Trends in Higher Education Development in the Age of Digitalisation: Studies and Activities at a Glimpse

University:Future Festival 2021
Online, 2–4 November 2021

September 2013

January 2015

HIS-HE

May 2014

HIS-Hochschul-IT,
IT-Service Department
for Universities

previous
HIS-Institut für Hochschul-
forschung, HIS GmbH

previous
Department Hochschulentwicklung,
HIS GmbH

HIS Institute for Higher Education Development (HIS-HE)

❑ Non-profit institution of the 16 federal states supporting science, research and teaching

❑ Research-based, independent competence centre

❑ Support of universities, non-university research institutions and ministries with a variety of consulting services

❑ Departments:

- University Construction (Bauliche Hochschulentwicklung)

- University Infrastructure (Hochschulinfrastruktur)

- Higher Education Management (Hochschulmanagement)
  - ➢ Governance
  - ➢ Quality management in study and teaching
  - ➢ Digital teaching and learning
  - ➢ Process optimization
  - ➢ IT & change
  - ➢ Benchmarking

Our „Digitalisation Team"

- ❑ *University construction*

  - ➢ Inka Wertz: Influence of digitization on the physical learning location at universities, sustainable teaching and learning environments

- ❑ *University infrastructure*

  - ➢ Ralf Person: Digitization in building management and technology, e.g. CAFM, Smart Campus

- ❑ *Higher Education Management*

  - ➢ Astrid Book: Implications of the Corona Pandemic for Strategic Higher Education Development Concepts
  - ➢ Dr. Elke Bosse: Corona@university, Implications of the Corona Pandemic for Strategic Higher Education

- ➢ Dr. Harald Gilch: Evaluation of IT-Services, Effects of digitization on Administration processes, EFI, OZG and MODUS Survey

- ➢ Imke Jungermann: Effects of digitization on Administration processes, Implementation of Campus Management Systems

- ➢ Dr. Maren Lübcke: Digitization in teaching and research, Corona@university, Study individualisation through digital, data-supported assistants (SIDDATA)

- ➢ Funda Seyfeli: Study individualisation through digital, data-supported assistants (SIDDATA), development of studies and teaching

- ➢ Dr. Klaus Wannemacher: Digitization of higher education institutions, IT governance and development of studies and teaching

HISHE

Digitalisation as a Cross-cutting Topic: the HIS-HE Weblog

❑ HIS-HE sets a focus on the digital trans-formation in the areas of governance, administration, learning and teaching as well as research and its effects on infra-structure and structural requirements: https://his-he.de/leistungen/digitalisierung-im-hochschulbereich

❑ Since 2020, HIS-HE informs on current digitalisation topics in the higher education context on its weblog: https://digi-blog.his-he.de/

Digital Change at Universities

Impacts and Challenges

Digitalisation…

…is triggering a comprehensive differentiation process in the higher education system, not only since the Corona pandemic.

…is changing common forms of administrative and scientific work, of university governance and administration, research and teaching.

…opens up new possibilities for collaborative research and learning.

…changes role and requirement profiles and demands new digital competences from employees and students.

… requires institutional support structures and changes the requirements for IT governance, IT architecture together with flexible supply concepts.

Digital Change at Universities
Impacts and Challenges

Digital administration

Elektronische Studierendenakte
Digitale Organisationsdatenverwaltung
Business Intelligence und Datenanalytik
Elektronische Vorgangsbearbeitung
Social Media-Integration
Elektronische Formulare
Digitales Prozessportal
Online-Beratungsangebote
Integriertes Campus-Management
Open Data
Elektronische Signatur
Elektronisches Beschaffungswesen
Elektronischer Rechnungsaustausch
IT-Governance Digitale Erklärungen
Dokumenten- und Workflowmanagement-Systeme
Internetgestützte Selbstbedienungsfunktionen
Digitale Information zum Verfahrensstand
Dialogorientiertes Serviceverfahren
Enterprise Resource Planning
Elektronische Workflowunterstützung
Hochschulservice 4.0
Digitalisierung von Prozessketten
Digitale Abbildung des studentischen Lebenszyklus
Reorganisation operativer Geschäftsprozesse

