of stack in mathematics at birmingham 2012–2013. *Community for Undergraduate Learning in the Mathematical Sciences*, 8:16–30, December 2013.
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