

Mobile Learning, Data Protection and Copyright in the EU

A report on the legal aspects of using mobile devices in classrooms

published by the Vodafone Institute for Society and Communications and iRights.Lab

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About this paper

"MOBILE LEARNING, DATA PROTECTION AND COPYRIGHT IN THE EU" is a publication by the Vodafone Institute for Society and Communications (2014) written by Matthias Spielkamp.

This policy paper examines the legal implications of mobile learning in Europe. Numerous projects in various EU countries have conducted research into how mobile devices can be used in class, whether they facilitate the more effective achievement of educational objectives and how teachers can be trained to use smartphones and tablets in their lessons.

However, hardly any consideration has been given to whether the devices and the programs that run on them are being used legally, how content is made available on mobile devices and whether pupils' data is processed in compliance with the law. This report formulates initial recommendations on the improvement of the framework and offers governments a range of options to improve the situation regarding the in-class use of mobile devices.

The outcomes are based on extensive literature research, interviews among a focus group of teachers of the "Science on Stage" Project and interviews with experts from the field of education. The sections on Copyright Issues and Data Protection are based on the analyses of John W. Weitzmann and Jan Schallaböck, both lawyers working with iRights.Law.

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This paper does not necessarily reflect the opinions of each of the persons named in all respects. The Vodafone Institute for Society and Communications and iRights.Lab have sole responsibility for its content.

About the Author

Matthias Spielkamp works as a journalist, trainer and consultant based in Berlin. He is co-founder of the independent think tank iRights.Lab and founder and managing editor of the online magazine iRights.info – about legal issues in the digital world (Grimme Online Award). As a consultant and trainer Matthias has worked with media companies and journalists in Germany, South-Eastern Europe, Asia and the Middle East for institutions like Deutsche Welle, the International Institute for Journalism of GIZ and others for 15 years. Matthias testified before committees of the German Bundestag on future developments of journalism, online journalism and copyright regulation. He is a member of the American Council on Germany as a former John J. McCloy Fellow and serves on the boards of the German section of Reporters Without Borders. He has co-authored three books on journalism and copyright regulation and holds master's degrees in Journalism from the University of Colorado at Boulder and Philosophy from the Free University of Berlin.

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Executive Summary

There has been a rapid increase in the use of mobile devices in schools. Numerous projects in various EU countries have conducted research into how mobile devices can be used in class, whether they facilitate the more effective achievement of educational objectives and how teachers can be trained to use smartphones and tablets in their lessons.

However, hardly any consideration has been given to whether the devices and the programs that run on them are being used legally, how content is made available on mobile devices and whether students' data is processed in compliance with the law.

The resulting lack of clarity on the legal situation poses three problems:

- It will be difficult to encourage teachers to use smartphones and tablets in lessons if the legal situation is or appears to be unclear.
- Schoolchildren – and their parents – want to be sure that there is no risk stemming from the use of mobile devices in lessons, for example as a result of the collection and transmission of personal data.
- Schools themselves could be hesitant to adopt the technology due to the possibility of schoolchildren's or right holders' rights being breached, which could lead to expensive and image-damaging lawsuits.

A prerequisite for the use of mobile devices in schools is a clear and transparent legal framework.

This policy paper examines the legal implications of mobile learning in Europe, analyses the resulting consequences and formulates initial recommendations on the improvement of the framework. There are some major challenges – not only are the school systems and education laws in the EU Member States very different, the schools in almost all EU countries also have extensive autonomy, which should not be restricted. However, governments do have a range of options available to improve the situation regarding the in-class use of mobile devices.

These are:

- improve the range of information provided to schools, parents and, in particular, teachers and school administrators, so that they have legal guidance;
- promote and support the use of Open Educational Resources (OER);
- discourage the use of closed "ecosystems" for mobile learning in order to avoid a quasi-monopoly of individual providers and safeguard the quality and diversity of mobile learning offerings;
- improve the schools' IT expertise and resources;
- support the development of privacy- and data protection compliant concepts to more effectively protect personal data.

This paper does not propose any comprehensive solutions. It merely provides an initial overview of the legal issues as the basis for more in-depth discussion.

01

Introduction and definition: What is mobile learning?

In recent year, there has been a significant increase in the use of mobile devices in schools. For example, in the United Kingdom the British Educational Suppliers Association (BESA) estimates that the number of tablets used in class increased from 146,000 in 2012 to 258,000 in 2013.¹ Numerous projects in various EU countries have conducted research into how mobile devices can be practically used in class, whether mobile devices facilitate the more effective achievement of educational objectives and how teachers can be trained to use smartphones and tablets in their pedagogical work.

However, hardly any consideration has been given to whether the devices and the programs that run on them are being used legally, how content is made available on mobile devices and whether it is processed in compliance with the relevant laws. For example, the UNESCO Policy Guidelines for Mobile Learning do not include the terms "copyright", "intellectual property", "privacy" or "data security/data protection".²

The Vodafone Institute for Society and Communications and iRights.Lab have therefore focused on these aspects in this policy paper. It investigates the frameworks that exist within the EU, decision authority in the surveyed countries on whether mobile devices can be used in lessons and how the affected institutions and organisations in selected countries operate within these frameworks. In addition to an analysis of relevant literature, experts from Germany, the United Kingdom, Italy, the Netherlands, Spain and Hungary were interviewed and a non-representative online survey of teachers of MINT (Mathematics, Informatics, Natural Sciences and Technology) subjects who use mobile devices in their classes was implemented.

For the purposes of this policy paper, "mobile learning" is defined pursuant to the UNESCO Policy Guidelines for Mobile Learning³:

"Mobile learning involves the use of mobile technology, either alone or in combination with other information and communication technology (ICT), to enable learning anytime and anywhere. Learning can unfold in a variety of ways: people can use mobile devices to access educational resources, connect with others, or create content, both inside and outside classrooms. Mobile learning also encompasses efforts to support broad educational goals such as the effective administration of school systems and improved communication between schools and families."

Furthermore, the term "mobile devices" includes smartphones as well as tablets such as the Apple iPad, HP ElitePad or Samsung Galaxy tabs. This paper focuses exclusively on the use of mobile devices in schools, not at universities or in vocational training.

02

What are smartphones and tablets used for in class?

In order to achieve the objective of this paper, it is important to establish what mobile devices are used for in class and who owns them.

Content presentation

First of all, mobile devices, such as smartphones or tablets, are used to present content. This content is mainly teaching materials, though it can also be content such as videos produced by the teachers or students. Legally relevant issues in this connection are: "Who created the content?", "Who holds the copyright or exploitation right to the content?", "What programs are used to display the content?" and "Are people – teachers and schoolchildren – depicted?"

Content editing

Technical capabilities of mobile devices are advancing rapidly. They now offer an increasing range of content editing options. Just a few years ago writing and editing texts was the only practical option. Today, mobile devices can be used to record images, audio files and even videos, as well as to edit them. It is therefore necessary to address the issue of who holds the rights to the content and what happens to it after processing.

Data collection/creation

In science lessons mobile devices could be used for measurements, which means they are used to collect data. Data can be collected with the help of acceleration sensors or stop-watches, frequency counters, pressure sensors or magnetic field sensors, audio recording and many other functions. Teachers also use smartphones and tablets to take pictures and to record audio and video.

