



ORGANIZING DIGITAL CHANGE AT THE UNIVERSITY

The Practitioners' Field Guide for
Implementing Educational Technology

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THE PRACTITIONERS' FIELD GUIDE FOR IMPLEMENTING EDUCATIONAL TECHNOLOGY

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Introduction

In life, there is no digital switch. Digital change, like other transformative processes, takes universities on adventurous and challenging journeys. Educational technology, a pedagogical approach that infuses technology into the classroom, brings change to the heart of the university. Digitizing the learning experience can include incorporating an array of different software and hardware: learning management platforms, communication tools, and technical equipment. However, implementing these changes involves coordinating various organizational processes related to leadership, strategy, infrastructure, and most importantly, creating an organizational culture which inspires motivation and engagement among university teachers.

What is Educational Technology?

“Educational technology (commonly abbreviated as edutech, or edtech) is the combined use of computer hardware, software, and educational theory and practice to facilitate learning” (“Educational Technology”, 2023)

“Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources.” (Januszewski & Molenda, 2013, p. 1)

As a companion on this journey, the *Practitioners' Field Guide for Implementing Educational Technology* offers directions for those navigating the sometimes turbulent, but rich road of implementing educational technology. In this guide, we offer research-based recommendations and data-derived best practices which draw on the findings of the [OrA Project](#), a cooperation between the Alexander von Humboldt Institute for Internet and Society ([HIIG](#)) and the [FernUniversität](#) in Hagen, [CATALPA](#) - Center of Advanced Technology for Assisted Learning and Predictive Analytics. Readers will gain insight on six key themes related to organizing educational technology across a higher education institution: **leadership, strategy, infrastructure, networks, engagement** and **motivation**.

The guide covers these themes in six sections: Leading with educational technology, Creating a common vision, Building a strong foundation, Maintaining connections, Unpacking resistance, and Fostering motivation. In the sections, we provide university managers and administrators, teachers as well as technical staff insight into overcoming central implementation challenges. Each section includes an overview text with the main research takeaways as well as an exercise – discussion guide, steps, or case study example – to equip readers with food for thought. The sections are designed to operate as standalone references as well as collectively address interconnected organizational processes at work. Readers are encouraged to select sections and combinations that fit the needs of their institutions.

We sincerely hope this guide offers readers helpful suggestions, space to reflect and guidance for discussion. We wish you all the best on your educational technology journeys!

1

Leading with educational technology

How can institutional leaders encourage engagement with educational technology?

Centrally-led changes to teaching have been known to spark [reluctant responses](#) from teaching staff, and even in some cases [resistance](#). To counter these reactions, institutional leaders – presidents, vice-rectors, deans – can play key roles in encouraging [staff engagement](#) with educational technology. Institutional leaders can empower informal leaders by providing space for creativity, delegating decision-making, and allocating resources.

Institutional and informal leaders: What's the difference?

While institutional leaders include presidents, rectors and deans and others in formally recognized leadership positions, we also recognize that people without these formal capacities can assume a leadership role. These informal leaders may hold any position within the university.

How to lead with encouragement

A **first step** for institutional leaders is to identify [informal leaders](#) – staff members who have expertise and are creative in this area. These informal leaders we classify as individuals who are intrinsically motivated to work with technology and already successfully engaged with educational technology. Such individuals can be located throughout an institution and are not limited to one field or department.

Identifying informal leaders

"... for me personally two colleagues from our faculty were quite central. [They] took charge of this [digital teaching], they are extremely committed, they are very tech-savvy and put in a degree of extra work that is greatly appreciated. [They] have also designed little learning videos [for others]"
(Lecturer)

The **second step** is to involve both informal and institutional leaders in administrative discussions about educational technology. Most importantly, informal leaders should be granted decision-making capacities regarding the application and selection of educational technology in their respective disciplines. In addition, they should be given a voice in related issues such as strategy building, funding, teacher training, incentive schemes and other organizational matters. We found in our case studies that giving informal leaders the power to make changes about educational technology policy kept motivation high in such partnerships.

Empowering informal leaders

"We have a very decentralized organizational structure. We assigned a lot of competencies to the departments and the departments in turn have passed those competencies to the individual study areas and teachers. The goal is to increase motivation and identification – that each person can say, "I did that myself," and not, "I had to apply something that others somewhere gave me.""
(Central-level leader)

In the **third step**, institutional and informal leaders should aim to work in tandem to identify the pressing challenges – financial, technical, personal or bureaucratic – hindering the uptake of educational technology. Surveys, focus groups or workshops with staff members are useful formats for understanding how challenges may be experienced differently across disciplines and departments.

Listening to informal leaders

"... [there is a] feedback loop from teachers and tutors at the coalface who are sharing their learning and that's filtering up. People are listening to it and then trying to find solutions which accommodate these new thoughts and ideas."
(Head of study program)

With their vantage points, institutional and informal leaders bring different perspectives to the table when unpacking and addressing these challenges. Ideally, these discussions lead to the [generation of practice-oriented solutions](#) which ensure that educational technology fits the diverse needs of a variety of study programs and teaching environments.

