Resolution of the
37th General Assembly
of the HRK
on 14 November 2023
in Berlin

**"Digital University":
Challenges and
Cooperation Opportunities**

**HRK** German Rectors' Conference

The Voice of the Universities

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**Executive Summary**

1. The dynamics of digitalisation for German universities continue to be extraordinarily high: Generative AI models such as ChatGPT automatically create content, encryption technologies and security structures face the constant threat of cyberattacks. These are just a few of the prominent challenges facing German universities. The HRK therefore stands by its demands to the federal and state governments on the further development of digital teaching and teaching infrastructures from June 2021.[1] This paper takes up these demands and places them in the current context.

2. The coalition agreement at federal level from November 2021 provides for a federal programme entitled "Digital University", with which "broad concepts for the expansion of innovative teaching, qualification measures, digital infrastructures and cybersecurity (are promoted)" The aforementioned focus of this federal programme largely corresponds to the HRK's demands for the further development of digital learning and teaching as well as teaching support services, support staff, continuing education programmes, teaching support infrastructures and information security. The HRK therefore continues to welcome the will expressed by the coalition parties for such a federal programme.

3. The BMBF's position is made clear in the "Science Council recommendations on Digitalisation in Teaching and Learning" of July 2022 by the wording that the federal government should promote overarching cooperation structures "with a one-off and time-limited federal programme". Even this withdrawn claim was postponed until further notice at the end of 2022.

4. In view of the unchanged challenges in the digitalisation of teaching and learning, the HRK identifies the current challenges for the design of federal and state programmes. These key points relate to the possibilities and limits of cooperation, enabling and stimulating cooperation, the

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[1] Resolution of the HRK Senate of 8 June 2021 (available only in German), https://www.hrk.de/positionen/beschluss/detail/forderungen-an-bund-und-laender-zur-weiterentwicklung-der-digitalen-lehrinfrastrukturen/ (14.11.2023).

differentiation of approaches according to levels and complementary, and the prioritisation of fields of action.

5. Overall, a federal "Digital University" programme and corresponding state programmes should be designed in such a way that the structures created can form the basis for more comprehensive and sustainable funding and development.

## I. Current challenges of the digitalisation of teaching and learning and the need for cooperation

Based on the experience gained so far with digital teaching formats during the pandemic, the question arises as to what the mix of face-to-face and online teaching should look like in the future as part of blended learning. There is a basic consensus that there must be "no mere shift into reverse mode"[2] towards the old structures of teaching and learning, but rather a "departure into a different university world" is required.[3]

Sustainable digital teaching infrastructures are a necessary prerequisite for modernising teaching and learning through digital concepts. While at the beginning of the pandemic, the digitalisation of teaching and learning was made possible primarily by the extraordinary personal commitment of university members, ad hoc decisions by university leadership and immediate programmes in many federal states, there is now a need for the systematic and strategic further development and expansion of digital teaching infrastructures.[4]

According to the recommendations of the German Council of Science and Humanities on digitalisation in teaching and learning, university members, university leadership, the federal states and the federal government should all make their contribution. A clear distribution of tasks and good coordination are important here. This applies in particular to the "Digital University" programme planned by the federal government, which is intended to promote "subject-specific hubs and interdisciplinary advisory and support centres as well as the establishment of an umbrella structure for networking".[5] In this context, it should be noted that most universities are already cooperating successfully. This means co-operation structures already exist in the area of digital teaching

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[2] Higher Education Forum on Digitalisation 2022, https://hochschulforumdigitalisierung.de/de/blog/keine-rolle-rueckwaerts-bitte/ (14 November 2023, available only in German).

[3] HRK Conference on lessons learnt from the COVID-19 pandemic: Departure into a different university world, 28/29 March 2022, University of Potsdam, https://www.hrk.de/themen/studies/conference-potsdam/ (14 November 2023, available only in German) and review of the HFDcon https://hochschulforumdigitalisierung.de/en/hfdcon/ (14.11.2023).

[4] Resolution of the HRK Senate of 8 June 2021 (available only in German), https://www.hrk.de/positionen/beschluss/detail/forderungen-an-bund-und-laender-zur-weiterentwicklung-der-digitalen-lehrinfrastrukturen/ (14.11.2023).