Digital research

Kollaborative Forschung auf Basis digitaler Infrastrukturen
Interoperabilität digitaler Werkzeuge
Nationales Hoch- und Höchstleistungsrechnen
ResearchGate, Academia.edu, Mendeley
frei verfügbare Forschungsrohdaten
Forschungsdateninfrastruktur
Forschungsdatenmanagement
European Open Science Cloud
Open Access Infrastructure for Research in Europe
Science 2.0 Online-Panel
Scientific Workflow
ORCID Open Science Preprint-Server
Computersimulation
Grid-Computing Cloud Computing
Data Mining
digitales Publizieren
Research Data Alliance
Digital Engineering, Digital Geography, Digital Humanities, Digital Medicine
Virtuelle Forschungsumgebung
Wissenschaftliche Informationsversorgung
Supercomputing mit verteilten Rechenkapazitäten

Digital design of learning spaces

Raumnutzung Campus
Lernorte
Design Thinking LearnerLab
Lehrraumkonzept
Servicebereich Lounge-Bereiche
Gruppenarbeit Lehr-Lern-Settings
Virtuelle Räume Lernarchitekturen
Kollaboration
Stillarbeitsplätze
Computerarbeitsplätze
Nutzer:innenbedürfnisse
Multifunktionalität

Digitised teaching

Gamification
Blended Learning
Peer Assessment
Self-Assessment Learning Community
Open Course E-Assessment
virtuelle Welten Educational Data Mining
Online-Seminar
Informelles Lernen
Digitales
Tablet Computing
Augmented Reality Neue Lernszenarien
Simulation Mikroblog Peer Grading
Live-Digitized Lecture E-Lecture
Massive Open Online Course (xMOOC/cMOOC)
Online-Peer- und kollaboratives Lernen
Virtual Reality
Online-Studiengang
Interaktives Lernen
Adaptives Lernen
Inverted Classroom
Virtuelles Klassenzimmer
E-portfolio

Third Mission
Digital further education / Transfer of knowledge

Heranbildung digital kompetenter Arbeitskräfte
Verständnis für Wissenschaft
Digitale Partizipation
Freie Lehr- und Lernmaterialien
Gemeinnützige Universität
Entrepreneurial University
Informelles Lernen
Online-Weiterbildung
Online-Dienstleistungen für die Industrie
Wissenschaftskommunikation in sozialen Medien
Massive Open Online Course
Big Data, Educational Data Mining
Digitale Regionalentwicklung
Verwertung von Innovationen für die Digitalwirtschaft
Einsatz für Wissenschaftsschranke im UrhWissG

Digital Infrastructure

Nachhaltigkeit
Energiebedarf
Gebäudesimulationen
Klimaneutralität
Raumautomation
Building Information Modeling
Gebäudeautomation
Gebäudetechnik Energieverbrauch
Intelligente Gebäude Intelligente Räume
Smart Campus
DV-gestütztes Gebäudemanageme
Gebäudetechnologie
Facility Managment

HIS-HE Projects Dealing with the Digital Transformation in Higher Education (Selection)

- ❑ HIS-HE-projects relating to the pandemic situation in higher education

- ❑ Digitalisation of the universities (Digitalisierung der Hochschulen)
  Study on behalf of the Commission of Experts for Research and Innovation
  (Expertenkommission Forschung und Innovation - EFI)

- ❑ (Digital) university administration

- ❑ International horizon scanning: Trend analysis for a higher education landscape in 2030 (AHEAD)

- ❑ SIDDATA – Individualisation of Studies through Digital, Data-Driven Assistants

- ❑ Artificial intelligence at universities. Potentials and challenges in research, study and teaching as well as curriculum development

- ❑ twillo – Lower Saxony's OER portal

- ❑ Learning spaces of the future

The Broader Picture
Digitalisation of Universities
(*Digitalisierung der Hochschulen*)