Various legal issues are associated with the use of mobile devices in school lessons depending on the purpose they are used for. These will be presented and discussed in the following.

Who owns the devices?

Schoolchildren can use mobile devices for educational purposes in two different ways. The first option is "bring your own device" (BYOD), where the device belongs to the schoolchild or his or her parents. The second option is a one-to-one computing concept where the school purchases the devices and allows students to use them. Both concepts differ considerably in terms of their potential legal consequences.

The use of mobile devices in schools raises a number of questions. The answers to these questions differ from country to country depending on the statutory provisions (laws, directives etc.) that are in place. Is it permitted to take mobile phones to school and/or use them in class? Is a teacher allowed to confiscate or search a smartphone? What mechanisms are in place to prevent adult content being watched on mobile devices? Do audio or image recordings infringe on privacy rights?

This policy paper sets out the legal issues to be considered when mobile devices are used in class with the school's consent. Mobile learning generally involves the creation, display or processing of information, so privacy and copyright legislation will usually apply. Data protection laws are applicable because personal data is processed; copyright laws are applicable because works protected by copyright such as texts, photos, audio and video recordings are created, displayed or edited.

03

Mobile learning and copyright

Most teaching and learning materials are protected by copyright. The few exceptions include public domain works or materials compiled from public domain works. Public domain works are works whose copyright has expired, in most cases 70 years after the creator's death. In some countries, e.g. the USA, a copyright holder can dedicate copyright of his or her works (e.g. photos, texts, music, films) to the public domain. This is not possible in EU countries, though the fact is significant for people in the EU to the extent that they also use public domain works from the USA, such as NASA photos. Special database rights exist in Europe alongside copyright, which can also put indirect restrictions on the use of works, even those in the public domain. If mobile learning concepts include the use of teaching and learning materials there will almost always be legal considerations involved, irrespective of what technology is used and how the content is displayed.

Copyright limitations and exceptions for educational purposes

Most countries around the world are signatories to the *Berne Convention*, the international convention on **copyright** and **related rights**. The standard level of protection under the Convention is that copyrighted works may only be used with the consent of the copyright or related right holder (which is the basis for the familiar term, "all rights reserved"). This standard protection is accorded automatically when the copyright holder completes his or her work. No registration is necessary, nor is the use of the copyright mark ©. The only requirement that the work has to meet is a certain "level of originality". However, the level of originality demanded today is not particularly high, so even average everyday products such as press articles, city maps, technical drawings and simple computer programs are copyrighted.

Related rights are another protective mechanism. They are granted automatically, but expire long before a copyright. The most important related right for teaching and learning materials concerns photographs (photos that do not have the level of originality of a work), motion images (simple videos) and audio recordings. There is no base threshold of originality to achieve before related rights apply. Even simple snapshots taken with a mobile phone camera are protected. All other recordings, even very old works, are protected by performers' rights (held by the musicians involved in a song recording, for instance). Depending on the type of material in question, related rights expire either 50 or 70 years after first publication. When a teacher prepares suitable materials for class work, in almost all cases copyright or related rights apply, because these materials are often a compilation of content from different sources. The underlying educational concept for any given lesson module is in itself not rights-protected by copyright. However, all documentation, plans and worksheets relating to the concept can be protected – and usually are protected.

The legal situation below the level of the *Berne Convention* is governed by EU copyright laws, which are translated into national laws, i.e. into the EU Member States' copyright laws. Each EU country has specific limitations and exceptions on the scope of copyright protection, some of them in favour of the education system. The extent of these limitations and exceptions is determined by EU law, so they vary considerably from country to country. The minimum general exception to the precept of "all rights reserved" in the European Economic Area seems to be the following⁴:

All Member States permit the use of quotes free of charge and it is permissible to compile parts of works, such as chapters of books, for educational purposes. However, the legal situation differs from country to country as regards what content can be

compiled into educational material and whether/how much the user has to pay the copyright holder for its use. Also, the laws differ in terms of the type of work. For example, it may be admissible to use a chapter of a book without requesting the author's permission, but not to use a few bars of music without asking for the composer's consent.

In around half of the EU Member States, complete works can be used for educational purposes.

The Internet as a copy machine

Digital copies can be disseminated via the Internet practically free of transmission charge, without loss of quality. This has had a massive impact on many areas of life, including legislation on the use of teaching and learning materials. The copyright limitations for the education sector set out above permit its privileged use of works for teaching and learning purposes. In other words, rights holders' control of use is limited in that schools can use their works for specific purposes without having to request their permission. However, these copyright limitations and exceptions in some countries are restricted to the school premises and do not extend to the concept or idea of the schooling, which would allow the schoolchildren and teachers to use the copyrighted works in their homes.

Particularly the restriction of education-related limitations to the physical school premises collides, firstly, with the extensive networking of mobile hardware and, secondly, with the new educational concepts that are based on this networking. It affects the existing materials at school textbook publishing companies most. As a result of the copyright limitations, the materials cannot be distributed and used outside the schools without special permission, which is usually not granted without payment.

The mentioned limitations on copyright for the education sector are also very narrow when it comes to all other materials (those not specifically made for school use). Only "small parts of a work" may be placed online "as far as this is justified for educational purposes that are non-commercial in nature", and "exclusively for the designated participants of the lesson" (which in itself rules out the use in many cases), and only subject to payment to a collecting society (see i.e. section 52a of the German Copyright Act).

Furthermore, the materials created by the pupils are also automatically protected by copyright – assuming that they have the required level of originality – so all rights in them rest with their creators and not with the school or teacher. Anybody wishing to distribute these materials therefore requires permission, at least if they want to go beyond the narrow scope of the education-related limitations on copyright. This is a problem because underage schoolchildren are generally unable to give such permission without their parents' consent. The parents in turn are seldom involved because they have no access to the schools' networked learning systems (such as Moodle and other platforms).

So to ensure that materials don't leave the privileged physical area of the school premises, it is best to use school-owned devices. As soon as these devices are connected to the Internet it will, however, be difficult to prevent the materials from entering the public sphere where they are subject to the copyright holder's consent. In BYOD scenarios, the consistently legal use of materials cannot be reliably ensured.

04

Mobile learning and data protection

Depending on what they are used for, applications and IT systems in mobile learning have to comply with various data protection regulations.

Legal bases and principles

In the European Union, personal data can only be processed, if there is a legislative basis to do so. There are no specific provisions in data protection legislation exempting schools from such compliance with statutory data protection requirements when they use mobile learning concepts.⁵ There are also no generic default- or fall-back provisions in the law, that can generally be applied. As a result, processing data on mobile devices in class is in most cases legal if the people affected have voluntarily provided their informed consent.

Further data protection principles apply in addition to the declaration of consent, which will be described in more detail later on. The key principles are:

- transparency, so that the people affected are aware of the consequences of the data being processed;
- necessity and purpose limitation, committing the user to only use the data for the necessary purpose (which must be specified for transparency reasons);
- compliance with IT security requirements, and;
- monitoring of the processes used (by the data protection officer in charge).