[5] German Council of Science and Humanities of 8.7.2022, "Recommendations on Digitalisation in Teaching and Learning", https://www.wissenschaftsrat.de/download/2022/9848-22.pdf?__blob=publicationFile&v=10 (14.11.2023, available only in German).

infrastructure. Therefore, in the interests of complementarity, the promotion of duplicate structures should be avoided.

The future distribution of tasks between the various levels in the digitalisation of learning and teaching requires the clarification of a few key points: What added value can be achieved through cooperation? How can co-operation be stimulated? How do you create the ability to cooperate? How can the complementarity of measures at different levels of action be ensured? Which measures have high priority? What good practices can be used as a guide? These questions will be explored below.

**II. Added value of cooperation: Possibilities and limits**

The fact that cooperation is a promising approach to achieving goals applies in particular to the digitalisation of university teaching infrastructures. The focus is initially on bundling resources, i.e. economies of scale, which play a major role in digitalisation processes in particular.[6]

The idea of learning from and with each other and developing and testing joint prototypes is particularly promising for digital teaching infrastructures. This also corresponds to the guiding principle of "higher education institutions as learning organisations". Cooperative learning is about sharing and jointly developing information and content, as is already successfully implemented in open source, open educational resources and open government.

Cooperation between universities also eliminates intransparency, overcomes pillarised structures and enables complex innovations. Common standards, not least with regard to ethical principles, can be achieved and further developed. Cooperation favours joint further training and thus the professionalisation of academic, artistic and administrative staff. The key challenges here are cultural change and the associated change management.

In the future, cross-university cooperation will make it easier to achieve resilience in information security. The process of internationalisation of German universities can also be supported through cooperation on digital teaching infrastructures. Finally, in terms of the sustainability of digitalisation processes, it has been shown that networks in particular maintain these structures.

These fundamental considerations on the desideratum of cooperation in the digital teaching infrastructure show that the idea, tabled by the Federal Ministry of Education and Research, of competence and service centres with multi-professional teams, which advise and support the universities in digitalisation and offer further training, is promising. This idea of cooperation corresponds to key elements of the HRK's demands for the further development of the digital teaching infrastructure.

However, these measures also raise some fundamental questions about the scope of cooperation. This includes, first of all, the question of the

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[6] Cf. Science Council "Recommendations on the Sovereignty and Security of Science in the Digital Space" of 23 October 2023, https://www.wissenschaftsrat.de/download/2023/1580-23.pdf?__blob=publicationFile&v=10 (14.11.2023, available only in German), p. 26.

steering concepts of the participating universities. In particular, it must be decided which measures are to be implemented across universities and which are to be implemented locally. The qualitative degree of cooperation must also be clarified, e.g. whether it is a mere exchange or a binding coordination. Furthermore, it can be assumed that, especially in the case of content-related tools such as OER, a differentiation of cooperation by subject is necessary due to the different subject requirements and subject cultures.

Finally, university cooperation across national borders is subject to different framework conditions due to different higher education laws. At this point, the paradigm of competition both between federal states and universities must also be taken into account. With regard to the German higher education system as a whole, there is also the question of the balance between uniformity and diversity of digital teaching infrastructures. These boundary conditions could lead to a situation where there is no comprehensive cooperation structure, but only where there are common interests, resulting in cooperation between the willing.

### III. Enabling and stimulating cooperation

If the cooperation promises a lot of added value, especially in the digitalisation of teaching and learning, two questions arise with regard to achieving the potential added value: How can those involved be supported in their co-operation where necessary? And how can cooperation be stimulated?

The *ability* to cooperate relates both to the individual level of students and teachers and to the institutional level of organisational units and universities. Students and teachers need a minimum level of digital sovereignty and digital equipment. These prerequisites may have to be communicated or created in advance. However, technical equipment is also essential for students and teachers. These include learning and campus management systems, studios, digitally equipped learning rooms, cameras, whiteboards, notebooks, remote access, bring-your-own-device facilities, comprehensive local wireless internet access and an increase in bandwidth. In the case of institutional cooperation, it is particularly important that a minimum number of staff with proven expertise and resources in the form of available server and storage infrastructure are at hand.

