

Administering school ICT infrastructure: developing your knowledge and skills November 2016 – January 2017

School ICT development plan

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# The situation in our school

Our school faces three challenges in the coming months and years:

1. A main part of the school is being replaced by a new building. Thus, for about 2 years we have less classrooms (no central computer room anymore) and some teachers have to change location more frequently than before.
2. Starting with the school year of 2017 a new competency-based curriculum will be introduced. Therefore so-called 21st century (and digital skills) will feature more prominent in daily teaching.
3. The schoolboard has decided to equip all students with an individual laptop/tablet-computer. At the moment one third of the students is already equipped and has been using the devices (Surface 3) for the last eight months. In summer 2017 all students will have their own device.

For a better understanding I’ve included a graphical representation of the process.

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|  | Now | April 2017 | August 2017 | February 2018 | August 2018 | February 2019 | August 2019 |
| Students 1 |  | Intro devices | Regular use |  |  |  |  |
| Students 2 | Regular use |  |  |  | not in school | anymore |  |
| Students 3 |  |  | Intro devices | Regular use |  |  |  |
| Staff 1 |  | Introduction | Regular use | and training |  | (online course) |  |
| Staff 2 | Regular use | and | additional | training | (online course) |  |  |
| Staff 3 |  |  | Introduction | Regular use |  |  | (online course) |
| Admin 1 | responsible | for | Deployment |  |  |  | support |
| Admin 2 |  |  | training | (CAS) | introduction |  | responsible |
| Support 1 |  | hardware | support | pedagogical | support |  |  |
| Support 2 | sabbatical |  | pedagogical | support |  |  |  |
| LSM Specialist | continuos | work | on | LSM | (Administration) |  |  |

# 1: Infrastructure

## Where are we now?

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| *Topic* | *Current situation* | *Critical commentary, explanation* |
| 1: Server | The server has recently been replaced and is up-to-date. | There will be no major change at the server level. |
| 2: LAN and WLAN, Internet | Due to the building activities a shift from LAN to WLAN has already occurred. At the moment we know how to provide enough bandwith to all classrooms. | Due to moving class rooms providing basic internet access isn’t threatened, but it will keep our ICT responsible busy for the next few months. |
| 3:individual devices | A third of the students is already using individual devices (Surface 3) as well as most teachers. For the other two thirds of the students a new devise has to be acquired. Until very recently most teachers made only occasional use of ICT equipment despite the school having three computer lab rooms and most classrooms being provided with several desktop computers (old models). | At the moment we are planning to invite different companies to make us offers according to our specification. The budget has already been made, therefore we should be able to buy the devices within the next few months. Within the next few years all the desktop models still in use will be replaced with more mobile devices.  As for the optimal device for the teachers, a decision is pending. |

## Where do we want to be?

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| *Objective in ten words* | *Description* | *Priority level (1 high-5: low)* | *Explanation / justification* |
| 1: maintaining the high standards concerning the internet, wifi and server infrastructure | Due to the building activities maintaining the obtained internet bandwith, the server connectivity and the wifi coverage are a central aim, as these build the foundation for further development | 1 | During the building phase classrooms have to be shifted to different locations. It is a major goal to keep the level of connectivity we have achieved during the last year. |
| 2: making 1:1 devices available to all students | In the next few months we will have to acquire 200+ 1:1 devices. Even though a list of requirements for those 1:1 devices has been developed, the additional devices have not been bought yet and costs might be an issue. | 2 | As mentioned the 1:1 devices which are available for 6 classes at the moment should be available to all classes (an additional 12) latest by summer 2017. |
| 3: making the maintenance of the 1:1 devices and other critical infrastructure more easy | Once the works on the new building have finished, our main computer infrastructure expert will go on pension, therefore making administration more easy is of some priority. | 3 | Once the dust of the new building has settled the rewired infrastructure should be more easily maintained then the organically grown infrastructure we faced until recently. |

## How do we get there?

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| --- | --- | --- | --- | --- | --- |
| *Sub-Task description* | *Resources* | *Cost* | *Leader* | *Who else?* | *Deadline* |
| 1: Final transfer of server data. | server already in place | Included in salary | IT expert | External expert | end of January 2017 |
| 2: provisional rewiring of network services | Rewiring already in place, connection to be made and testet | Work of external technicians | IT expert | External technicians | End of February 2017 |
| 3: network in new school building | List of all Aps and electrical sockets | Included in building budget | IT expert | External expert and technicians | Begin of 2019 |

