



Jaarrapport (2018-2019) achievements Research-on-Education-Innovation programma

Remon Rooij & Roberto Cavallo _ 8 november 2019

In de afgelopen maanden is er op meerdere fronten succes geboekt in de faculteit binnen het thema Onderzoek-naar-onderwijsinnovatie :

- Wetenschappelijke output: meerdere journal articles in verscheidene journals;
- Meerdere congresbijdragen in de vorm van congrespapers en congresworkshops;
- Financiering van meerdere onderwijsinnovatie- en/of onderwijsonderzoekprojecten.

Dit document is het facultair overzicht van wat we afgelopen anderhalf jaar bereikt hebben. Zie ook: <https://www.tudelft.nl/en/architecture-and-the-built-environment/research/research-at-bk-bouwkunde/education-innovation/>.

Inhoud

Afgeronde wetenschappelijke publicaties en activiteiten

Lopend PhD onderzoek

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Lopende, facultaire innovatie- en/of onderzoekinitiatieven

Eerdere relevante publicaties en activiteiten

Website

Nieuws flashes @BK News

Education for the City We Need

Teaching the
New Urban Agenda

World Urban Forum 9
TU Delft Side Event Report

Kuala Lumpur, 7-13 Feb 2018



Afgeronde wetenschappelijke publicaties en activiteiten '18/'19

- Bekkering, H., Hoekstra, M. J., Rooij, R., Wagenaar, C., & Zeinstra, J. (2018). The Delft Fundamentals: integration of disciplines, projects and analysis. *Proceedings of the ICE - Urban Design and Planning*, 171(2), 87-96. <https://doi.org/10.1680/jurdp.18.00008>
- van Bergeijk, H. (2018). *Die Architekturausbildung an der Technischen Hochschule in Delft und die Zukunft der europäischen Architektur in den 1920er Jahren*. Mühlenpfordt – Neue Zeitkunst. editor / Olaf Gisbertz. Berlin : Jovis, pp. 108-119
- Chen, Y., Daamen, T., Heurkens, E., & Verheul, W. J. (2019). Interdisciplinary and experiential learning in urban development management education. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-019-09541-5>
- Clarke, N., Kuipers, M., & Stroux, S. (2019). Embedding built heritage values in architectural design education. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-019-09534-4>
- van Dooren, E., Dorst, M., Asselbergs, T., Merrienboer, J., & Boshuizen, E. (2019). The Tacit Design Process in Architectural Design Education. *Design And Technology Education: An International Journal*, 24(1), 79-100. Retrieved from <https://ojs.lboro.ac.uk/DATE/article/view/2587>
- Havik, K., M. Proosten, Perrotoni, D. (eds) (2018). *Writingplace Journal for Architecture and Literature #1 Literary Methods in Architectural Education*. Rotterdam: Nai010 publishers.
- Hein, C., & van Dooren, E. (2019). Teaching history for design at TU Delft: exploring types of student learning and perceived relevance of history for the architecture profession. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-019-09533-5>
- Klaassen, R., de Fouw, N., Rooij, R., & van der Tang, Y. (2019). Perceptions of Interdisciplinary Learning: A qualitative approach. In B. Kloot (Ed.), *Proceedings of the 8th Research in Engineering Education Symposium, REES 2019 - Making Connections* (pp. 398-407). Research in Engineering Education Network.
- Mackenzie, L., Scarth, E., Chanon, A., van Loon, F. (2019). *New practices of collaboration: Exploring landscape architectural teaching, learning and practice contexts*. Workshop organized at the 2019 ECLAS conference 16-17 September 2019 in Ås, Norway.
- Lousberg, L., Rooij, R., Kamp, A. (2019). *Project management in engineering education*. Workshop organized at the 2019 Project Management conference 11-12 April 2019 in Delft, the Netherlands.
- Lousberg, L., Rooij, R., Jansen, S., van Dooren, E., Heintz, J. L., & van der Zaag, E. (2019). Reflection in design education. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-019-09532-6>
- Maynard, N. and Rooij, R. (2018). *Embedding, Teaching and Assessing Teamwork Skills – How hard can it be?* Workshop at the 2018 CDIO conference in Kanazawa, Japan.
- Mota, N., & van Gameren, D. (2018). Dwelling with the Other Half: Architectural Education for the Design of Affordable Housing in the Global South. *Charrette*, 5(1), 33-49.
- Qu, L., Chen, Y., Rooij, R., & de Jong, P. (2019). Cultivating the next generation designers: Group work in urban and regional design education. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-019-09540-6>
- Rocco, R. (2018). *TU Delft UTC 2017 Report: Education for the City We Need: Exploring how to integrate the UN-Habitat New Urban Agenda in higher education*. Delft University of Technology.
- Rooij, R., Klaassen, R., Cavallo, R., & Arts, J. A. (2019). Architecture and built environment design education: disciplinary and pedagogical developments. *International Journal of Technology and Design Education*, 1-12. <https://doi.org/10.1007/s10798-019-09535-3>
- Rooij, R., Aalbers, K., van Loon, F. (2019). *Stimulating Engineering Education Research: Staff development & competencies, community building, and educational leadership*. Workshop at the 2019 CDIO conference in Aarhus, Denmark.
- Rooij, R., Aalbers, K., van Loon, F. (2019). *Stimulating Engineering Education Research: Staff development & competencies, community building, and educational leadership*. Workshop at the 2019 TU Delft Education Day in Delft, the Netherlands.
- Wandl, A., Balz, V., Qu, L., Furlan, C., Arciniegas Lopez, G., & Hackauf, U. (2019). The Circular Economy Concept in Design Education: Enhancing Understanding and Innovation by Means of Situated Learning. *Urban Planning*, 4(3), 63-75. <https://doi.org/10.17645/up.v4i3.2147>
- Wilms Floet, W. (2017). Nieuw Inzicht. Article about the Delft Methods of Plan analysis and the three dimensional "Magic Box". *De Architect* 2017, 44-50.
- Wilms Floet, W. (2018). *EAAE Education Academy: Educating the educator*. Network meeting, Valencia, 20 Oct 2018. Chair of programme committee.