Further development of the local digital teaching infrastructure is an essential prerequisite and basis for further cross-university co-operation. Cooperation requires standards agreed between equal partners. For this reason, a "Digital University" programme must also include local measures that equip the universities for overarching cooperation.

In the digitalisation of teaching and learning, a functional stimulation of cooperation should not be initiated by unilateral decree, but rather on the basis of coordination and negotiation processes. This applies equally to both internal and external university collaborations. In order to achieve a basis for the greatest possible legitimisation and participation, cooperation projects should emerge from complementary top-down and bottom-up processes. In the case of internal university cooperation, it is particularly important for the area of learning and teaching that the

university leadership involves the students with their needs and concerns. In the case of cross-university cooperation, policymakers must seek dialogue with the universities in question or their representative bodies (LRK and HRK) and create the conditions for cooperation. Simply initiating collaborations through monetary incentives usually does not do justice to the complex technical and cultural requirements for the digitalisation of teaching and learning.

## IV.  Differentiation according to cooperation levels and complementarity of the cooperation approaches

As already described in the section on enabling and stimulating cooperation, the tasks involved in the digitalisation of learning and teaching arise at various levels. By their very nature, these levels can overlap.

At a *local level*, the requirements must be met in the individual faculties and departments as well as throughout the university. These requirements relate above all to learning and campus management systems, digitally equipped studios and learning spaces as well as a network infrastructure suitable for research and teaching. Universities in particular are called upon to ensure the necessary digital framework conditions for students and teachers. However, the universities themselves must also be provided with sufficient resources by the funding bodies to ensure a university-wide digital teaching infrastructure. This university-wide teaching infrastructure also includes integrated communication channels for video conferences and chats as well as collaboration tools, forums and services for academic and artistic work.

In order to achieve added value through *cross-university cooperation*, the federal states in particular are required to create the necessary framework conditions. This is not only about financial contributions, but also about the creation of standardised legal regulations, e.g. in terms of digital examination law, teaching obligations and data and privacy protection. On the basis of this financial and legal framework, cross-university cooperation may be possible and successful in the case of overlapping offerings/platforms, cloud strategies and cloud services as well as the establishment of institutional digital sovereignty, including the development of own and expansion of existing open source solutions. In view of the existing skilled labour problem in the IT sector, both the federal states and the federal government are called upon to make the remuneration of such skilled workers more flexible.

In order to prevent cooperation in the digitalisation of learning and teaching from ending at state borders, the federal government is called upon to promote *cross-state structures*. The "Digital University" programme planned by the federal government  may contribute to these cross-state structures.

With regard to the *international level*, digital teaching infrastructures must be designed in such a way that they can also keep pace with the growing internationalisation of German universities. Special attention is paid to the development of virtual international programmes for students, the recruitment of international students and the preparation of domestic and international students. In this task, the universities are

primarily dependent on the support of the federal government and the German Academic Exchange Service (DAAD).

The different levels of action can also be accompanied by a distribution of roles: The Higher Education Forum on Digitalisation (HFD) addresses the community, the HRK addresses the university leadership, the state initiatives ensure local and regional coordination and support and the Stiftung Innovation in der Hochschullehre (Foundation Innovation in University Teaching) takes care of the didactic concepts.

*Complementarity* with existing digital teaching infrastructures and cooperation within and across universities is crucial for the success of new impulses for the digitalisation of learning and teaching. Complementarity ensures both the sustainability of resources that have already been contributed and the continuation of existing digital organisational cultures.

The requirement for complementarity must be based on the actual status of digitalisation activities in the federal states between 2019 and 2023 – i.e. before, during and after the COVID-19 pandemic:
In line with the drastic nature of the pandemic, all federal states launched COVID-19 emergency programmes to a greater or lesser extent. These immediate action programmes are primarily aimed at digitalising university operations. Due to the particular challenge of maintaining university teaching during the pandemic, the digitalisation of teaching and the expansion of media-supported teaching is the focus in all federal states. It is worth noting that more than half of the federal states also address the promotion of digital research in their activities. In contrast, the digitalisation of university administration is only specifically promoted by just under half of the federal states. The fact that only just under half of the federal states explicitly address the improvement of digital infrastructures shows the rather short-term perspective for overcoming the COVID-19 challenges.