## How do we know we’ve got there?

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| --- | --- | --- |
| *Objective in ten words (as above)* | *Measures of success* | *How measured* |
| 1: all services are available again | All the software and administrative services as well as all personal and group data are available to the people who need it. | Checklist of services  Personal control of data availability |
| 2: everybody has access to school network | All staff and students can access data on server, all staff can access services on provided by local server | Personal control of staff  Personal control of students |
| 3: setting up the new network in the newly build part of the school | All staff and students have equal or better access to server services and internet hosted data and services | Technicians checklist  IT expert’s checklist  Personal control |

# 2: Wifi and BYOD

## Where the school is now

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| *Topic* | *Current situation* | *Critical commentary, explanation* |
| 1: Wifi | every classroom has highspeed wifi access to the internet | Some of the access points are only temporarily installed |
| 2: BYCD | As the school provides students with devices we follow a “Bring Your Charged Device” philosophy | As there are always problems with some devices (not charged, updating, other problems) each classroom has to be provided at least two additional devices (older notebooks) as a temporary replacement. |
| 3: Internet | At the moment the internet connection is fast enough for all the work and learning done during a typical school day. | We have recently done some substantial investments in widening internet bandwith. |

## Where do we want to be?

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| --- | --- | --- | --- |
| *Objective in ten words* | *Description* | *Priority level (1 high-5: low)* | *Explanation / justification* |
| 1: maintain quality of wifi | The school wants to make sure wifi connection doesn’t worsen during the building phase | 1 | During the building phase it is essential that wifi connection keeps the obtained quality as resources like photocopiers and other materials are less accessible. |
| 2: devices | The newly to acquire devices need to be centrally administrated. | 2 | The new classes outfitted with the 1:1 devices are less tech affine than the classes who have already implemented teaching and learning with 1:1 devices. |
| 3: setting up supporting devices | Printers and infrastructure like beamers are depending on wires at the moment. This should change in the coming years. | 3 | As people are shifting around during the building phase and wiring doesn’t come cheap, as many services as possible should be available through a wireless connection. |

## How do we get there?

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| --- | --- | --- | --- | --- | --- |
| *Sub-Task description* | *Resources* | *Cost* | *Leader* | *Who else?* | *Deadline* |
| 1: wifi routes have to be installed in the temporary classrooms | Wifi routers and APs already in use, have to moved to new rooms | Salary, building credit | IT expert | external technicians | January 2017 |
| 2: board has to decide on best offer, IT expert has to set up ground installation | Criteria list for devices already written | Salary, 170’000 SFR | IT expert | Internal interest group, external companies | July 2017 |
| 3: supporting devices | Printers, beamer, USB-docks, … (only partially available), some of them not needed at the moment | Normal IT budget | IT expert | External technicians | January 2017, 2018, 2019 |

## How do we know we’ve got there?

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| *Objective in ten words (as above)* | *Measures of success* | *How measured* |
| 1: guaranteed access to internet via wifi at all phases of construction | Staff an teachers have internet access at all working weeks during the school year. The systems is only down during non-schooling weeks or when communicated in advance. | Wifi and internet logs  Personal reaction from users |
| 2: devices are available for teaching and learning | Devices are available and running at latest by the end of the school year (July 2017) | All classes can use the new devices without any major problems. |
| 3: additional devices | Printers, beamer and other devices are available to all people who need them. | Basic functionality test for beamer, printers and other devices. |

# 3: Cloud

## Where the school is now

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| --- | --- | --- |
| *Topic* | *Current situation* | *Critical commentary, explanation* |
| 1: Data | At the moment most of the school’s data is stored either on local computer, the school’s server or individually by teachers (e.g. Dropbox). But as we have recently introduced Office 365 this is probably soon going to change. | Personal information about students will stay on the school’s sever (physical access only from the school’s computer and restricted to actual needs of users) as we can’t guarantee the safety of the data online. |
| 2: Software | Our school has a long tradition of using Microsoft Office products. With the introduction of Office 365 the use of OneNote has been introduced in some teaching situations. | At the moment most teachers don’t make (good) use of Office 365 and they mainly stick to the ways of working with the office software as they have used to. |
| 3: LMS | The school’s LMS has been hosted for several year on an external server by a specialized internet provider. Recently the system has shown that it is stable enough even if three classes at the same time access a test. | The main disadvantage of having a hosted solution is that maintance (e.g. updates) of the LMS are normally time consuming as testing of new features has to be done on a local installation. |