Lopend PhD onderzoek

Elise van Dooren (AET) - Design Education

BK promotoren: Prof. Thijs Asselbergs (AE&T) en dr.ir. Machiel van Dorst (URB)
Niet-BK promotoren: Prof.dr. Jeroen van Merriënboer, Prof.dr. Els Boshuizen

Nina Bohm (MBE) – Engaged Engineering Education

Gefinancierd door het 4TU Centre for Engineering Education
BK promotor: Prof.dr. Ellen van Bueren (MBE)
Niet-BK promotor: Prof.dr. Perry den Brok

Lopende, extern gefinancierde (innovatie- en/of onderzoek)initiatieven 2019-2020-2021

Igor Pessoa (URB) & Roberto Rocco (URB) - Comenius Teaching Fellow project 'Bridging DOCS'

€ 50.000 gefinancierd door NWO/NRO

The Bridging DOCS project aims to integrate the TU Delft Urbanism master students with students from existing TU Delft online courses. This integration will start with the development of a platform connecting the students from the master course "Methodology for Urbanism" with participants of the "Rethink the City" MOOC (massive open online course), both organised at Bouwkunde.

Remon Rooij (URB/O&S) - Project 'Studiestress in ontwerponderwijs'

€ 50.000 gesponsord door het 4TU Centre for Engineering Education, samen uitgevoerd met Faculteit Industrieel Ontwerpen

Binnen dit project wordt gekeken naar de factoren die werkdruk en stress opleveren in de eerstejaars ontwerpvakken van de bachelor Bouwkunde. Ook wordt gekeken naar mogelijke oplossingen. Een aantal interventies zal worden gepleegd en gemonitord. Hiervoor werken projectleider Remon Rooij en vakcoördinatoren Steven Steenbruggen en Frank Schnater niet alleen samen met collega's van de faculteit Industrieel Ontwerpen, maar ook met Christianne Wilmink van Herzien Advies een specialist op het gebied van coaching en persoonlijk leiderschap. De resultaten van het onderzoek zullen het nodige inzicht bieden om een gezond studieklimaat effectief te stimuleren.