The above-mentioned general measures are being implemented very differently in the concrete operationalisation: Just under half of the federal states are focusing on the formation or promotion of higher education networks and on explicit state strategies, agendas or master plans. University-specific digitalisation strategies, on the other hand, are only supported by individual federal states.

Just under a third of the federal states are addressing the topics of equipment, skills, teacher training and open access in connection with the digitalisation of universities. Only a quarter of the federal states are prioritising improving support or increasing the number of specialist staff. A quarter of the federal states also rely on their own alliances for the digitalisation of universities.

Few federal states operate their own platforms or have launched their own digitalisation programmes. Similarly, only a few federal states have explicitly provided funding to meet the challenge of digital examinations.

The other measures are only mentioned sporadically, i.e. by one or two federal states: Support for service facilities, research institutes, computer centres or libraries, calls for applications for fellowships or digitalisation

professorships, promotion of open science, open educational resources (OER) and micro-learning. The further development of cloud services, high-performance computers, campus management systems and student services is also only addressed in individual cases. This also applies to overarching topics such as internationalisation, the advancement of women and IT security. University contracts and best practices as well as the procurement of digital materials or e-licences are listed in order to steer the universities. The topics of "artificial intelligence" and "digital knowledge" also only appear sporadically in the federal states' activities.

Overall, the evaluation shows that beyond the recognition of the immediate need for action for the digitalisation of teaching in the face of the COVID-19 pandemic, there are few similar or even joint activities by the federal states. Although the general goals of digitalising teaching and research are still mentioned by the vast majority of the federal states, only a minority of the federal states explicitly pursue the overarching tasks of digitalising administration and infrastructure. The operationalisation through strategies, networks and institutions is correspondingly heterogeneous. The large number of different individual measures listed can also be seen as an indication of the tendency towards detailed control.

When the federal and state governments take action with funding programmes, these heterogeneous statuses and characteristics must be taken into account in higher education institutionalisation in the federal states. Since an increase in complexity through any overarching federal measures is not promising, it seems sensible to promote measures in close coordination with the universities and to implement these with a high degree of organisational freedom on the part of the universities. Both existing digital teaching infrastructures and university-specific cultures can be taken into account.

**V. Prioritisation of the fields of action**
In view of the complexity and scope of the digitalisation of learning and teaching, it is advisable to prioritise fields of action. It should be noted in advance that both the agenda and the terminology are changing rapidly due to the rapid pace of digitalisation. This applies in particular to the challenge posed by AI-supported learning. Fields of action to be prioritised include:

*Teaching support infrastructure:* Although almost every university can guarantee the operation of digital teaching and digital learning, there is often a need for optimisation, particularly with regard to usability, comprehensive coverage and technical performance. This is particularly true for the smaller universities. In general, the usability of services for transferring, storing, processing, sharing and archiving data should be improved, as this fundamentally simplifies everyday life in learning and teaching. Ideally, these services should be thought of and combined with virtual learning environments. In addition, some locations still lack extensive wireless internet access. Improving the digital teaching infrastructure also requires an increase in bandwidth and a highly

available server and storage infrastructure. The latter measure may be implemented partly locally and partly across universities.

*Legally compliant online examinations and e-assessment:* In terms of blended learning, examinations and assessments must be available for a large number of constellations. Combinations result from the dimensions of "individual versus collective" and "face-to-face versus virtual". Particularly in view of the challenge posed by generative artificial intelligence and the increasing relevance of distance learning in the context of lifelong learning, universities must have all combinations at their disposal. Online examinations should therefore always be an available and reliable option. This also applies against the background of possible further pandemic waves. In order for online examinations to be readily available, a legal basis for supervised online examinations is required in some federal states in addition to the technical and organisational requirements. Ultimately, the decision in favour of a particular form of examination must be derived from the subject-specific didactic concepts and the corresponding competences to be tested.