Finding solutions

"It's also true that we offer a variety of different courses ... where students seem to be very receptive towards technological innovation. Not just as a subject for studying, but also in terms of getting more creative with the use of technology for the purpose of the course. So, perhaps instead of writing an essay, they would be happy to produce a short video, this kind of stuff. But this is not the experience of all students. So, I guess in order to accommodate these different expectations, and these different student cohorts, there is quite a good degree of flexibility." (Lecturer)

By distributing power to informal leaders, institutional leaders can in turn become ambassadors of educational technology within their institution. However, this does not mean that the responsibility of educational technology rests solely on their shoulders, and this extra responsibility should be acknowledged and compensated. Rather institutional leaders prioritize fostering a partnership with staff members, which positions both parties as [co-owners](#) of educational technology.

Co-ownership of educational technology

Institutional leaders and staff members collectively take responsibility and make decisions on how to include educational technology in the classroom and the institution as a whole.

DISCUSSION GUIDE: FACILITATING CO-OWNERSHIP



Building a partnership with informal leaders

- Who are the informal leaders in educational technology at my institution / faculty / department? What is their expertise?
- How can a partnership between institutional and informal leaders be organized to ensure joint decision-making?
- How can the extra responsibilities of informal leaders be recognized and compensated?

Assessing challenges

- Working jointly, what are the main challenges institutional and informal leaders identify, which hinder the uptake of educational technology?
- What formats – surveys, focus groups or workshops – are best suited to understand how these challenges are experienced differently across the institution?
- How can institutional and informal leaders work together to find solutions that address different needs across the institution?

Strengthening co-ownership

- What other actions can institutional leaders take to foster the co-ownership of educational technology?
- Are there any obstacles at my institution preventing a co-ownership approach? If so, what would need to change?

2

Creating a common vision

How can institutional strategies guide the use of educational technology?

Forming a central strategy is often a first step for institutions seeking to incorporate educational technology. Such strategies can provide a platform to share institutional visions and values as well as offer guidance for decision-makers and practitioners alike. For example, strategies on educational technology can outline different technology options, clarify the responsibilities of different actors, highlight common goals as well as communicate the institution's approach to outsiders.

The strategy conundrum

The absence of a strategy has been found to be a barrier for implementing educational technology across an institution. Without a strategy, [university teachers may feel abandoned](#) with the challenges that accompany educational technology – left alone to sort out their own solutions. At the same time, strategies can be counterproductive, when they are [unclear](#) and disconnected from the practices of teaching and learning.

Our research showed how there was often confusion surrounding such strategies. We repeatedly found that staff members within the same institution were not in agreement regarding the purpose of a strategy or if one even existed. In this vein, strategy was often something that happened to teachers, not with them.

Case Study Snapshot: Does your institution have a strategy for educational technology?

Responses from a mid-sized research university

"I suppose so, but somehow I'm not aware of [the strategy] directly right now. We have several boards and committees that deal with this."

– Member of IT services

"I would say there is no real strategy. So sure, maybe if you look, you can find something on paper somewhere. So there's always a mission statement or something like that ... but in everyday work, if there were a real strategy, it wouldn't really be present."

– Instructor

"We have a strategic mission statement for teaching and digitization processes, which are of course subordinate to each other."

– Member of IT services

"The new [strategy] was adopted in 2019. But before that, there was an e-learning strategy. I think. But I'm not quite sure about that. [The strategy] provides various points ... something like making good practice examples at the university visible."

– Member of the vice rectorate

"I'm always a bit skeptical about the strategy at universities because, of course, you can formulate it as a guideline, but the individual teachers have to implement it ... but if they don't implement it, then we have to try to work with incentives. But, of course, there are some [teachers] who refuse to do so."

– Central-level leader

This conundrum leaves us with lingering questions: Are strategies for implementing educational technology necessary or just cumbersome? And how can an institution create a strategy that fits everyone's needs?

Going back to the basics

Drawing on our research, we recommend starting with the basics by creating a common vision for educational technology. This involves fleshing out what the purpose of educational technology is and aspires to be for individual teachers, departments and the larger institution. A common vision is the basis on which to build a strategy for implementing and using educational technology.

Strategies built on a common vision can become lighthouses for teaching staff, [offering guidance](#) and clearing up ambiguity. When creating a common vision, equal participation among stakeholders – teachers, managers, technicians, and administrators is key. Collectively forming a vision can [closely align it with practice](#), which is [vital](#) for increasing the acceptance of educational technology.

A common vision can be organized by the central university management as well as be formed at the level of faculties and departments. These visionaries may work in different areas of the universities and the focus should be placed on including diverse voices and encouraging reflection and engagement.