Data protection principles also require the selection and design of technical systems to generate the least possible personal data (data minimisation and data avoidance).⁶

How personal data is generated and processed depends to a great extent on the specific project. Basically, any processing of personal data falls under data protection legislation, if any data of the student's data is transmitted to anybody else and this data can be attributed – including a mere possibility by third parties – to the specific student.^{7,8}

It is feasible that data protection legislation would be irrelevant in some cases depending on the way in which data is collected. This would apply if the data were created on the schoolchild's own device, the schoolchild retained full control over the data or the data was not transferred to any third parties.

However, this is not typical when mobile devices are used. If the law is followed to the letter, merely downloading an app from most mobile distribution platforms (Apple App Store, Google Play etc.) creates personal data. And this definitely applies in BYOD concepts when the devices belong to the schoolchildren. This means that teachers cannot request their class to download an app to their devices without the voluntary and informed consent of all schoolchildren in the class.⁹

Furthermore, the majority of mobile applications involve data connections with platform operators, software and other service providers that can be problematic from a data perspective. In an extreme case scenario, the platform operators obtain a comprehensive learning profile of the schoolchild which – although doubtlessly offering considerable potential for analysis in educational research or adaptive learning programs – provides them with detailed personal data about that child. This is why Germany has already Federal State Education Acts imposing strict requirements, even when only "general information" is acquired in a school administration context. The acquisition of more detailed information is not permitted in most cases.¹⁰

On the basis of the current legal situation, participation in mobile learning can therefore only ever be voluntary from a data protection perspective, and it must be preceded by an explicit declaration of consent.

From an educational perspective – and for reasons of fairness – it seems appropriate to ensure additionally that any pupil's refusal to provide consent will not lead to disadvantages. In other words, the schoolchildren have to be given the option of attending classes without having to disclose personal data through the use of mobile devices.

Data processing by the school

This leads to the question: Is it conceivable, under these circumstances, that mobile learning can be used in schools without breaching data protection regulations? Yes – provided that the school processes the data itself or commissions its processing directly, and that certain requirements which are similarly regulated in all EU countries are met.

Requirement to obtain consent

If schoolchildren are willing to provide a declaration of consent, the following requirements have to be met. The consent must be provided voluntarily and on an informed basis. Generally, it also has to be provided in writing¹¹ and must always be revocable.

Any such declaration of consent must be transparent. It must set out in writing the details of which types of data will be processed, for what purpose, and whether the consent to the processing of the data can be revoked. At the same time, it should not include a lot of legal small print that people tend not to read, because this could result in the consent not being "informed". To solve this dilemma of providing comprehensive and comprehensible information, it makes sense to include

the most important information at the top of the declaration so that the reader can gain a quick overview. Such "multi-layered" approaches are also recognised by the data protection authorities.

Declarations of consent can also be given by minors because data protection law doesn't include any specific age restrictions. However, jurists would only consider a declaration of consent to be effective if the person who signed it can be assumed to have understood it properly. Whether or not this applies depends on the individual. This is why it is customary to involve the parents in the consent process – and it is also recommended to facilitate good parent-teacher relations.

Further requirements and contract data processing

An effective declaration of consent is, however, not enough. Schools have to comply with further data protection requirements, which we will merely outline in the following.

If the school operates or has developed its own data processing system, it has to ensure that the system complies with state of the art IT security requirements. That includes developing an IT security concept and having it approved by the supervisory authority.

The school also has to give the pupils or their parents the opportunity to inspect the data records that it stores. These data records have to be deleted when they are no longer required for the processing purpose or if the consent to their use is effectively revoked.

Data processing can be performed by external service providers as contracted data processors. If an external data processor is used, a specific reference has to be made to this fact in the declaration of consent. Furthermore, the school would also be responsible for ensuring the data processor's compliance with

IT security requirements. It has to conclude a contract with the service provider in this respect, which includes provisions granting the school control rights.

Direct data processing by third parties

Direct data processing by third parties who have no explicit contractual relationship with the school is legally questionable. This is particularly relevant in mobile learning because the schoolchildren's use of external services via independent apps, which involves transferring data to a service provider, is only admissible in exceptional cases. For example, in Germany it is fundamentally prohibited to transfer data to a service provider, which is not required to comply with German or European data protection laws, respectively. This rules out widely used educational services such as *Flipboard*, *Mathmateer*, *Quizlet*, *Motion Math* and many others because the companies that provide them and process the data are based in the USA and do not adhere to the *Safe Harbor Privacy Principles*, which means they don't satisfy EU data protection standards. US-EU Safe Harbor is a streamlined process for US companies to comply with the EU on the protection of personal data.

Even when the service provider is based in Europe, engaging it to process school data would give rise to legal concerns unless an explicit agreement were concluded with it. According to the data protection authorities, the school will remain the data controller and thus its responsibility extends to all areas within the school where personal data is processed.¹² If it is not possible to conclude a data processing agreement, e.g. because the service provider doesn't offer this option, the school must not use its service. Otherwise it would run the risk of getting in conflict with the supervisory authorities.

05

Legal issues relating to the implementation of mobile learning concepts

In light of the above-described, extremely complex legal situation for the use of mobile devices in class, we have to address the issue of how the schools in selected countries deal with it. For this purpose we developed a catalogue of questions on mobile learning practices and distributed it to teachers as well as employees of the public authorities responsible for schools in the surveyed countries. A number of preliminary remarks are necessary to explain the results.

Survey of teachers

Participants of the Science on Stage project¹³, a “network of and for science and technology teachers of all school levels” were asked questions such as “What do you use mobile devices for in lessons?”, “Who owns the devices?”, “Are you aware of the rules on using mobile devices in lessons?” and “Have you ever been informed about the legal aspects of using mobile devices or virtual learning environments for teaching purposes?” “If so, how and by whom?” etc.

27 teachers from 11 EU countries (Germany, the United Kingdom, France, Greece, Italy, Austria, Poland, Romania, Slovenia, Hungary and Cyprus) and Switzerland took part in the survey, so it is not representative. It is instead a collection of individual statements providing insights into the use of mobile devices. The responses have been incorporated in the section entitled “What are smartphones and tablets used for in class?” and in the section entitled “Legal issues relating to the implementation of mobile learning concepts: results”.

Survey of experts on the use of mobile devices in schools

In addition to the teachers’ interviews, the responsible ministries in six EU countries (Germany, Italy, the Netherlands, Spain, the UK and Hungary) were surveyed. The main questions were:

- Does an official national guideline exist on the use of mobile devices in schools? If not, who decides whether mobile devices can be used or not? (e.g. the schools, the regional education authorities)
- Has the ministry or another public education authority created information materials for nationwide use, e.g. to reduce uncertainty among teachers about legal aspects of data protection and copyright (and other issues)?
- If not: do you think such information materials are necessary and useful?
- What kind of a legal and political framework is necessary for the widespread use of mobile learning concepts in schools?
- What barriers and deficits exist?

The plan was to obtain responses from a person or department in an education authority (national ministry, regional ministry, state ministry or similar) that deals with the issue of mobile learning. However, none of the ministries were able to put us in contact with any one specific person or department explicitly responsible for mobile learning, even though the term “mobile learning” (or m-learning/ mlearning) can be found in documents published on ministry websites. Overall, one can presume that most of the education authorities in Europe have not yet engaged a particular unit or department to work on the legal framework for the use of mobile device.