## Where do we want to be?

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| --- | --- | --- | --- |
| *Objective in ten words* | *Description* | *Priority level (1 high-5: low)* | *Explanation / justification* |
| 1: Data: Shift non-essential data to the cloud to reduce maintenance cost | With the introduction of Office 365 and 1:1 computing for all students (in 2017) we want to shift all non-critical and non-essential data to the cloud (individual users and common folders). The main reason for this step is to have access to the data even when not physically present in school. | 3 | This task has a middle priority because just having updated our server infrastructure there is no immediate need to shift the data to the cloud – unless additional functionality is wanted (like access from everywhere and working on documents together). It is very like that the data transfer is spear-headed by a smaller group of teachers who are used to “work in the cloud”. |
| 2: Software: Make use of collaborative features in learning scenarios and reduce paper load | We have already started to use OneNote in collaborative learning scenarios and we want to reduce the amount of paper we are currently using in our school. The technical aspects of introducing OneNote and the Class Notebook extension go hand in hand with pedagogical aims of shifting from worksheets to more engaging collaborative tasks. | 1 | Using a tool like OneNote materials needed for learning can more easily deployed to students and sketches of their work can be shared among students in a simple way.  However, we still have a long way to go, as we have only officially started our journey this very school year. |
| 3: LMS: Bring more teachers on board (technical knowhow). | Next school year a competency-based curriculum is introduced in our school. To keep track of the many competences an LMS can help teachers not to loose oversight of what students have already achieved. In order to use the full functionality we have to provide additional material (exercises, practices, collaborative tasks) through the LMS (including OneNote notebooks), we also have to type the competences of the national framework into the system and link them to actual student work. | 1-2 | Proving additional material and get teacher technically fit for the LMS is of highest priority. Only when this has been achieved can the next step of linking activities to competences been done (therefore priority 2). |

## How do we get there?

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| *Sub-Task description* | *Resources* | *Cost* | *Leader* | *Who else?* | *Deadline* |
| 1: teacher training (Office 365) | Training material | 2x half a day | ICT responsible | principle | Before current school year ends |
| 1: making teachers and students use the cloud | User database (raw data provided by the district, adjusted for school’s needs: logins) | Setting up user accounts (yearly task)  Included in job description | ICT responsible (data from school administration) | - | Before new school year starts |
| 2: introducing OneNote Class Notebook to all teachers | Training material | 1x half a day | ICT responsible | Teachers already using OneNote (showcases) | Before autumn holiday of school year 2017 |
| 3: introducing collaborative features of other Office 365 components | Training material | 3x half a day | ICT responsible | Experts on applications (Word, Excel, PowerPoint) | Before winter holiday 2017 |
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## How do we know we’ve got there?

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| *Objective in ten words (as above)* | *Measures of success* | *How measured* |
| 1: Teachers and students save their date routinely in the cloud (OneDrive). | Apart from critical and confidential data most files are stored in the cloud (an exception could be very large files like movie material). Teachers and students know how to make their files available to other people who need access to them. | 1) Amount of data still saved on server and 2) number of documents shared within the school. |
| 2: Students work on highly demanding collaborative tasks to further their knowledge and skills. | Teachers are able to devise learning tasks for students which are closely fitted to the curriculum, cognitively demanding, motivating for students and include elements of collaboration.  Students are able to share drafts of their work with other people and they can work together on a given document. | 1) amount of copied worksheets (counter on the photocopier machine) has reduced by more than 30% after one year, more than 50% after two years), 2) when visiting classrooms principle sees evidence of collaborative tasks |
| 3: Teachers can generate an automatic report of students’ competences at the end of the term. | Students can access learning an training material in all subject areas via the LMS. Teachers routinely make use of different features of the LMS and know what tools provided by the LMS are suitable for a certain pedagogical approach and the subjects they teach. | 1) number of subjects with are covered in detail through the LMS  2) number of activities students solve in the LMS (making use of automatically graded tests and peer feedback)  3) set up of competencies framework within the LMS  4) ability to automatically generate reports through linking activities to the competences framework |