Study on behalf of the Commission of Experts for Research and Innovation (Expertenkommission Forschung und Innovation – EFI)

❑ Nationwide analysis of the process of digitalisation at universities (addressing administration, research, teaching and infrastructure)

❑ **Questions:** Importance, anchoring and implementation status, framework conditions and options for action

❑ **Methods:** Literature review, online survey, case studies, workshops with ten experts, external data

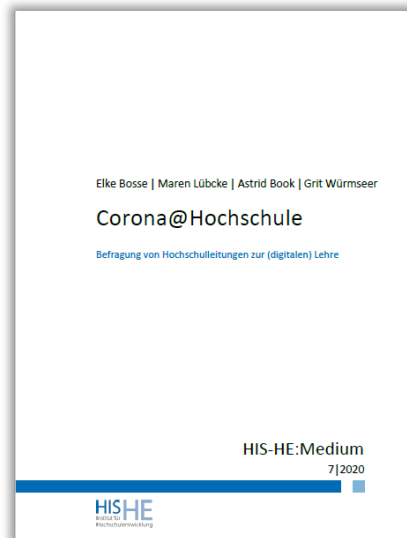❑ The **target groups for the online survey** were the presidencies and rectorates of the German universities.

https://www.e-fi.de/fileadmin/Assets/Studien/2019/StuDIS_14_2019.pdf

Projects Addressing Effects and Consequences of the Pandemic Situation in Higher Education

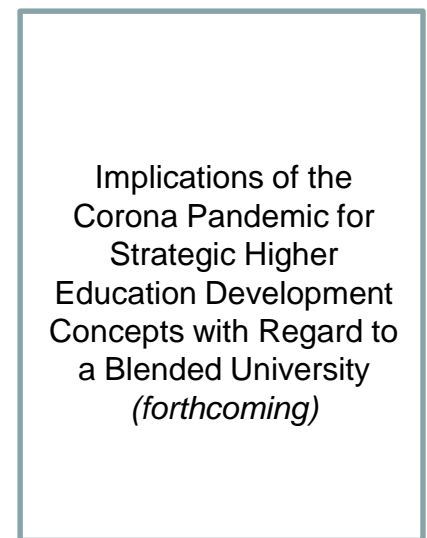**Funda Seyfeli | Laura Elsner | Klaus Wannemacher**

Vom Corona-Shutdown zur Blended University?

ExpertInnenbefragung Digitales Sommersemester

Tectum

Elke Bosse | Maren Lübcke | Astrid Book | Grit Würmseer

Corona@Hochschule

Befragung von Hochschulleitungen zur (digitalen) Lehre

HIS-HE:Medium
7|2020

HISHE
Institut für Hochschulenwicklung

NR. 57 / FEBRUAR 2021

Fachbereiche und Fakultäten in der Corona-Pandemie. Erfahrungen und Erwartungen an die Zukunft

Dr. Elke Bosse

Implications of the Corona Pandemic for Strategic Higher Education Development Concepts with Regard to a Blended University
(forthcoming)

https://www.tectum-elibrary.de/10.5771/9783828876484/vom-corona-shutdown-zur-blended-university

https://his-he.de/publikationen/detail/coronahochschule

https://hochschulforumdigitalisierung.de/de/news/corona-lehre-fachbereiche-arbeitspapier

https://festival.hfd.digital/de/programm/sessions-2021/?id=286957

Projects Addressing Effects and Consequences of the Pandemic Situation in Higher Education

HIS-HE-projects	Target group	Methods	Publi-cation
EDiS – Expert survey digital summer semester 2020	- teachers - students - staff of support institutions	multi-perspective expert survey using two online channels (Mattermost, video conferences)	Link
Corona@University	university management	online survey	Link
Experiences and expectations of faculties and departments with regard to (digital) teaching under pandemic conditions	faculty and department heads	guideline-based interviews	Link
Implications of the corona pandemic for strategic higher education development concepts relating to a blended university	university management	online survey	Link (main stage lecture)

