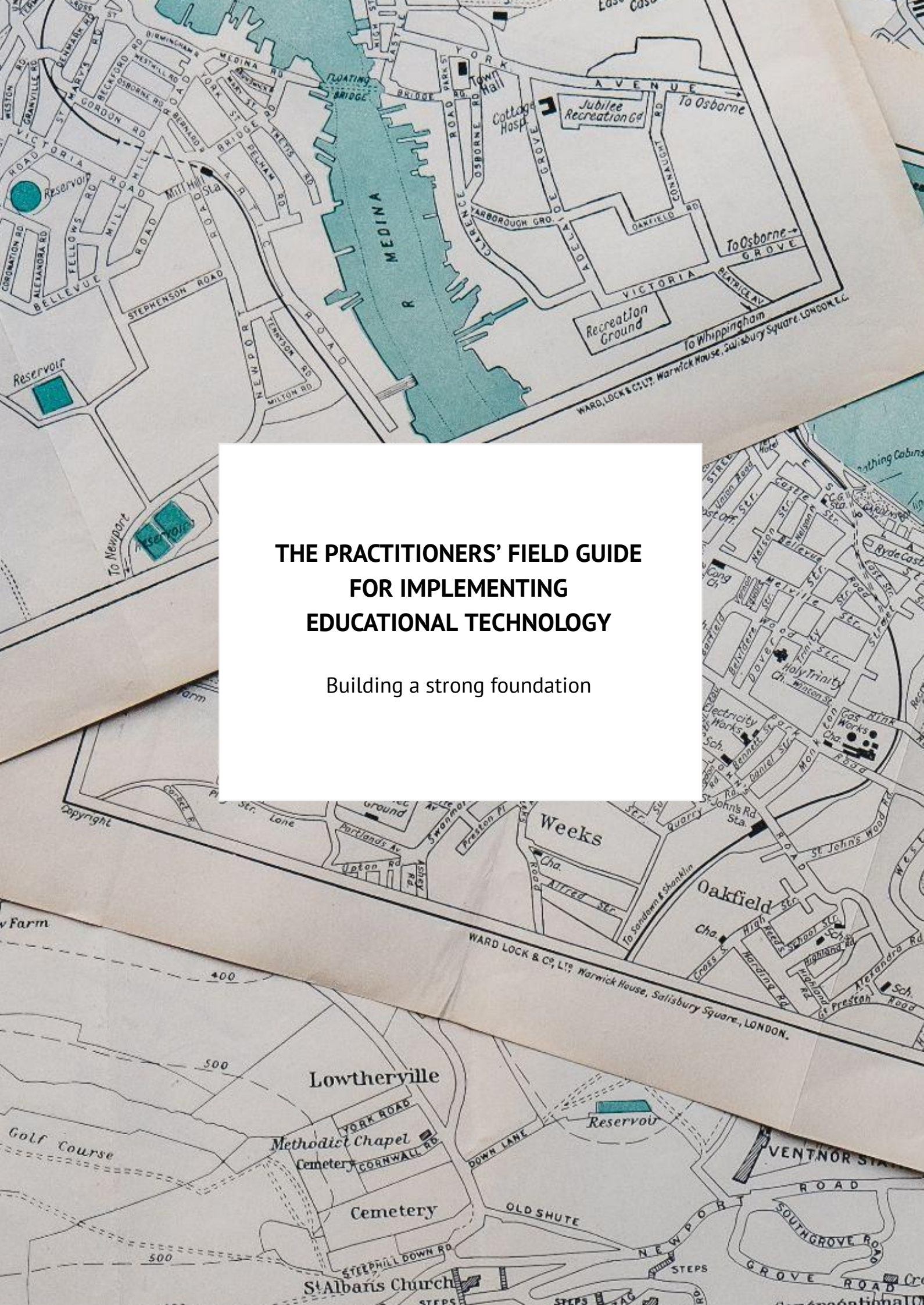

THE PRACTITIONERS' FIELD GUIDE FOR IMPLEMENTING EDUCATIONAL TECHNOLOGY

Building a strong foundation

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?

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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?

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