*Digital sovereignty:* The goal of digital sovereignty is complex, but this is precisely why it must be tackled both promptly and sustainably. A distinction must be made between the dimensions of individual, institutional and national or European digital sovereignty. Individual digital sovereignty relates primarily to the skills development of students and teachers: In order for students to develop further in terms of digital sovereignty, a comprehensive integration of digital elements in synchronous and hybrid teaching formats is required. This in turn requires the digital sovereignty of teachers, which can be promoted through university didactic training and continuing education. There is also a need for action when it comes to institutional digital sovereignty. The main focus here is on the further development of the university's own IT services – including the development of its own and the expansion of existing open source solutions – and the avoidance of irreversible dependencies when commissioning external service providers, as well as the influence of the universities on the software they use. Last but not least, the issue of systemic digital sovereignty must also be addressed at national and European level. The aim here is to reduce dependencies on non-European providers and ensure fair and equal conditions for all players within a European or national framework. Naturally, the political players at national and European level are called upon here.

*The handling of data in consideration of artificial intelligence (AI):* Data is being generated and transferred with increasing speed. This also applies to the transfer from research to teaching. This data can be analysed conventionally, but also increasingly by artificial intelligence. At the same time, media content is increasingly being generated by AI – usually without reliable acknowledgement of its original sources and without any real basis ("fake" or "work without an author"). Knowing these options and being able to evaluate the generated content requires a special basic skill, AI literacy. This is a current and particularly challenging new component of skills development for students and teachers.

*Information security:* Although information security is not exclusively related to the digitalisation of teaching and learning, it is nevertheless a necessary condition for this area. As recent hacker attacks have shown,

these can lead to weeks of downtime or considerable restrictions on the entire university IT system – including the digital teaching infrastructure. Increasing information security is less about the complete defence against attacks and disruptions and more about improving cyber resilience so that normal digital operations can be resumed as quickly as possible. Measures to improve information security include awareness measures to create a security culture, classification of data and the development of data management plans as well as personnel for computer emergency response teams. The latter measure in particular may ideally be carried out in co-operation across universities. However, all of these measures require specialised, qualified personnel who must be hired to supplement existing expertise.

*Subject-specific didactic concepts:* Didactic concepts for digital teaching formats generally have to be subject-specific. For this reason, an intensive exchange between technical and media didactic expertise is necessary when creating these concepts. With this in mind, both research and the exchange of subject-specific concepts should be promoted across universities wherever possible. The potential of digital teaching arises specifically from interactive didactic methods. The concrete implementation of generic subject-specific didactic concepts is left to the teachers on site. However, teachers must have access to media technology and university didactics service centres.

*Accessibility:* Digitalisation creates new opportunities for the further development of inclusion. In this way, a contribution can also be made to the guiding principle of a "university for all". For example, assistive technologies can support hybrid teaching and digital examinations to ensure full participation in the study programme. Priority tasks for the realisation of accessibility include education and awareness-raising for all university members. Building on this, concrete instructions for action should follow, for example for the legally required provision of accessible documents and websites, and the multiplication of good practices should be supported.

*Internationalisation:* Digital teaching infrastructures must be coordinated with the process of internationalisation at German universities. The following tasks arise in particular: The creation of virtual international programmes for students, the recruitment of international students and the preparation and support of international exchanges. These goals are to be pursued in close coordination with the federal government and the DAAD.

**Appendix: The origins of the resolution**
This recommendation was prepared by the HRK Standing Committee on Digitalisation. The Committee is headed by the HRK Vice-President for Digitalisation and Academic Continuing Education, Professor Dr Ulrike Tippe. The permanent members of the commission are Professor Dr Philipp Ahner, Mr Malte Dreyer, Professor Dr Hannes Hartenstein, Professor Dr Wolfram Horstmann, Professor Dr Michael Jäckel, Professor Dr Lauer, Professor Dr Norbert Lossau, Mr Jens Andreas Meinen, Professor Dr Jörg Müller-Lietzkow, Dr Hans Pongratz, Professor Dr Arnd Steinmetz and Professor Dr Jens Weiß. Professor Dr Ada Pellert is a

permanent guest. The Committee is supported by Dr Elmar Schultz at the HRK Head Office.