STEPS FOR CREATING A COMMON VISION

Step 1: Getting started

- Who should become involved in administrative discussions about educational technology? Where are these individuals located? How can their expertise and time commitment be recognized?
- What are our motivations for implementing educational technology at our institution / faculty / department?

Step 2: Clarifying expectations

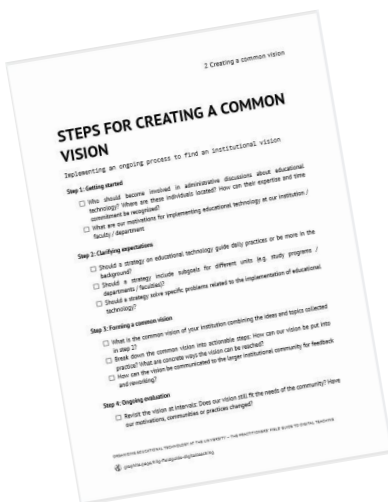
- Should a strategy on educational technology guide daily practices or be more in the background?
- Should a strategy include subgoals for different units (e.g. study programs / departments / faculties)?
- Should a strategy solve specific problems related to the implementation of educational technology?

Step 3: Forming a common vision

- What is the common vision of our institution combining the ideas and topics collected in step 2?
- Break down the common vision into actionable steps: How can our vision be put into practice? What are concrete ways the vision can be reached?
- How can the vision be communicated to the larger institutional community for feedback and reworking?

Step 4: Ongoing evaluation

- Revisit the vision at intervals: Does our vision still fit the needs of the community? Have our motivations, communities or practices changed?



3

Building a strong foundation

How can infrastructure facilitate the use of educational technology?

Educational technology has a dependent and complementary relationship with infrastructure. Building a strong infrastructure requires not only investment in hardware and software, but also in fostering digital literacy and technical expertise among teaching staff. Addressing both these technical and didactic issues have been found to be essential for [facilitating digital change](#) at universities.

What is included in an institutional infrastructure?

Infrastructure encompasses the hardware, software and expertise needed to build a foundation for educational technology. This includes technical equipment (servers, computers, etc.), software and licenses for digital tools, in addition to technical staff who maintain these systems.

Technical infrastructure

Ensuring a sound technical infrastructure includes providing technical equipment such as computers, servers, microphones, cameras, and also software applications and tools used to digitally communicate and collaborate in learning contexts. There is a wide range of digital tools that fall under the umbrella of educational technology: Virtual whiteboards to help stimulate online discussions, conferencing tools to facilitate meetings and host group activities and online archives to enable students and instructors to collect material and annotate it collaboratively.

When organizing, maintaining, and expanding educational technology, there are different aspects to consider: Is there a central learning management system, or is one desired? Are educational technology tools able to exchange information with each other and be combined? Are the tools easily accessible and user-friendly? Do the tools fulfill security and privacy requirements? Should the tools be used across the university?

Overwhelmed by different technologies

"... I've been working with three [online] systems the whole time, it's been a bit challenging at times. What room are you in right now? How does it work here now? And at the beginning, I also had some anxiety sweats or, well, panic attacks. I then said to myself, "No, you have to stay calm now." (Lecturer)

The selection of digital tools can follow different rationales. More general tools can be selected that are applicable to various learning contexts, or discipline specific tools can be chosen, or a combination. The selection strategy is dependent on contextual features of the university and should ideally be determined in discussion with [university stakeholders](#). It is key that technical infrastructure, licensed tools and technical equipment are maintained and kept up-to-date.

Practice-oriented disciplines

"I think the biggest problem is certainly that a large part of our courses are practical and these aspects can only be replaced to a limited extent. I cannot replace the practical examination of a patient with an online tool ... these tools are extremely well suited for demonstrating [pathological findings], without a doubt ... [but] at some point this no longer works only in theory, but you have to practice it." (Instructor in a medical faculty)

In addition, technical staff can also play a key role in fostering digital competencies among staff through offering ongoing technical training and support services. We found that university teachers were often discouraged by having limited technical support, expertise or training opportunities needed to operate educational technology.

Lack of expertise

"I noticed that a lot of people are completely overwhelmed [with online teaching]. Lecturers are simply being told, "Why don't you teach digitally" and they then ask: Where do I start?" (Professor at a university of applied science)

The underlying goal of technical training is to empower teachers with the skills they need to fully engage with educational technology. For example, one university tapped into the technical expertise of students and trained them to support teachers transitioning to online teaching during the pandemic.

Case Study Snapshot: Mobilizing Students in Tech-Teams

How can students support lecturers?