HIS HE

Expert Survey Digital Summer Semester
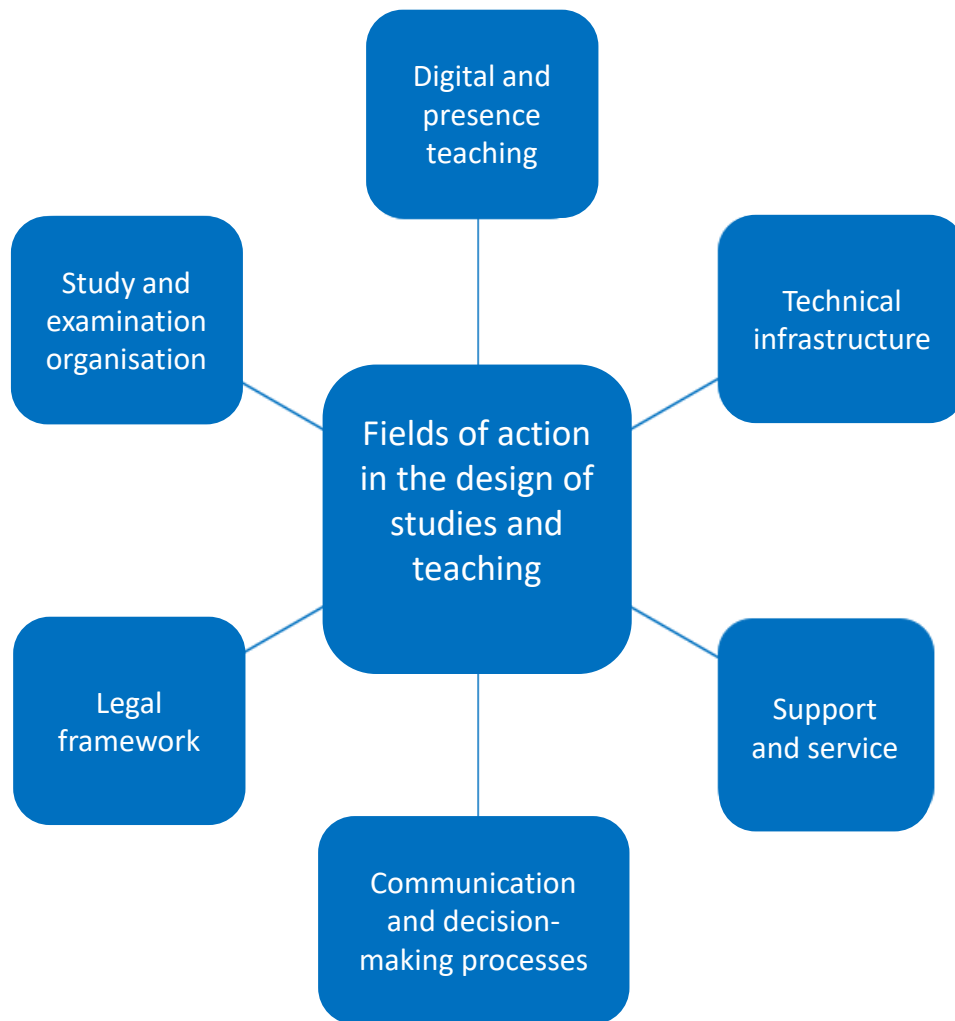## (*EDiS ExpertInnenbefragung digitales Sommersemester*)

- ❑ **Need for action in higher education policy**

  - – Support measures/experimental fields for the didactic further development of digitalised teaching across the board

  - – Systematic didactic further development of hybrid teaching scenarios at universities

  - – Close interweaving of didactic concepts and technical solutions

  - – Study financing

- ❑ **Institutional framework and approaches**

  - – Differentiation of cross-status communication

  - – Media technology modernisation

  - – Consideration of possible competence gaps of students in subsequent semesters

- ❑ **View of the university post Corona**

  - – Digital semester as a building block for the development of a 'blended university'

Short and Medium-Term Focus
Corona@University (*Corona@Hochschule*)


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        Digital and
        presence
        teaching

Study and                    Technical
examination                infrastructure
organisation

        Fields of action
        in the design of
        studies and
        teaching

Legal                        Support
framework                  and service

        Communication
        and decision-
        making processes
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Workshop with university leaders in Spring 2021: Crisis mode, holding pattern or shaping the future?