Roberto Cavallo (ARCH/O&S) - Project 'Pedagogies for MSc AUBS studio teaching'

€ 40.000 gesponsord door het 4TU Centre for Engineering Education, samen uitgevoerd met Faculteit Industrieel Ontwerpen

Studio-onderwijs is een belangrijke bouwsteen van het BK en IO projectonderwijs. Maar hoe geven de verschillende studio's vorm aan de relatie tussen ontwerp en onderzoek? Hoe worden ontwerp en techniek geïntegreerd? Hoe reflecteren studenten op hun ontwerpproces? De antwoorden op deze vragen zijn essentieel om inzicht te krijgen in de verschillende methodes voor het ontwerp onderwijs in studieverband. Dit project heeft als doel de methodes van de ontwerpstudio's van de MSc Architecture, Urbanism and Building Sciences systematisch te beschrijven, vergelijken en evalueren, met expliciete aandacht voor pedagogiek en didactiek. Projectleider Roberto Cavallo en de MSc coördinatoren Peter Teeuw, Inge Bobbink, Kristel Aalbers en Peter Koorstra brengen samen met collega's van de faculteit Industrieel Ontwerpen verschillende methodieken in kaart.

MaartenJan Hoekstra (URB), Louis Lousberg (MBE), Remon Rooij (URB), Willemijn Wilms Floet (ARCH) & Sake Zijlstra (MBE) - Boek 'Academische vaardigheden voor bouwkundigen'

€ 10.000 gesponsord door het 4TU Centre for Engineering Education

In dit project worden meerdere collega's van BK Bouwkunde gevraagd om bijdragen te leveren aan dit -op termijn tweetalige- open access leermiddel voor de bacheloropleiding Bouwkunde. Zo wordt het boek een theoretische onderlegger met achtergrondinformatie waar zowel studenten als docenten op terug kunnen vallen. Er wordt in het bijzonder aandacht geschonken aan de relatie tussen ontwerp en onderzoek en de bijbehorende academische vaardigheden. Onder redactie van MaartenJan Hoekstra, Louis Lousberg, Sake Zijlstra, Willemijn Wilms Floet en Remon Rooij wordt zo wordt een totaalbeeld geschetst en inzicht gegeven in de academische vaardigheden die op BK Bouwkunde in de bachelor worden onderwezen. Dit boek wordt daarmee ook een ijkpunt voor de nationale en internationale studenteninstroom vanuit andere universiteiten.

Roberto Rocco (URB) & Marcin Dabrowski (URB) - Values for Urbanism handbook

€ 7.000 gefinancierd door het TUD Values for Design platform

The Department of Urbanism, in partnership with the Department of Values, Technology and Innovation (TBM), promotes a methodology course with two main components: 1. Academic research skills; and 2. Values for the built environment. Based on extensive teaching experience we are preparing a handbook titled "Spatial Justice for Urbanism", both in print and open access online, in which we discuss how to teach and study values connected to the role of urban planners and designers in society: democracy, nature and role of the State, rule of law, democracy, participation, governance and ethical values of planning and design for people. The handbook is part of our efforts to systematise education in these areas. It will entail the organisation of a symposium gathering DDFV members and others.

Reinout Kleinhans (URB) – TU Delft Education Fellowship

Community – University Engagement via Student Research and Education

€ 50.000 gesponsord door de TU Delft 2020-2021

Martijn Stellingwerff (ARCH) – TU Delft Education Fellowship

VR/AR in Architecture Design Education

€ 50.000 gesponsord door de TU Delft 2019-2020

Roberto Cavallo (ARCH) & Remon Rooij (URB) - Symposium 'Research on Education Innovation'

€ 5.000 gesponsord door het 4TU Centre for Engineering Education

In het najaar avn 2020 wordt een meerdaags symposium georganiseerd op Bouwkunde om de voortgang en de resultaten van het onderzoeksprogramma Research on Education Innovation te presenteren en te bespreken. Roberto Cavallo en Remon Rooij organiseren dit evenement, waar BK collega's en gastsprekers worden uitgenodigd om mede te reflecteren op dit faculteitbrede initiatief.