Parallel to this research we identified experts on the subject of mobile learning, either natives of one of the countries being surveyed or people who had done research in that country.

They were requested to provide the names of people in ministries, public authorities or institutions who had been involved in mobile learning projects commissioned by the ministry or another public authority. This enabled the identification of persons in all the surveyed countries who were either conducting research into mobile learning or whose work at public authorities or other institutions covered the aspect of mobile learning and were able to provide competent responses to the questions.

Results

None of the countries (Germany, the United Kingdom, Italy, Netherlands, Spain, Hungary) had or granted access to national guidelines on the legal use of mobile devices in school lessons. And at other levels, such as central and regional government, no consolidated information existed on the subjects of our questions.

This is due to the extensive autonomy of schools in European countries. Only a few countries support a centrally controlled education system, and even then this centralised authority is restricted to a few specific areas of education such as curriculum development.

In many cases, there are internal school policies that generally prohibit the use of mobile, unless they are explicitly used for teaching purposes. The majority of teachers interviewed for this paper, however, stated that they had never been informed about legal aspects of using mobile devices, e.g. with regard to copy-right or data security.

**Autonomy was initially an aim or perhaps even a fundamental principle of school administration and education policies. Educational institutions were designed to be autonomous to guarantee freedom of teaching, to reinforce local school democracy and to complete decentralisation processes.*

Today, in most countries, school autonomy is an instrument that is predominantly used to achieve educational objectives: greater freedom for schoolchildren and teachers and improved quality of education. [...] Different regulations apply to the functions of schools in European countries, and the scope of responsibilities transferred to the schools also varies from country to country.¹⁴

We have therefore presented the situation of six countries in brief profiles. However, for the reasons mentioned above, these profiles can only give an indication of the similarities or disparities of the surveyed countries. For example the "Education Ecosystems" information graphics on "Mobile Education" – regional reports by the Groupe Speciale Mobile Association (GSMA) – illustrate the complex interactions between schools, regulatory and supervisory authorities (ministries, public and semi-public education agencies), advisory and control organisations and funding institutions in the United Kingdom¹⁵ and Spain¹⁶.



Different competencies, varying responsibilities in the educational system – selected examples from six European countries

GERMANY

COMPETENCE

The governments of Germany's federal states are responsible for education policy. Although Germany has a Federal Ministry for Education and Research, schools and universities are primarily the responsibility of the state governments. The central government collaborates with the state governments on extra-curricular vocational training, training grants and further education. The schools are regulated by the federal states' education acts, decrees and ordinances. The school inspectorates are also at state level, and their supervisory concepts often differ depending on the school type. In some federal states supervision of academic secondary schools (Gymnasium), comprehensive schools (Gesamtschule), general secondary schools (Realschule), vocational schools, secondary modern schools (Hauptschule), special needs schools and primary schools is organised in different ways. Although they have to comply with effective legislation, the schools decide autonomously whether to use mobile devices and what to use them for.

AUTONOMY IN ICT PROCUREMENT

Limited autonomy. The schools have to obtain permission from the central authorities (e.g. their State Ministry for Education and Cultural Affairs) or make their decisions on the basis of a pre-defined range of options.

UNITED KINGDOM

COMPETENCE

In the United Kingdom, the central government is not responsible for the school system and the schools make decisions on the use of mobile devices themselves. The Department of Education has no regulatory competencies. It merely provides assistance in the form of specific documents such as data privacy policies for schools.

AUTONOMY IN ICT PROCUREMENT

In England and Wales there are special, centrally financed ICT programmes and schools can also make additional investments out of their own budgets. In Scotland the schools make their own decisions after consulting the education authority.

ITALY

COMPETENCE

The Italian education system is mainly governed by national laws, so it is relatively uniform. Since the Schools Reform in 2008 the schools have been granted more autonomy in curriculum development, provided that they comply with the national guidelines. Italy's autonomous local authorities, such as Aostatal, Friaul-Julisch Venetia, Sardinia, Sicily and Trentino-South Tyrol, have broader competencies and responsibilities in the education sector.

AUTONOMY IN ICT PROCUREMENT

Basically, the schools are fully autonomous provided that they comply with general education policies.



Different competencies, varying responsibilities in the educational system – selected examples from six European countries

NETHERLANDS

COMPETENCE

The Dutch Education Ministry performs a general supervisory and controlling function in the education sector. It establishes quality standards and core education policy objectives, while the schools have a relatively high degree of freedom in curriculum design and use of materials. More than two-thirds of primary schools and 60 percent of secondary schools in the Netherlands are independent because Dutch law grants the right to found schools that provide teaching based on religious, ideological or educational beliefs. Independent schools can also be government-funded if they meet specific requirements. Each school has a sponsoring organisation, which can be responsible for one or several schools. The sponsoring organisation may be a municipality, church, foundation or other private sector organisation. (It is assumed that there are more than 6,000 such independent school providers in the Netherlands). The sponsoring organisation has overall formal responsibility, though it can defer decision authority to the school administrators or school principal. In practice, however, it isn't possible to say which responsibilities are delegated and which aren't.¹⁷

AUTONOMY IN ICT PROCUREMENT

The school's sponsoring organisation can transfer decision-making authority for ICT procurement to the school. However, it is more likely to remain with the organisation.

SPAIN

COMPETENCE

A general national framework has resulted in the relatively homogenous regulation of schools at national level. The schools are required to submit various documents (curricula, syllabuses etc.) to the education authority for approval before they can be implemented and the education authority implements a performance review at the end of the school year. However, 17 of Spain's autonomous communities – first-level political administrative divisions created in accordance with the Spanish constitution with the aim of guaranteeing the autonomy of nationalities and regions that integrate the Spanish nation – have the right to grant autonomy to their schools.

AUTONOMY IN ICT PROCUREMENT

The most important items of ICT hardware for schools and all network equipment are generally provided by the autonomous communities. However, the schools can also use their own budgets to purchase additional ICT devices.

HUNGARY

COMPETENCE

Even before the collapse of the Soviet Union, Hungary's Education Reform Act of 1985 identified necessary areas of autonomy which were then implemented in the main act of 1993, providing schools with extensive autonomy in many areas (funding, personnel). However, the current government has done an about turn by nationalising the country's around 1,300 schools. At the beginning of the year they were still under local authority management.¹⁸ The state-owned Klebelsberg Institute is now in the process of developing a mandatory national curriculum and new textbooks. Teachers, parents and schoolchildren are protesting against the recentralisation, and it is not yet clear what the future Hungarian school system will look like and how much autonomy will remain with schools.

AUTONOMY IN ICT PROCUREMENT

Until the reform at the beginning of 2013 schools purchased ICT equipment autonomously. The current arrangement isn't clear.

Consequences of decentralised school administration

All of the surveyed countries have decentralised school administration and supervisory structures. The national education ministries are not responsible for schools. Hungary is the exception because its government is currently attempting to recentralise the school system, though this process is still only at a very early stage. However, even if the government is successful with its recentralisation plans, observers and teachers assume that issues such as whether and how mobile devices can be used will still be decided by the schools themselves.

School administration structures differ from country to country, which means that different bodies are responsible for schools' policy. Germany is a good example of how complicated the current legal situation is.