"[Prior to the pandemic] there was one person who was responsible for organizing Moodle for about 45.000 students and 10.000 employees ... [now] we have this system of tech-teams ... we have between three and five hundred students available who have a certain expertise in the discipline where they are deployed ... they also have a technical affinity through hobbies or through their studies. And they receive training in certain areas such as data protection, copyright and so forth. [These students] are then placed to support lecturers [with educational technology]"

– Dean

Didactic support structures

The technical side is complemented with an investment in didactic support. This type of support can include offering ongoing pedagogical training for university teachers as well as individualized [mentoring services](#). Didactic training may follow a so-called [pedagogy first approach](#). This approach seeks to reframe how we understand technology in the classroom: Instead of seeing it as something applicable to all learning experiences, pedagogical considerations (e.g. learning objectives, disciplinary needs) determine when to bring in technology and to what extent.

Didactic support can also be provided by centralized support units or designated contact persons. In one university, a faculty appointed a learning technologist to help teachers integrate educational technology in their course designs.

Case Study Snapshot: Responses from a Learning Technologist

What does a learning technologist do?

"... our approach is rather customized. There's no one model that is universal, because obviously courses have different outcomes, learning objectives, target groups and assignments, etc. ... we ask [teachers] for the scenarios, once they send us the scenarios we respond with individual emails. So, for example, if a person says: "I want to do pre-recorded lectures with webinars." Then we will follow up with customized questions and advice ... Do you need a teaching assistant? How would you record them? What would be the workload and things like that?"

How does a learning technologist influence teaching?

"In our case, I think [teachers] are absolutely free. What is controlled is the compliance of the syllabi and the Moodle pages with technical requirements. For example, there should be a clear list of topics, a short description, and then the literature, home reading and then all assignments will be very clearly indicated, including grading policy ... When it comes to the content, it's up to the individual teachers and instructors. The university helps [teachers] with teaching assistants and with training sessions."

DISCUSSION GUIDE: TECHNICAL AND DIDACTIC SUPPORT



Technical equipment

- What is the current status of the technical equipment, i.e. hardware, at your institution / faculty / department needed to implement educational technology?
- Are there areas where the technical equipment can be improved?

Software and tools

- What is the current status of software and digital tools at your institution / faculty / department?
- Does the current software and selection of digital tools meet the needs of different teachers and courses? What can be improved?

Expertise and didactics

- What training opportunities are being offered at your institution to foster the technical expertise of teaching staff? Is this support ongoing and readily available?
 - What kind of didactic support is being offered to teachers to integrate educational technology into their courses?
 - Who is offering technical support for teachers regarding both hardware and software at your institution? Is this support easily available?
-

4

Maintaining connections

How can educational technology expertise be shared across networks?

Adopting educational technology can be a daunting task for many staff members. Exchange with trusted colleagues serves an [important role in facilitating the implementation of educational technology](#) at universities. Networks can be powerful resources for exchanging knowledge, building confidence with new technologies and finding moral support. For example, digitally experienced teaching staff can provide less experienced colleagues with practical advice for dealing with problems and help them to overcome their reluctance to use technology.

While this exchange may be especially beneficial for teachers who have limited experience with educational technology, our research has shown that these networks can be mutually beneficial for all staff members regardless of their digital expertise. In building such [communities of practice](#), groups of people bonded through common tasks and challenges, new knowledge can be created and shared.

Network learning

“ ... one of the best ways of dealing with teachers who were reluctant [to teach online] is for them to talk to colleagues ... just talking to people who are more used to online teaching” (Central-level leader)

Networking within the institution

Collegial networks can lead to the emergence of [informal leaders](#), individuals who have expertise in educational technology. Such informal leaders, we found, were intrinsically motivated to share their digital experience and knowledge. This interaction led to peer learning groups forming.

Peer Learning

“We made small training videos, which were then available in our learning management system ... and together we then tried to create, as the most experienced people or experts, some kind of support platform that you could look at later.” (Prorector)

Collegial networks

" ... [one colleague] is very committed [with educational technology]. We are all very close to each other, in terms of work. You can write an email [saying], 'I have a problem with this and that' depending on the content, and either cc the whole team or explicitly just this one colleague, 'Can you help me out?' And then you have the answer and sometimes immediately, 'Do you want to have a quick phone call?' or 'Do you want to try it out right now live on the computer?' That's how it works for us." (Lecturer)

Networking beyond the institution

External networks, we discovered, can also become relevant sources for sharing knowledge. Individual university teachers, who are embedded in networks outside their home institutions, may have access to a vast amount of knowledge and digital study material. Such networks may vary in their size and focus and involve different actors, e.g. policy makers, funders, external colleagues and university associations.

External networks

"[interuniversity collaboration] is totally based on informal trust, on a one-to-one basis. I would just send a link to colleagues and like a small library of courses that people could browse through and see ... it just happened to be a sort of shared economy amongst frontline staff without any formal university involvement." (Head of study program)

Learning about educational technology from a trusted colleague, one who understands the subject area, opens up new possibilities for teachers to engage with educational technology. Such networks make the road of educational technology seem less perilous.

DISCUSSION GUIDE FOR MAINTAINING CONNECTIONS



Identifying internal networks

- Are there existing educational technology / teaching collegial networks at your institution / faculty / department? Are these networks discipline specific?
- What is the motivation behind these networks? Who is organizing them?