Thesis 1: Teaching in the post-Covid era will be different from teaching in the pre-Corona era.
Thesis 2: The pressure to act is twofold.
Thesis 3: There is a need for new fields of experimentation and testing spaces in the organisation of higher education institutions.

The survey was commissioned by Hochschulforum Digitalisierung.

https://digi-blog.his-he.de/krisenmodus-warteschleife-oder-zukunftsgestaltung/

Short and Medium-Term Focus
Departments and Faculties in the Corona Pandemic (*Erfahrungen und Zukunftserwartungen von Fakultäten bzw. Fachbereichen im Hinblick auf die (digitale) Lehre unter den Bedingungen der COVID-19-Pandemie*)

Crisis experiences and future expectations of faculties with regard to (digital) teaching under the conditions of COVID-19

☐ Faculties can benefit from both the central and their own digital infrastructure.

☐ The technical-didactic expertise of teachers is a resource whose development can be promoted both at faculties and by central institutions.

☐ Although subject-cultural differences such as proximity to technology and practical relevance can favour or limit the possibilities of digital teaching at the faculties, there is an interdisciplinary consensus regarding the relevance of face-to-face teaching.

☐ Central frameworks can provide orientation in ensuring the provision of teaching, but at the same time they must be shaped by means of internal faculty communication and coordination of teaching planning and development.

The survey was commissioned by Hochschulforum Digitalisierung.

Medium-Term Focus
Implications of the Corona Pandemic for Strategic Higher Education Development Concepts with Regard to a Blended University (*Auswirkungen der Corona-Pandemie auf strategische Hochschulentwicklungskonzepte im Hinblick auf eine Blended University*)

- ❑ In view of the development dynamics triggered by the COVID 19 pandemic, this study explores the question of the extent to which the ad hoc changes realised in the area of study and teaching have an impact on longer-term, strategic higher education development concepts.

- ❑ It is based on a nationwide online survey of university administrators conducted by HIS-HE in September 2021 on behalf of the CHE Centrum für Hochschulentwicklung. In order to gain a closer insight into the strategic engagement with (digital) teaching, assessments of the effects of the COVID 19 pandemic on central fields of action related to teaching and studying were collected.

- ❑ The survey results are used to examine the extent to which future concepts for strategic higher education development, for example in the sense of a "blended university" (Seyfeli et al., 2020), are emerging.

The survey was commissioned by Hochschulforum Digitalisierung.

SIDDATA – Individualisation of Studies through Digital, Data-Driven Assistants

@SIDDATA_de
www.SIDDATA.de

❑ The joint project of the universities of Osnabrück, Hano-ver and Bremen and HIS-HE (2018-2021) examines how students can be supported in achieving individual study goals.

❑ A prototype of the digital study assistant developed with-in the project is being tested at the three participating universities. The project is funded within the "Innovation Potentials of Digital Higher Education" funding line.

"With the use of the assistant, students should be encou-raged to define their own study goals and to follow them consistently."

https://www.siddata.de/

GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung

twillo – OER Portal in Lower Saxony

- ❑ twillo offers teachers at universities the opportunity to share educational resources with colleagues and thus make their own teaching more visible.