In Germany, the Ministries for Education and Culture in the 16 federal states all pass their own education acts. Some have more than one education act because different laws apply to public and private schools. As a result, there are 28 different education acts in Germany.¹⁹

However, in almost all cases it is the schools, which decide whether and how mobile devices should be used at school. There are significant differences in rules governing the use of mobile phones in the various federal states, some more explicit, others less so.

The relevant section of the Bavarian Education and Schooling Act (section 56, para. 5 BayEUG) states:

“Mobile phones and other digital storage media, which are not being used in class must remain switched off inside the school building and on school grounds. The teacher taking the class or

performing a supervisory function during breaks may grant exceptions. If this rule is contravened, the mobile phone or other digital storage medium may be temporarily confiscated.”

This makes it quite clear that the school or teacher in Bavaria has decision authority on the use of mobile devices for mobile learning purposes. In Baden-Württemberg, the use of mobile phones is governed by section 23, paragraph 2 of the Baden-Württemberg Education Act (SchG), School's Legal Position:

“Under the provisions of this Act, the school is entitled to take any measures it deems necessary, including imposing local school rules, general rules and individual rules, in order to maintain school order and comply with the teaching and educational duties conferred upon it. The content and scope of such rules shall be determined in accordance with the purpose and function of the school.”

It would be almost impossible for most teachers to translate that into a guideline on the use of mobile phones in schools. However, further clarification is provided on the state of Baden-Württemberg's "TeacherTrainingServer" based on a position statement by the Ministry for Cultural Affairs, Youth Affairs and Sport in response to a state parliament enquiry on the subject of "The use of mobile phones at schools in Baden-Württemberg".

- Legal experts believe that a general mobile phone ban is not possible and it cannot be justified on grounds of the school's functions.
- Pupils cannot be banned from bringing mobile phones to school (so that they can be reached before and after school, on the way to school...)
- Mobile phones must remain switched off during lessons.
- School rules may restrict the use of mobile phones during break times.

- If the rules are contravened (i.e. if the mobile phone is used for purposes which breach school rules) the mobile phone may be confiscated but needs to be handed back to the pupil/parent without undue delay.
- Taking a mobile phone into an exam constitutes cheating.

The enquiry and position statement are dated 2006 and no fundamental clarification has followed since then. These guidelines leave a number of related concerns unanswered as regards whether a number of related and, as yet unresolved, concerns as regards whether pupils should be allowed to take mobile phones and tablets to school.

- Are teachers permitted to confiscate mobile devices?
If so, for how long?
- Are teachers permitted to search mobile devices?
- If teachers or other schoolchildren make audio or video recordings, does this constitute an infringement of privacy rights? Or would that only apply if the recordings were published?
- In what case would a minor be deemed to have access to violent material constituting a criminal offence?
Would this apply if they were watching or sharing happy slapping videos?
- How can minors be prevented from being exposed to pornography, e.g. when one child shows pornographic content to another on its mobile phone?
- When are mobile devices used to expose minors to racist content?
- What would constitute a breach of youth protection legislation? (The German legal community cannot reach agreement on whether the *Interstate Treaty on the Protection of Minors from Harmful Media* applies, because most mobile devices are used for private communications.) If one child showed harmful content to another child on its mobile phone display, the Youth Protection Act would apply. However there is no clear opinion and there are no known legal precedents.²⁰

Mobile learning is hardly mentioned in regulations or information material

Legal issues relating to the use of PCs and the Internet in class haven't been dealt with under the heading of mobile learning (or m-learning / mlearning) in the past, but under other headings such as e-learning and distance learning. So there are relevant sources which can be of assistance in connection with mobile learning – even though they do not explicitly deal with mobile learning.

Some countries provide pupils with detailed information on the legal use of copyrighted materials in lessons, particularly about Open Educational Resources (OER) and the principles on which they are based.

As explained in the section about copyright, the legal issues relating to copyright and data protection in mobile learning rarely arise due to the use of the mobile devices specifically, but due to the fact that digitised material exists and is being distributed on the Intranet or Internet.

The following publications contain information that helps to clarify some of the copyright issues facing schools: "Basic Guide to Open Educational Resources (OER)" by the Commonwealth of Learning and UNESCO.²¹ Other publications in the countries' national languages also exist that take special national circumstances in the implementation of the EU Copyright Directive into account, such as "Legal Issues In E-Learning – A Practical Guide", which is published by Multimedia Kontor Hamburg. (The latter predominantly focuses on the situation at universities).

However, experience shows that teachers want customised information because, when the legal situation is complex, it is hard for them to rely on their own interpretations. For example, "If a regulation applies to the use of a PC, does it also apply to the

use of an iPad?” People without a legal background are often not aware of the legal complexity they are dealing with. It is therefore likely that teacher and other users lack specific information about copyright.

Another option is to offer educational materials that can be used safely – from a legal point of view – in class. In Spain, the Spanish Ministry of Education, Social Politics and Sports, the Ministry of Industry, Tourism and Commerce, the Autonomous Communities and Autonomous Cities of Spain, and Red.es, the public corporate entity responsible for promoting the development of the Information Society in Spain, in 2008 founded the platform *Agrega* to promote utilization of the Internet in schools.

The data protection information situation is entirely different. Not only are there far more issues to consider in connection with data protection when mobile devices are used in schools, there is also far less reliable information available. It can therefore be reasonably assumed that the data protection issues in mobile learning have not yet been recognised.

In the UK, the Governors’ Handbook states: “We do not advise schools on data protection policy. Schools have direct responsibility for ensuring that they comply with the Data Protection Authority and handle personal data in line with it.” Although the Department of Education provides data protection policy templates that the schools can use, they do not contain any information about data processing on PCs, mobile devices or online learning platforms; so they certainly don’t provide the necessary information for voluntary informed consent as described in the section on data protection.

In Germany, some of the State Ministries for Education and Cultural Affairs provide information in the form of administrative regulations. These documents are published with the aim of educating teachers about their rights and obligations, as well

as the rights and obligations of their pupils, but are formulated in a way that foils the aim. For example, the German state of Baden-Württemberg’s “Administrative Regulation on Data Protection in Public Schools” is 25 pages long and written in a language that is practically impossible for laypersons to comprehend. No attempt is made to translate the abstract rules into specific everyday school situations in order to illustrate them. This regulation dated 2009 does not include the term “mobile learning”, nor does it contain the words “e-learning”, “smartphone” or “learning platform”.

Even though other publications more effectively communicate and illustrate the data protection issues that can occur in connection with everyday school activities, none of them cover the topic of mobile learning. The same applies to the other German states.

Some ministries for cultural affairs and education offer advice on dealing with mobile devices, though it is generally restricted to mobile phone policy.²² There is a great deal of information available to teachers and pupils, such as the state ministries’ websites and the state education servers, which provide information specifically for teachers. Yet none of them address the issue of how mobile phones and tablets can be used in compliance with data protection legislation.

Italy is another example. The Italian Data Protection Commissioner has published a brochure on data protection in schools²³, which can be taken to be the official line since the publisher is the government. It is a concise and easy-to-understand publication that attempts to answer teachers’ questions about data protection, such as “What information is collected about school-children and how it is processed?”, “Which photos, audio and video recordings can be made and published?” and so on. The issues that we are looking into, relating to the use of mobile devices as teaching or learning materials, are not addressed, though.