Supporting internal networks

- How can these networks be best supported by the university administration (e.g. with funds, recognition, technical support)?
- What are other innovative formats for sharing experiences about educational technology? What are the benefits and disadvantages of formalizing these networks?

Expanding networks

- How can the knowledge of different (disciplinary) networks be shared?
- Are there other external organizations and actors (e.g. policy makers, other universities, associations) that may serve as good network partners?

5

Unpacking resistance

Is resistance to educational technology a bad thing?

The classroom has traditionally been the domain of teaching staff: reinforced by decentralized university structures, disciplinary subcultures and the protected value of academic freedom. Educational technology impacts various organizational processes and brings changes to the protected terrain of the classroom. [Research](#) has shown that centrally-led technological changes to teaching have resulted in reluctant responses from staff members, and even in some cases resistance.

In our imaginations, resistance conjures up dramatic scenes of picket lines and organized walkouts, however what we label '[organizational resistance](#)' embodies a wide range of actions. For example, employees may resist changes in their workplace by arguing against the change, opposing and obstructing it as well as in more subtle ways by ignoring, avoiding and undermining change.

Subtle resistance to educational technology was more commonplace in our data, such as investing minimal effort in engaging with technology, discrediting its quality and waiting for a return to in-person teaching (after the COVID-19 pandemic). These subtle forms of resistance were often the result of educational technology challenging personal ideologies about teaching and institutional identity.

Data Dive: Where does resistance to educational technology come from?

Less engagement in digital classrooms

"I was pretty anxious to be honest and uncomfortable [with teaching online], specifically, because in my particular personal style of teaching, I like to form relationships with the students and get to know them. I can look around the class, I can see who is not engaged and who is. I move people around quite often. I get them talking to one another, all of those things about being face-to-face with people." (Head of study program & Instructor)

The campus is missing

"... we are a very campus focused university and our students and many of our staff haven't been particularly happy to have to move online" (Central-level leader)

Restrictions on discourse and discussion

"With Corona, it was a forced changeover from one day to the next, which is still not easy for us. Well, not for me ... but because it contradicts my idea of the university. University is discourse and discussion with individuals and groups. And under digital conditions, that only takes place with great restrictions. So that's no longer possible." (Lecturer)

Lack of personal interest

"I'm not a digital person. That means I had to look up what a flipped classroom is. And to be honest, I'm not interested in it ... that's related to my subject. I want to exchange arguments. I don't do that in the flipped classroom or in group work ..." (Faculty member)

Resistance can also be fueled by an individual's emotional response to change. Some teachers associated new technology with fear: a fear of failing, fear of looking incompetent in front of students and a fear of losing one's authority.

Fear of educational technology

"... there is a real fear among teachers [concerning edtech] of losing their positions. When you understand digital teaching as a canned product, which some people still do, that is, a lecture recording can simply be played back over and over again for the next five years. If you're stuck with that concept, then there's the feeling that you lose control, that you're just not important ... I think that actually scares a lot of people ... they are afraid of losing their positions [and] that others will be able to copy or evaluate what they have done." (Faculty administrator)

There was also a common concern that educational technology would significantly increase teachers' workloads.

Simply too much work

"I'm skeptical of any reassurances given that [educational technology] will be time neutral ... whenever the university says minimal effort, or light touch, I think most of us are hiding under our desks ... there is reluctance to use some [digital] tools that are typically born out of worry that it will substantially increase our workload." (Instructor)

When we think of resistance, it is often seen as something to avoid or an obstacle to overcome. We found that unpacking resistance to educational technology revealed insight into other underlying factors at work – negative emotions, fear of increased workload and ideological and identity conflict.

Instead of seeing resistance in a negative light, we pose [repurposing it as an opportunity](#) to understand the personal impact of workplace changes. Thus, the occurrence of resistance becomes an [opportunity for reflection](#) and means to rethink the consequences of digital change and how we go about implementing educational technology.

EMPIRICAL EXAMPLE: UNPACKING RESISTANCE WITH PROFESSOR X

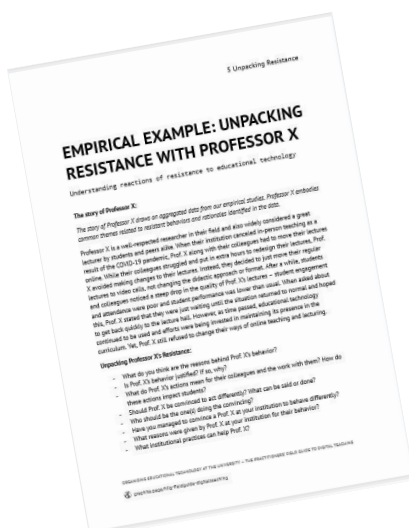
The Story of Professor X:

The story of Professor X draws on aggregated data from our empirical studies. Professor X embodies common themes related to resistant behaviors and rationales identified in the data.