Lopende facultaire innovatie- en/of onderzoekinitiatieven '19/'20

van den Burg, L., & Rooij, R., *Education for the city we need. A department of Urbanism vision on education.*

Bouwkunde. Online en blended onderwijs. Facultaire coördinatie door Mirjam Albertz-Paalvast. <https://www.tudelft.nl/bk/studeren/online-onderwijs/>

Bouwkunde. *BLEAP. Blended education in BSc Bouwkunde*: BK1TE1 (Eric van den Ham), BK1GR1 (MaartenJan Hoekstra), BK6MA3 (Erwin Heurkens)

Havik, K. & Wilms Floet, W. Architectural design teaching approaches. Group Methods and Analysis, Architecture Department research programme. The following themes have been outlined:

- “Delft Approach to Architectural Education” in collaboration with all Architecture chairs: studio reflections of teaching methods
- The critical moment of design invention: from analysis to design in the graduation studio creative imagination, design thinking
- The scientific ground of architectural pedagogy, architectural education as the production of knowledge

Lousberg, L. *How to give and improve the impact of written feedback?* For the bachelor AC3 module on Academic Skills, in cooperation with the Open University Heerlen, dr Kim Dirkx.

Rooij, R. *Developing a teacher community in BSc Bouwkunde*. In cooperation with Utrecht University, dr Eva Janssen and two UU MSc graduation students Education Sciences.

Rooij, R. *Assessing interdisciplinary engineering education*. Evaluation of TUD minor programmes. In cooperation with the Delft Centre for Engineering Education: dr Renate Klaassen and Nanneke de Fouw.

Eerdere relevante publicaties en activiteiten

- van Anel, F., D. van Gameren, D., de Vrede, A. (2016). *Yearbook of the Department of Architecture 2016: Contributions from Education, Research and Practice*. Delft: Delft University of Technology.
- van Dooren, E., van Merriënboer, J., Boshuizen, H. P. A., van Dorst, M., & Asselbergs, M. F. (2017). Architectural design education: in varietate unitas. *International Journal of Technology and Design Education*, 28 (2), 431–449, <https://doi.org/10.1007/s10798-017-9396-1>
- van Dooren, E., Boshuizen, E., van Merriënboer, J., Asselbergs, T., van Dorst, M. (2014). Making explicit in design education: generic elements in the design process. *International Journal of Technology and Design Education*, 24 (1), 53–71, <https://doi.org/10.1007/s10798-013-9246-8>
- van Gameren, D. (2017/2018). TU Delft Education Fellowship.
- Van Gameren, D. & Mota, N. (2014-2017?). *Dwelling in Addis Ababa: A Toolbox for Design Education on Affordable Housing*. Funded by: Delft Global Initiative Program Development Seed Fund.
- Komossa, S., Hartevelde, M., & Cavallo, R. (eds) (2016). *For Example Delft / A Case Study discussed in the Context of Institutional Profile(s) and the Future of Architectural Education*. Proceedings of the EAAE Annual Conference 2016 in Delft. TU Delft Open.
- Mudde, R., Pessers-Van Reeuwijk, G., Rooij, R., Verbeek, L. Wolff, R. (2017) *Onderwijssucces. Van structuur naar cultuur. Eindrapportage van de evaluatiecommissie project Studiesucces TU Delft*. Technische Universiteit Delft.
- Nijhuis, S., Stolk, E., Hoekstra, MJ (2017). Teaching urbanism: the Delft approach. *Proceedings of the ICE - Urban Design and Planning*, 170 (3), 96-106. <https://doi.org/10.1680/jurdp.16.00013>
- Rooij, R.M. and Frank, A. (2016). Educating Spatial Planners for the Age of Co-creation: the Need to Risk Community, Science and Practice Involvement in Planning Programmes and Curricula. *Planning Practice and Research*, 31 (5), 473-485. <https://doi.org/10.1080/02697459.2016.1222120>
- Rooij, R.M. and Frank, A. (guest editors) (2016). Educating Spatial Planners for the Age of Co-creation. *Planning Practice and Research*. Special Issue, 31 (5).
- Rooij, R. (redactie) (2016). *Zelfevaluatie bachelor vernieuwing Bouwkunde / TU Delft. In het kader van het TU Delft 'Koersen op Studiesucces' programma*. O&S, faculteit Bouwkunde, Technische Universiteit Delft.
- Rooij, R., (2017). *Academic Design*. Workshop at the 2017 CDIO conference in Queensland, Australia.