Case study: School IT Rhein-Waal, Germany

The School-IT Rhein-Waal research project²⁴, coordinated by the Learning Lab at the Duisburg-Essen University (Germany)²⁵, is a research-based attempt to integrate privately owned mobile devices in school lessons (BOYD²⁶). It involves four schools operated by Euregio Rhein-Waal, a German-Dutch association of authorities: the Walter-Bader Secondary School (Xanten, D), the Filder Benden Academic Secondary School (Moers, D), the Pallas Athene College (Ede, NL) and the Dorenweerd College (Doorwerth, NL). The project is designed to encourage teachers and pupils to use digital media in diverse ways for teaching and to develop “media schools” at their establishments. The project is also investigating the educational and technical requirements necessary for the use of mobile devices in classrooms and the consequences of using the mobile devices.

Legal issues played a role in various areas of the project, such as the installation of technical infrastructures. The Wi-Fi infrastructure at the participating German schools was developed and implemented by the Niederrhein Municipal Data Centre (KRZN). KRZN project manager Andreas Zboralski told the c’t magazine: “The special challenge was to operate school devices and privately owned devices securely in the same environment. Strict youth protection and data protection requirements also had to be complied with, plus the teachers wanted a solution that enabled them to use as many apps and services as possible.”²⁷

These objectives were achieved by setting up two physically separate networks at the schools, an administrative network and a mobile learning network. The schoolchildren cannot access the administrative network. The mobile learning network offers three Internet access options: “Via desktop PC and cable and via mobile device and VLAN (Virtual Local Area Network), with separate segments for school administration and private devices. In all cases content filtering takes place on a proxy server to ensure compliance with youth protection laws.

The filtering is implemented with a modern enterprise security web filter.”²⁸

As a result, the browser is always the smallest common denominator for BOYD users, although the infrastructure allows Internet access for most apps. It is therefore assumed that the use of mobile devices in this infrastructure will not be entirely legally compliant, despite all the precautions taken, under strict application of data protection legislation (see section entitled “Direct data processing by third parties”).

In the lessons themselves, the topics of copyright and privacy are dealt with in depth from an educational viewpoint, according to Richard Heinen of the Duisburg-Essen University, who is coordinating the project. For example, when pictures are taken for use in lessons this offers plenty of opportunities to discuss the legal issues. “If I film a physics experiment on a smartphone, I have to ask the students performing the experiment whether they consent to me filming.” Over time, the pupils develop a sensitivity towards privacy rights.

Yet Heinen also sees the disadvantages associated with teachers being constantly confronted with complex legal situations. Many teachers use the unclear legal situation – real or assumed – as an argument against the use of new devices, technologies and teaching methods. However, he has also “encountered teachers who have created fantastic lesson content that never left the classroom because of the teacher’s concerns about violating rights.”

Heinen is also ambivalent on the topic of data protection. In his experience, many schoolchildren use apps such as WhatsApp “expertly” and it could be used in lessons. Unfortunately, WhatsApp disregards data protection principles, which is counterproductive because it doesn’t take seriously the awareness for privacy that the young people have developed. Here is another example:

Case study: School IT Rhein-Waal, Germany

"If you ask an adult what Snapchat is, the first reaction that comes to mind is often "Sexting App". However, many school-children use it because they say that they don't feel in control of who sees whose content on Facebook. On Snapchat, they get the impression that they can control who can see a text with a photo, and for how long."

Even during the lessons the desired data protection level wasn't always achieved. "One teacher might say that he doesn't exactly know what the Soundcloud platform does with personal data, so he isn't going to use it. But he needs an alternative so that he can produce a podcast with the class. He might decide to use Audacity, an open source software for recording and editing, but it's more complex than Soundcloud and he doesn't know where to upload the podcast. The other teacher uses Soundcloud and provides a very good lesson."

Heinen summarised that the fundamental clarification of these issues is not enough. There should be checks performed on app terms and conditions so that "that's good or that's bad" information is available. Products that are designed from the outset for data protection-compliant use such as Socrative²⁹, an application that allows teachers to create simple quizzes and similar educational exercises, would also be a good idea. Only the teacher has to register with Socrative. The pupils then log in with a room code provided by their teacher.³⁰

Heinen would also like to see age-appropriate resources for use in the classroom. Existing materials are often patronising, and that's contra productive," said Heinen.

That's why the School IT Rhein-Waal project has appointed media scouts in the German schools. These are pupils who have received special training and pass on their knowledge to their peers. They might explain how to use the Wi-Fi, or how

to protect personal data on the Internet. Media scout mentor Christian Hauk explained the effect: "If I say to an eighth grader that he has to be careful about what photos he posts on the Internet, he'll think I'm just an old fogey who's got no idea what he's talking about. But the media scouts are the children's peers, so they listen to them and think about what they've said."³¹

06

Challenges and approaches to overcoming them

The next section deals with the legal challenges associated with the use of mobile devices in lessons and outlines existing approaches to overcoming them.

Copyright

Basic statutory provisions, including the copyright limitations and exceptions for the education sector, can only be changed by legislators. A flexibilisation of the European model would require the amendment of the EU's InfoSoc Directive³² and its translation into national law in the EU Member States. Naturally, such changes are always associated with vast effort and expense. The further course of the current debate on the copyright limitations for education and science, in which the German scientific community is taking a strong stance, will be very informative in this regard. A bill has already been drafted. However, it is highly uncertain whether it will be passed due to objections from school textbook and scientific publishing companies.

As an alternative to legislative amendments, the existing relatively narrow copyright exemptions for education purposes could be flexibilised if copyright holders took the initiative and transferred the copyright to their works to the public domain. This approach is being taken by initiatives and some government-funded programmes to increase the production and quality of Open Educational Resources (OER). These are teaching, learning and research materials in any medium that reside in the public domain or have been released under an open license that permits their free use and re-purposing by others. OERs are generally intended for use in learning scenarios. It is somewhat problematic that many users have no knowledge of the relevant laws and, as a result, they may (and do) violate the licensing terms when using and releasing OER material. School boards and intergovernmental organisations are already providing the necessary information, though efforts should be stepped up with regard to mobile learning.

In contrast, it is virtually impossible to violate licensing terms when operating in a closed "ecosystem" that provides devices, software programs and content specifically licensed for use in schools. Apple is one of the pioneers in developing this approach. This means legal certainty for schools and teachers. At the same time, it means that the public sector relinquishes control not only over the devices, but also, to a large extent, control over content. It additionally diminishes interoperability with other providers which could cause considerable problems for schools in the long term.

In Norway and several other countries, the production of teaching and learning resources is nationalised³³, which enables widespread use of the resources since they are not restricted by private control over the licensing process. Under these circumstances, mobile learning would be possible with coordination of just a few stakeholders, although it might be subject to potentially problematic content monitoring by public sector stakeholders.

Data protection and privacy

Data protection laws impose considerable restrictions on the mobile learning concepts in schools. In practice, mobile learning concepts should be restricted to applications that, ideally, do not create any personal data or, if personal data is created, it should be processed by the school itself or under the school's supervision. Third party providers who are interested in this market would have to enter into specific contractual data processing agreements with the schools. The school, as the responsible body, has to meet extensive obligations under data protection law. If personal data is generated with the mobile devices, consent to its use in lessons must be on a voluntary basis and confirmed in declarations of consent signed by the schoolchildren or their parents.