Professor X is a well-respected researcher in their field and also widely considered a great lecturer by students and peers alike. When their institution canceled in-person teaching as a result of the COVID-19 pandemic, Prof. X along with their colleagues had to move their lectures online. While their colleagues struggled and put in extra hours to redesign their lectures, Prof. X avoided making changes to their lectures. Instead, they decided to just move their regular lectures to video calls, not changing the didactic approach or format. After a while, students and colleagues noticed a steep drop in the quality of Prof. X's lectures – student engagement and attendance were poor and student performance was lower than usual. When asked about this, Prof. X stated that they were just waiting until the situation returned to normal and hoped to get back quickly to the lecture hall. However, as time passed, educational technology continued to be used and efforts were being invested in maintaining its presence in the curriculum. Yet, Prof. X still refused to change their ways of online teaching and lecturing.

Unpacking Professor X's Resistance:

- What do you think are the reasons behind Prof. X's behavior?
- Is Prof. X's behavior justified? If so, why?
- What do Prof. X's actions mean for their colleagues and the work with them? How do these actions impact students?
- Should Prof. X be convinced to act differently? What can be said or done?
- Who should be the one(s) doing the convincing?
- Have you managed to convince a Prof. X at your institution to behave differently?
- What reasons were given by Prof. X at your institution for their behavior?
- What institutional practices can help Prof. X?



6

Fostering motivation

How can university teachers become and stay motivated to use educational technology?

A productive and imaginative use of educational technology depends largely on the people who use it and their motivation. Teaching staff's motivation to engage with educational technology is driven by both intrinsic and extrinsic factors: While extrinsic motivation can stem from the institutional environment, intrinsic motivation is driven by personal interest.

Cultivating extrinsic motivation, we found, was tied to recognizing and rewarding personal efforts with educational technology. Many of our respondents repeatedly emphasized the extra workload that accompanied using this technology.

Too much work and too little time

" ... I'm not as active as these technology-savvy colleagues who are always trying things out, because as a mother of two children, I simply don't have the time to explore such things in my free time. I think this applies to all other colleagues with young children." (Professor at a university of applied science)

Teaching online, we found, also infringed upon teachers' personal lives beyond that of traditional classroom teaching, which made it hard to find a work-life balance.

No work-life balance

"... the dissolution of boundaries and the reconciliation [of work and social life]. So, when does work end? And when do I no longer have to be available?" (Instructor at a research university)

Acknowledging the additional workload was key in keeping motivation high among teachers. This compensation can be monetary, or the extra workload can be acknowledged through the reduction of teaching hours and/or efforts with educational technology could be counted towards tenure or promotion.

The need for compensation

"I think universities need to make sure that they do correctly recognize the amount of work that's involved in developing a new [online] course ... [they] have a role to play in financially incentivizing it by ensuring that if we want new things to take place that will take financial investment ... " (Faculty member)

Regardless of how it is structured, compensation should be transparent, comprehensible and commensurate with the invested work. Research has shown that supportive institutional policies may function to [encourage motivation](#) to explore educational technology. These policies can also establish an [environment necessary for innovation creation](#). Moreover, such policies should not be competition-based but rather focus on recognition. Forming [communities of practice](#) that nurture collaboration instead of competition can also increase motivation.

In addition, streamlining bureaucratic procedures for using educational technology and offering ongoing support from administrators is linked to increased motivation. Essentially, [management and faculty](#) should [work together](#) as partners with transparent discussions about overcoming motivational barriers.

However, due to the personal nature of intrinsic motivation, these factors may be invisible to university management and difficult to disentangle. Our research indicates that personal interest in educational technology may be sparked through collegial networks, didactic and technical training and working as co-owners of technological developments with institutional leadership.

Fostering motivation means addressing both extrinsic elements – recognizing and rewarding efforts – and understanding the personal motivations driving teachers' interest in educational technology.

Data Dive: Where does intrinsic motivation to use educational technology come from?

Examples from a research university

Personal praise from students

"I get more or less direct feedback from the students for [online] interactions that we have. A "thank you very much" or another question. And in fact, some of the students are also very, very grateful. They get back to me and say, "Now everything has worked out."

Confident use of tools

"I have to say, once you master a few tools, that [didactic difficulties are] no longer an issue. These are tools that just really work as well as pencil and paper by now. ... It's getting better and better, and of course with more complicated programs, you learn it bit by bit. So I can now say that I can make quite decent videos. Of course, it wasn't like that at the beginning. But it's a learning process."

Examples from a university of applied science

Exchange and cooperation

"We can exchange ideas relatively quickly. ... Sometimes the scientific team comes and says: "Hey, I have an idea, could we somehow make a tutorial out of it or could we somehow produce some cool video or something on this topic." And that's often how these ideas develop and I think that's actually very cool because we just kind of help each other out."