- ❑ Consortium leadership: TIB – Leibniz Information Centre for Science and Technology and University Library, funded by Lower Saxony Ministry for Science and Culture (MWK)

- ❑ HIS-HE is responsible for the development and introduction of a quality assurance tool.

https://www.twillo.de/oer/web/

@twillo_de
www.twillo.de

twillo
LEHRE TEILEN

Gefördert durch:
Niedersächsisches Ministerium
für Wissenschaft und Kultur

Artificial Intelligence at Universities. Potentials and Challenges in Research, Study and Teaching as well as Curriculum Development

HIS-HE conducted a literature study on the developments of AI use and research at German universities. The aim was to examine the existing progress at higher education institutions and with regard to the focus areas of research and development, study progression, teaching and learning support and integration into curricula. The study was commissioned by Hochschulforum Digitalisierung.

https://hochschulforumdigitalisierung.de/sites/default/files/dateien/HFD_AP_59_Kuenstliche_Intelligenz_Hochschulen_HIS-HE.pdf
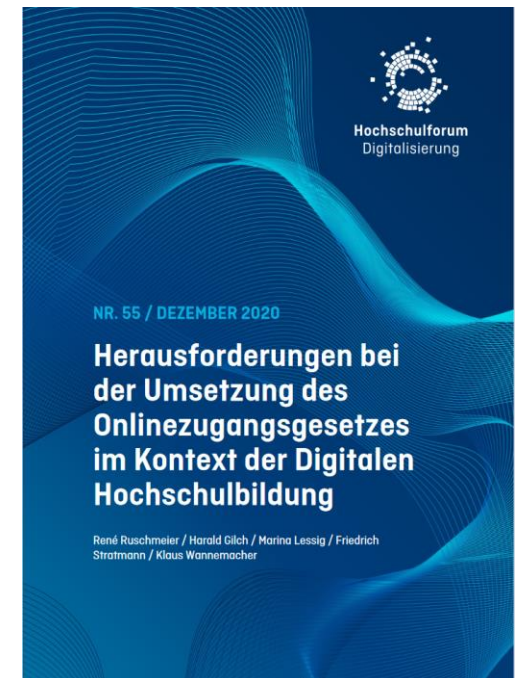
Implementation of the Single Digital Gateway at University Administrations in Germany

Numerous projects and activities around questions of the modern design of administration as well as digital university administration

Current focus areas:

1. Single Digital Gateway: Effects of the OZG on university administrations. BMBF-funded study carried out by Kienbaum and HIS-HE

2. Studies on IT services and on data centres

3. New requirements in examination administration

4. Introduction and implementation of campus management systems

5. Digitalisation of administrative processes (e-file, etc.)

Hochschulforum Digitalisierung

NR. 55 / DEZEMBER 2020

Herausforderungen bei der Umsetzung des Onlinezugangsgesetzes im Kontext der Digitalen Hochschulbildung

René Ruschmeier / Harald Gilch / Marina Lessig / Friedrich Stratmann / Klaus Wannemacher

https://hochschulforumdigitalisierung.de/sites/default/files/dateien/HFD_AP_55_Onlinezugangsgesetz_Hochschulen.pdf
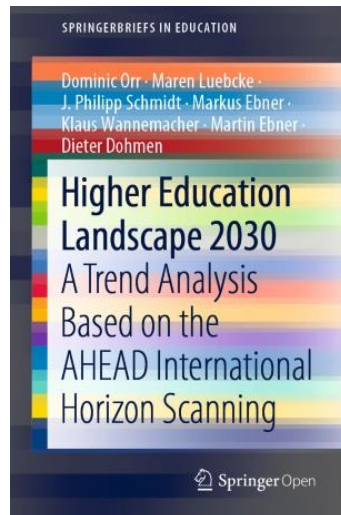
Study to Survey and Map Relevant Projects and Initiatives on the Digitalisation of Recognition and Credit Transfer Processes at Higher Education Institutions (MODUS)

- ❑ The digitalisation of the practical-technical implementation of recognition and credit procedures offers the opportunity to further optimise them and thus increase permeability in the higher education system and student mobility.

- ❑ Interfaces between the projects relevant to organisational and higher education development and higher-level initiatives in the area of digitisation of recognition and credit procedures will be identified within this study.