On the one hand, such a policy would permit the collection and processing of data on schoolchildren provided that they (and, depending on their age, their parents) give their consent. So there is nothing preventing initiatives where pupils, teachers and parents collaborate and communicate with each other electronically, such as the e-School in Estonia and other programmes of this kind³⁴.

On the other hand, areas of life that are relevant to the schoolchildren – such as the use of centralised social networks like Facebook – cannot be practically covered in school lessons. This regulatory effect could be desirable. The high hurdles to the use of mobile learning concepts might create a market for specialised data protection-friendly products and services.

One particular challenge associated with the use of mobile devices is the vast significance of the aforementioned distribution platforms. The use of apps in mobile learning – irrespective of whether they were specifically developed for mobile learning or not – is legally problematic because their operators generally collect data on users.

One alternative are decentralised platforms specifically designed for schools with special data protection features such as LOGI-NEO, a platform with a single sign on for teachers and pupils providing access to e-mails, data management, internal and external blogs, Moodle, Wiki, a timetable management system and media libraries. The data is hosted at communal data centres in Cologne and Kamp-Lintfort, Germany, and the operators, three municipal IT service providers, guarantee that the data is processed in accordance with the German Data Protection Act. This is another potential market where innovations are possible.

However, the use of alternative systems is dependent on extensive modification of platform operating systems, such as so-called jailbreaking. This certainly applies to iOS and Windows, and also to Android in some scenarios. Such jailbreaking and rooting may be legal³⁵ – but they do raise IT security concerns.³⁶ Such concerns can, however, be eliminated by one-to-one computing where the school retains control over the devices. And this, too, opens up another area of application for data protection-friendly innovations.

Legal issues relating to mobile learning concepts in practice

Past and current research projects on mobile learning focus on how mobile devices can be used in lessons in an educationally beneficial way. Although this is an important issue, the legal issues associated with mobile learning should not be ignored. At the present time data protection hardly plays a role because the teachers are left alone to form their own opinions and interpretations of very complex legal texts and regulations.

In the area of copyright, on the other hand, the concept of Open Educational Resources (OER) could help to create more legal safeguards in mobile learning. Some countries and supranational institutions such as UNESCO also provide information explaining the concept and use of OER.

This is very useful, although it needs stressing that OER is still at a very early development stage. The pool of resources available is nowhere near sufficient to replace existing educational resources. Some people also doubt whether this will ever be the case. OER will not include content such as famous literary works, photographs or videos if the right holder refuses to provide it on an open content basis. In any case, it seems unlikely that copyright problems will be avoided entirely in the short or medium term through the widespread use of OER.

Finally, it has been ascertained that most official information documents about mobile devices – i.e. published by ministries, school authorities and schools – only mention mobile phones but not tablets. The mobile devices are also portrayed as a problem and a threat to lessons. Although there are research and testing projects on the use of mobile phones in schools, such as "School IT Rhein Waal" (see case study on page 19), which is funded by the European Regional Development Fund (ERDF) at two German and two Dutch schools,³⁷ these projects are more the exception than the rule when you consider that there are several tens of thousands of schools in the EU. They are unlikely to change the fundamentally negative tone of official publications by ministries and school authorities in the near future.

07

Recommendations

Improve information for schoolchildren, parents, teachers and school administrators

The education policy and school administration decision makers should create or arrange for the development of information material providing an easy-to-understand explanation of the complex legal requirements and restrictions associated with mobile learning. This information material's character should be empowering and focus on explaining how mobile devices can be legally used for mobile learning. It would make it a lot easier for teachers interested in using mobile learning concepts to actually introduce one. The material should include information about copyright, privacy, data protection and data security, and be made available to as many teachers as possible. Information on the subject of data protection has to be updated to incorporate the mobile learning aspect because it is barely mentioned in existing information products.

Support Open Educational Resources (OER)

Existing licencing alternatives, particularly OER, should be taken as a basis and information should be provided about them. Funding should also be provided for the production of OER materials.

Avoid closed mobile learning "ecosystems"

Stakeholders and responsible bodies (school boards, principals, teachers, education policy experts and school supervision bodies) should be explicitly informed about the disadvantages of using closed "ecosystems", such as manufacturer lock-in, and their attention should be drawn to the fact that content created in these systems can almost never be used in other contexts. Such systems are also associated with the risk that their providers will establish a market monopoly to the detriment of content diversity, quality and innovation.

Improve the schools' IT expertise and resources

Implementing mobile learning concepts that are legal, convenient and educationally beneficial is impossible without IT skills. Schools should have the necessary access to this expertise, either via their own administrators, or via regional service providers that support the schools.

Support the development of data protection-compliant solutions

It is necessary at both EU and Member State level to encourage the development of data protection-compliant mobile learning solutions. The focus should not be on academic research, but on the development of marketable concepts, for instance, through the establishment of suitable funding programmes as incentives.

Strengthen the rights of users

Education policy and school administration decision makers should support the simplification of using copyrighted material in schools by way of appropriate copyright limitations, both at EU and Member State level. This is not restricted to mobile learning, but it would considerably simplify it.

Endnotes

- 1 Tablets and Connectivity in Schools: 2014 Edition, BESA, p. 13 et seq.
- 2 <http://unesdoc.unesco.org/images/0021/002196/219641E.pdf>
- 3 loc.cit., p. 6
- 4 The European Economic Area includes 31 countries, so there are 31 copyright acts, all of which are open to interpretation. Also refer to Teresa Nobre, LL.M., "Mapping Copyright Exceptions and Limitations in Europe", Working Paper, Creative Commons Project "Open Educational Resources Policy in Europe", July 2014, http://oerpolicy.eu/wp-content/uploads/2014/07/working_paper_140714.pdf
- 5 However, the state education acts include provisions on the processing of enumerative listed data records, such as data on learning performance and conduct, cf. section 30 Schleswig-Holstein Education Act. Due to being restricted to just a few data categories, these provisions do not apply to mobile learning data.
- 6 For an illustrative and comprehensive explanation of school data protection, 2nd edition 2009 see: Unabhängiges Landeszentrum für Datenschutz (ed.), Praxishandbuch Schuldatenschutz, online: <https://www.datenschutzzentrum.de/schule/praxishandbuch-schuldatenschutz.pdf>
- 7 For simplification purposes, we will focus on schoolchildren in this paper. However, it is important not to forget that the teachers' fundamental right to self-determination over the use of personal data can, and in many cases will, also be affected by the use of mobile learning.
- 8 It is not a question of whether the processor can draw conclusions about the school children. Rather, it has to be taken into consideration that the interaction of several parties or the combination of data records, which would occur in a security incident, can reveal information about a specific schoolchild.
- 9 The information that a specific app has been downloaded by a schoolchild may seem trivial taken in isolation, so it is difficult to understand why the comprehensive data protection regulations should apply to it. However, the Federal Constitutional Court has recognised that there is no such thing as "trivial" data. This can be explained in terms of a specific incident. The information about apps that are downloaded in a child's school day can, in turn, be an indication that the child has not done its homework. Above all, it is important to consider that the operators of distribution platforms create comprehensive user profiles and such information is an additional component of those profiles.
- 10 Also refer to section 30 of the Schleswig-Holstein Education Act
- 11 Some state data protection laws, and the Telemedia Act, provide for the option of electronic consent. However, since personal contact exists in the school context, written consent should not be difficult to obtain.
- 12 Cf. Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein (ed.), Die Schule als Daten verarbeitende Stelle im Sinne von § 3 Abs. 2 LDSG (undated) p. 2, <https://www.datenschutzzentrum.de/schule/schule-als-dv-stelle.pdf.2>, <https://www.datenschutzzentrum.de/schule/schule-als-dv-stelle.pdf>. However, various opinions of the data protection authorities do not resolve the problem of how to reconcile this requirement with the admissibility of Internet use – when, in many cases, personal data will also be collected. This viewpoint would only be consistent if the schools using the Internet were requested to take precautions to ensure that no personal data is generated during browsing.
- 13 <http://www.science-on-stage.eu/>
- 14 EURYDICE: School Autonomy in Europe. Policies and Measures. http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/090DE.pdf
- 15 GSMA: Mobile Education in the United Kingdom, <http://www.gsma.com/connectedliving/wp-content/uploads/2012/03/uk110811interactive1.pdf>