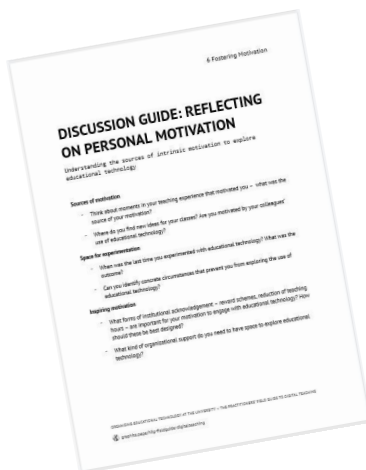
Experimentation

"We are not so stuck in our ways, but have the freedom to think about what really makes sense here, or what could be exciting. ... When someone says: "Hey, let's test this program, maybe it will be useful for us," then we actually don't have anyone who says: "No, we will not do that," but we simply try it out. And we try an exercise with it, and if it just isn't anything, then it isn't, but then we know."

Training opportunities

"[We] just check ourselves, what would be useful, what we would perhaps still be able to do in terms of technical know-how. And then we can actually choose relatively independently what kind of training really helps us."

DISCUSSION GUIDE: REFLECTING ON PERSONAL MOTIVATION



Sources of motivation

- Think about moments in your teaching experience that motivated you – what was the source of your motivation?
- Where do you find new ideas for your classes? Are you motivated by your colleagues' use of educational technology?

Space for experimentation

- When was the last time you experimented with educational technology? What was the outcome?
- Can you identify concrete circumstances that prevent you from exploring the use of educational technology?

Inspiring motivation

- What forms of institutional acknowledgement – reward schemes, reduction of teaching hours – are important for your motivation to engage with educational technology? How should these be best designed?
- What kind of organizational support do you need to have space to explore educational technology?

SUMMARY

In the real world, there is no digital switch. Practical steps need to be taken to transfer the physical to the digital realm. Implementing educational technology means taking into account different organizational layers, the ways in which these layers intersect and the multiple groups of individuals working in these spaces. The *Practitioners' Field Guide for Implementing Educational Technology* highlights six topics – **leadership, strategy, infrastructure, networks, engagement, and motivation** – which contribute to how educational technology is perceived, experienced, and structured in higher education institutions.

In our field guide, we equip readers with research-based recommendations and practical exercises – discussion guides, steps, and empirical examples – for tackling organizational challenges that accompany the implementation of educational technology. Throughout the guide, the principle of co-ownership is a common thread. In this approach, educational technology is positioned as a joint venture between university management, teaching staff, administrators, and technical staff. The goal of this partnership is to ensure that approaches to educational technology make sense for specific institutional settings, align with shared teaching ideologies and empower those who work closest with the technology to become active and equal partners in its development and implementation.

In six thematic sections, we unpack how to organize educational technology at the university through examining the interplay of different organizational processes and actors. In the section, *Leading with Educational Technology*, we discuss how institutional leaders, individuals in formalized leadership positions, can partner with informal leaders, staff members passionate about technology and eager to share their expertise, to collectively understand challenges associated with implementing educational technology. In the next section, *Creating a Common Vision*, we explore how to disentangle motivations for pursuing educational technology and jointly pursue a shared goal by including diverse voices from across the university in discussion. Challenges related to infrastructure – technical and didactic support – and solutions for these are explored in the section *Building a Strong Foundation*. In addition, the section, *Maintaining Connections*, shows the importance of peer-learning for motivating teachers to engage with educational technology and build their skills and confidence. We investigate the counterpart of engagement – resistance to technology – in the section *Unpacking Resistance* and reflect on what we can learn from the occurrence of resistance. Lastly, in the section, *Fostering Motivation*, we address a key and deciding factor for the success of educational technology: staff engagement. Through a data dive, we further our understanding of the motivational factors that fuel teacher interest in using technology in the classroom.

The field guide provides directions and insights for practitioners navigating the adventurous road of educational technology in efforts to organize digital change at their universities. We hope that it may be a helpful and valuable companion on that journey.

PROJECT BACKGROUND

Analogue teaching cannot be instantly transferred online. Rather the process of implementing educational technology (Edtech) involves organizational change. In our research project, *Organizational Adaptivity in the German Higher Education Context* (OrA), we investigated the organizational change that occurs during the adoption and implementation of Edtech in higher education institutions. The OrA project was a three-year (2020-2023) cooperation between the [Research Programme: Knowledge & Society](#) at the Alexander von Humboldt Institute for Internet and Society and [CATALPA](#) - Center of Advanced Technology for Assisted Learning and Predictive Analytics at the FernUniversität in Hagen.

Through three empirical studies, the OrA project provided new insight into the organizational layer involved in implementing Edtech at universities. Specifically, we sought to identify the organizational factors and processes – leadership structures, institutional policy, staff motivation, infrastructure and resources, that shape institutional Edtech approaches and staff experiences with these technologies.