Research on education innovation

Architecture and the Built Environment (A+BE) at TU Delft scores outstandingly in international rankings. The Faculty of A+BE conducts a lot of high-quality scientific research in the field of the built environment. It also produces hundreds of engineering graduates at BSc and MSc levels in [a wide range of subdisciplines](#) every year. But how do you know if a curriculum is effective and whether degree programmes and courses actually achieve their aims? This also requires research! More specifically, it calls for research that combines specialist content and didactics from an educational science point of view. The Faculty of A+BE is launching scientific research into its educational innovations.

The approach will be evidence-based and involve educational research, interdisciplinary collaboration between Architecture and the Built Environment staff and educational scientists, data collection and the sharing of knowledge and experiences with other degree programmes in the field. In the years ahead, this could result in some interesting curricular changes.

Digitisation, a globalising economy and whirlwind developments in technology, demographics, the environment, mobility and urbanisation all mean that the sector of design and construction will face new challenges. Existing engineering and design curricula will need to be continually updated and education will have to become 'agile'.

Educational innovation research is one of TU Delft's key priorities and the Faculty of A+BE has taken up the challenge. The educational innovation research team invites lecturers and researchers in the faculty to share their knowledge, experience and ideas about educational innovations for the A+ BE degree programmes.

Themes

The educational innovation research programme will develop knowledge on five key themes:



Teaching design



Academic skills



Multi-, inter-, transdisciplinary education



Online and 'blended' education



Curriculum revision and leadership

Six BK publications in International Journal of Technology and Design Education

<https://www.tudelft.nl/en/2019/bk/six-bk-publications-in-international-journal-of-technology-and-design-education/>

No less than six articles on architecture and built environment design education have been published in the latest open access issue. Twenty staff members from all over the faculty contributed to broad range of topics, from disciplinary and pedagogical developments to interdisciplinary learning and the cultivation of the next generation designers

Extensive research on education innovation

<https://www.tudelft.nl/en/2019/bk/extensive-research-on-education-innovation/>

Within the research programme 'Research on education innovation', BK Bouwkunde structurally looks into opportunities to innovate, improve, monitor, and research education. The 4TU Centre for Engineering Education has granted € 105.000 to both BK Bouwkunde and the faculty Industrial Design Engineering to set up, carry out, and extend three projects and one event to further develop and share knowledge.

AESOP award of Excellence in Teaching to BK MOOC Rethink the City

<https://www.tudelft.nl/en/2017/bk/aesop-award-of-excellence-in-teaching-to-bk-mooc-rethink-the-city/>

The MOOC 'Rethink the City: New Approaches to Global and Local Urban Challenges' is awarded with the 2017 AESOP 'Excellence in Teaching' Award. AESOP is the Association of European Schools of Planning and the award aims to promote innovative planning education and disseminate high quality teaching practices among European planning schools.

Integrating online education with on-campus classrooms

<https://www.tudelft.nl/en/2019/bk/integrating-online-education-with-on-campus-classrooms/>

A broad international debate is paramount for urban planning education. To this end, the Bridge DOCS research project aims to connect students from online courses with students in on-campus classrooms. Igor T.M. Pessoa and Roberto Rocco received a NWO/NRO Comenius Teaching Fellowship grant of € 50.000,- to develop the necessary platform. They will start with connecting first year Urbanism students with students from the MOOC 'Rethink the city'.