- 16 GSMA: Mobile Education in Spain, <http://www.gsma.com/connectedliving/wp-content/uploads/2012/03/esp110811110811interactive-1.pdf>
- 17 <http://www.kooperation-international.de/buf/niederlande/bildungs-forschungslandschaft/bildungslandschaft.html>
- 18 Saskia Bücken: Staatskontrolle über Schulen in Ungarn: großes Chaos und kleiner Widerstand, <http://www.pestertloyd.net/html/1304schulreformklebelsberg.html>
- 19 Kultusministerkonferenz: Schulgesetze der Länder in der Bundesrepublik Deutschland, <http://www.kmk.org/dokumentation/rechtsvorschriften-und-lehrplaene-der-laender/uebersicht-schulgesetze.html>
- 20 Cf.: David Pachali: Handys an Schulen: Häufige Fragen und Antworten, <http://irights.info/artikel/faq-handys-schule-was-ist-erlaubt/24289>
- 21 <http://www.col.org/resources/publications/Pages/detail.aspx?PID=357>
- 22 Cf. Schulrecht von A bis Z des Portals der Landesregierung Schleswig-Holstein – http://www.schleswig-holstein.de/Bildung/DE/Service/Schulrecht/Data/F_K/handyFoto.html
- 23 http://194.242.234.211/documents/10160/2416443/La_privacy_tra_i_banchi_di_scuola.pdf
- 24 <http://www.school-it-rhein-waal.eu/>
- 25 <http://mediendidaktik.uni-due.de/forschung/projekte/school-it-rhein-waal>
- 26 "Bring Your Own Device"
- 27 Richard Heinen: Handy erlaubt! Smartphone & Co erobern das Klassenzimmer, in: c't 14/2014, p. 112
- 28 Richard Heinen: Handy erlaubt! Smartphone & Co erobern das Klassenzimmer, in: c't 14/2014, p. 112
- 29 <http://www.socrative.com/>
- 30 However, it isn't immediately evident which data is transferred when children log in via the browser; if they use the app, not only do we have to address the issue of which data is transferred when they take part in lesson activities on Socrative but also the problem that, under some circumstances, the app contravenes data protection laws when it is downloaded and installed.
- 31 Richard Heinen: Handy erlaubt! Smartphone & Co erobern das Klassenzimmer, in: c't 14/2014, p. 115
- 32 Governors' handbook – For governors in maintained schools, academies and free schools, September 2014, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/352752/Governors_Handbook_2014.pdf
- 33 Nasjonal digital læringsarena (NDLA), <http://ndla.no/>
- 34 "Teachers enter information about attendance in the system, give homework and assess pupil behaviour. They can send messages to parents, schoolchildren or classes. Parents use it to be involved in the education of their children. They can go on the Internet at any time to see what homework their children have, what grades they got and when they attended classes, and they are sent messages by the teachers, with whom they can communicate directly. Schoolchildren can see their own grades and homework assignments, and save their best work in personal e-portfolios. The school board has access to current statistics, which makes it easier to collate data from various schools in the district." – cf. <https://e-estonia.com/component/e-school/>
- 35 Jail breaking does not contravene European copyright laws according to the ECJ ruling of 23 January 2014, <http://curia.europa.eu/juris/document/document.jsf?text=&docid=146686&pageIndex=0&doclang=DE&mode=req&dir=&occ=first&part=1&cid=662699>, <http://curia.europa.eu/juris/document/document.jsf?text=&docid=146686&pageIndex=0&doclang=DE&mode=req&dir=&occ=first&part=1&cid=662699>. Jail breaking also does not infringe copyright in the USA. (Library of Congress, Copyright Office (ed.), Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies [Docket No. RM 20088], available online at <https://www.eet seq.org/files/filenode/>

dmca_2009/RM-2008-8.pdf). The further legal implications of jail breaking have not yet been legally clarified in Germany. Apple's GTCs state that warranty is rendered void by jail breaking, although the legal effectiveness of this statement has not yet been verified in Germany. (E.g. Solmecke in: "Was Nutzern beim "Knacken" ihres iPhones droht" (<http://www.express.de/recht-im-netz/sind-jailbreaks-erlaubt—was-nutzern--beim--knacken--ihres-iphones-droht,20964798,22613052.html>). Solmecke assumes that warranty will only be lost if the device is rendered defective by jail breaking.) Devices with Android operating systems retain their warranty, at least when purchased by consumers, after "rooting" the operating system. (Matija Šuklje and Carlo Piana, Does rooting your phone invalidate its warranty? (In EU), <http://piana.eu/root>(In EU), <http://piana.eu/root>)

- 36 The Federal Office for Security in Information Technology (BSI) takes a very critical view of jail breaking iOS, because it increases security risks (BSI (ed.), Überblickspapier zu iOS, Version 1.0 dated 24.7.2013 (https://www.bsi.bund.de/SharedDocs/Downloads/DE/BSI/Grundschutz/Download/Ueberblickspapier_Apple_iOS_pdf.pdf), whereby the paper only takes the status up to the date of publication into account, and the new version of the operating system has a range of new security features. At the same time, the paper does not address the manufacturer's options for accessing user data, and only briefly addresses the obvious data collection practices of Apple Inc.). On the whole, however, even the use of the devices without jail breaking them is associated with significant data protection risks (cf. BSI, loc. cit., and particularly: Egele, Manuel, et al. "PiOS: Detecting Privacy Leaks in iOS Applications." NDSp. 2011, <http://www.iseclab.org/papers/egele-ndss11.pdf>2011, <http://www.iseclab.org/papers/egele-ndss11.pdf>)
- 37 <http://mediendidaktik.uni-due.de/forschung/projekte/school-it-rhein-waal>

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Author

Matthias Spielkamp, iRights.Lab

Editorship

Dr David Deißner, Director Strategy & Programs, Vodafone Institute

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Andreas Mayer, Stuttgart

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