For example, the project shed light on both [new and existing organizational challenges](#) for global universities using digital tools in the wake of the COVID-19 crisis. Through surveys and interviews with higher education leaders, we pinpointed key international challenges related to online teaching: lacking infrastructure, uneven digital literacy, and unequal access to internet, electricity, and devices. In light of this rapid digital turn, we also reflected on how the rapid adoption of Edtech impacted the [quality of teaching and learning](#) at universities.

Our research also furthered our understanding of organizational processes involved in Edtech success, such as the importance of finding [the right balance](#) between organizational support and academic freedom when it comes to implementing Edtech. This translated into



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Countries

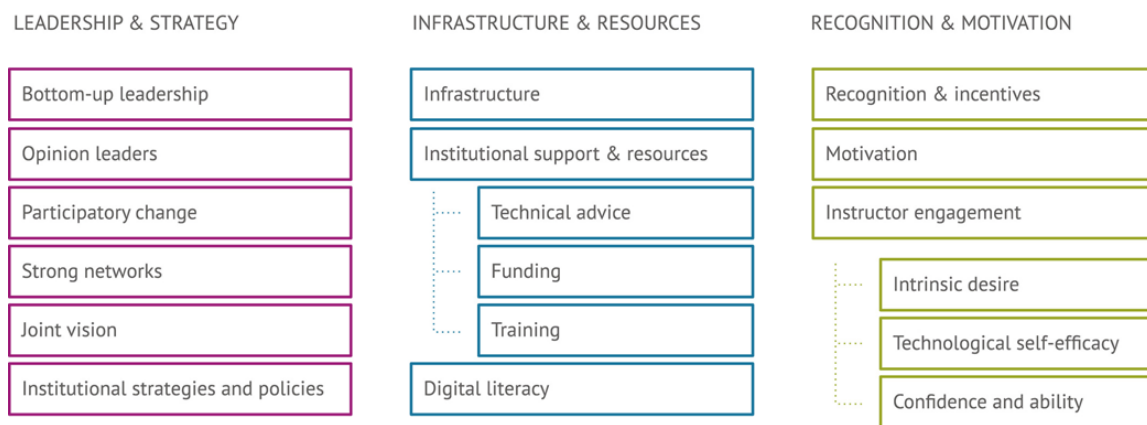
Higher education institutions

Private universities, public universities, research, applied and technical universities, music and arts and open universities

Research participants

University leadership, administrative and teaching staff, teaching staff and members of university associations

university management providing teaching staff with resources, training, and guidelines and at the same time safeguarding their freedom to experiment with digital technologies. [Collegial networks](#), we found, also play a key role in motivating teaching staff to engage with Edtech as well as serve as hubs for innovation, knowledge sharing and moral support. These findings resonated and were extended upon in our [organizational framework](#) for universities implementing educational technology (see below). This framework, based on a systematic review of studies published in top Edtech journals over the last decade, consists of three organizational pillars: Leadership & Strategy, Infrastructure & Resources and Recognition & Motivation.



Implementation of educational technologies: A framework of organizational factors.

Source: Deacon, B., Laufer, M. & Schäfer, L. O. (2022). Infusing Educational Technologies in the Heart of the University – A Systematic Literature Review from an Organisational Perspective. *British Journal of Educational Technology*, 0(0), 1-26. DOI: 10.1111/bjet.13277

The *Practitioners' Field Guide for Implementing Educational Technology* draws on these research findings with the purpose of sharing insights with practitioners working with Edtech. In the spirit of the OrA project, the field guide is a product of collaboration with higher education practitioners. The design of the OrA project followed [an interactive research model](#). In this model, research participants – university leaders, administrators, technical staff, and teaching staff – were involved in various stages of the research process. This included partaking in interviews and surveys, in addition to participating in case study selection, workshops and creating this field guide. This collaborative approach was essential to the success of the project and the richness of the data collected. We wholeheartedly thank all our participants for their time and effort!

PROJECT PARTNERS

Alexander von Humboldt Institute for Internet and Society

The Alexander von Humboldt Institute for Internet and Society ([HIIG](#)) was founded in 2011 to research the development of the internet from a societal perspective and better understand the digitalisation of all spheres of life. As the first institute in Germany with a focus on internet and society, HIIG has established an understanding that centers on the deep interconnectedness of digital innovations and societal processes. The development of technology reflects norms, values and networks of interests, and conversely, technologies, once established, influence social values.

FernUniversität Hagen and CATALPA

The [FernUniversität in Hagen](#) is Germany's only state distance-learning university. Its central scientific institution [CATALPA](#) - Center of Advanced Technology for Assisted Learning and Predictive Analytics does not only stand for research on adaptive learning technologies. In this research center, nearly 60 scientists work together interdisciplinarily to support the transformation of education towards more digitality, personalized learning, adaptive systems, and artificial intelligence with evidence-based findings and to advance them in practice.

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