A study commissioned by HRK German Rectors' Conference

International Horizon Scanning: Trend Analysis for a Higher Education Landscape in 2030 (AHEAD)

https://hochschulforumdigitalisierung.de/sites/default/files/
dateien/HFD_AP_Nr_42_AHEAD_WEB.pdf,
https://www.springer.com/de/book/9783030448967

❑ One aim of this study was to examine the latest developments in learning theory, didactics, and digital-education technology against the background of (increasingly) digitalised higher education.

❑ The analysis formed the basis for a horizon scanning of higher education in 2030, designed to develop future scenarios that would meet future higher-education demands by taking advantage of social and digital innovations.

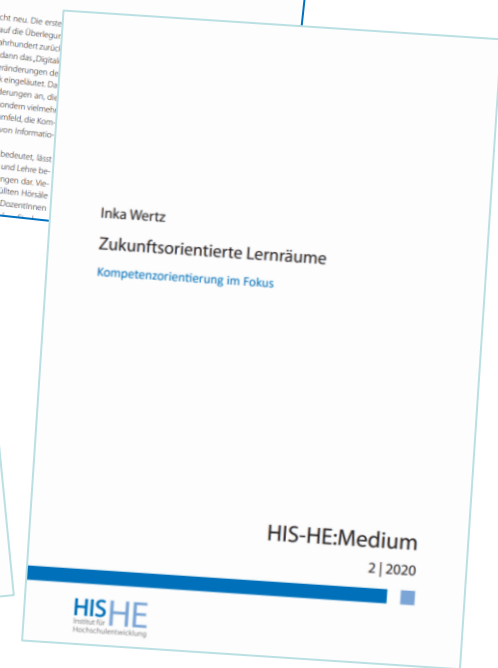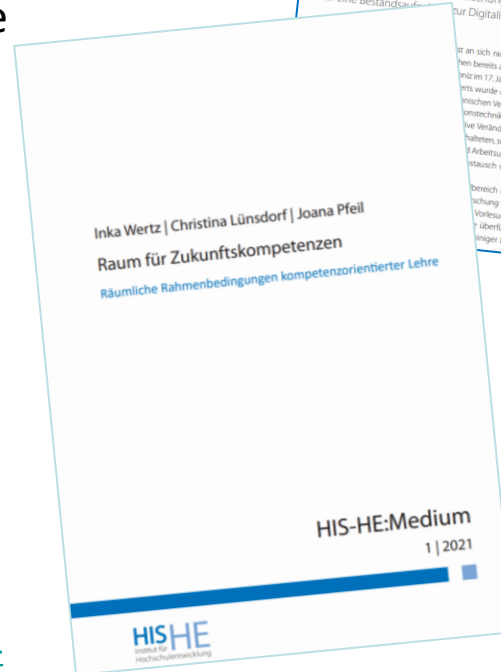# University Construction and University Infrastructure-Related Developments

Online-Survey of Employees in construction and facility management of higher educations institutions. The study provides an overview about Digitalisation in these associated departments.

https://his-he.de/publikationen/detail/digitalisierung-im-gebaeudemanagement

Publication about space for future skills and rooms for future teaching and learning.

https://his-he.de/publikationen/detail/raum-fuer-zukunftskompetenzen;
https://his-he.de/publikationen/detail/zukunftsorientierte-lernraeume

Thank you for your attention

Please do not hesitate to contact us for any request!

**Astrid Book, Dr. Elke Bosse, Imke Jungermann,
Dr. Maren Lübcke, Funda Seyfeli, Dr. Klaus Wannemacher**

book@his-he.de, bosse@his-he.de, jungermann@his-he.de
luebcke@his-he.de, seyfeli@his-he.de, wannemacher@his-he.de
Tel.: 0511/169929-71, 0511/169929-26, 0511/169 929-22
Tel.: 0511/16 99 29-19, 0511/16 99 19-29, 0511/16 99 29-23

www.his-he.de

**HIS-Institut für Hochschulentwicklung e. V.
Goseriede 13a, 30159 Hannover**

www.his-he.de/hochschulmanagement