# 4: Security and safety

School policy for the acceptable use of ICT, including secure access to the Internet; eSafety with mobile phones, eSafety Label / Safer Internet Day activities; dealing with malware, protecting data, separating domains, backing up…

## Where the school is now

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| *Topic (suggested)* | *Current situation* | *Critical commentary, explanation* |
| 1: Security strategy and policy | At the moment data and software services are provided by at different instances: Cloud services by Microsoft (Office 365); local server for data (students and teachers) and administrative tools (teachers); hosted Moodle server for online-learning; external server for mail. | To fragment our services is partially a result of our school’s computing history, partially a decision we made on purpose. Even though different systems cause more work to the administrator, because we have to interconnect them, thus we are less dependent on complete blackouts. For instance due to building in progress, the whole server infrastructure needs to be moved, but mail and e-learning (as independent systems) will still work. |
| 2: Protecting the network and data against threats | The network is protected by different layers of protection: 1) not everybody has access to the network (students need either their preconfigured devices or a special access code which is valid only for some time). 2) critical data for the administration cannot be accessed by students and some not even by teachers. 3) software updates are made available as soon as possible; 4) all devices are protected by a security programme. | Even though there is an emphasis on network security, it can still be improved (and we are learning as we go). Things which need improvement are the internal network (LAN), and the local safety measures for student computers. |
| 3: Student and staff awareness | Students and staff know basic safety rules. Students are also made aware, that installation or access of non-school material is only allowed after they’ve gotten a permit from the responsible teacher. | The knowledge of different teachers and students does vary greatly. While some teachers are afraid to press a button because they fear malware, others use many different webpages and might have additional safety measures in place. |
| 4: Good practices | Updates can be pushed to students devices by the administrator who is also in charge of the security programs. When students download programs they are taught by teachers which webpages to use (pages with built-in virus detection). | As some students or teachers might not follow the given rule, we have recently discussed the option of a security check-point from time to time. Within computer science lessons student actively check their own devices for security risk. The idea being, that they might also use the strategies learnt with devices in their homes. |
| 5: Tools, services and apps used | For students and teachers we use a commercial security program. Webpages are filtered through the server by making use of a combination of a commercial black list in combination with a local white list. | We recently discovered that our security program can spot some problems but not rectify them. |

## Where do we want to be?

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| --- | --- | --- | --- |
| *Objective in ten words* | *Description* | *Priority level (1 high-5: low)* | *Explanation / justification* |
| 1: separate different LAN networks more strictly | As our school combines several locations, we want to separate the LAN as far as possible, so that problems in one part of the LAN network don’t affect other parts. | 1 | In the past we had some problems with damaged access points to the LAN network or intentional sabotage by a group of students which caused major problems in the network and cost the responsible administrator a lot of time to locate the problem. |
| 2: Introduce regular safety checks. | We want to raise awareness for online safety in staff and students by regularly checking for possible safety threats within school lessons and by informing students about possible risks and the likeliness of those risks depending on their online behaviour. | 1 | As more and more students use their own devices (bought and administered by the school) in lessons and at home, there is an increased risk of compromising the school’s server infrastructure. Also, safety threats become more sophisticated and more difficult to fight. |
| 3: Installing additional safety tools on the main server. | To minimize the risk of being compromised, we want to install additional software which observes internet traffic and alarms the administrator automatically, if some irregularities occur. | 2 | With a growing number of devices and services and more and more online connections it gets more difficult to find possible safety gaps. Therefore automatization can help by reducing the workload and make basic checks more reliable. |

## How do we get there?

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| *Sub-Task description* | *Resources* | *Cost* | *Leader* | *Who else?* | *Deadline* |
| 1: | In two years time we move into a new school building, therefore part of the LAN network can be built from scratch. | Minimal, as the costs are covered by the construction budget | administrator | External specialist | August 2019 |
| 2: | Training of class teachers and development of manual for checking computer safety. | 10 hours for development and testing (administrator)  2 h (every classroom teacher) for training | administrator  head teacher | Group of specialist teachers | April 2017 |
| 3: | Installation of additional software to watch internet traffic. | Unknown, not yet decided whether to choose open source option or commercial tool | administrator | External specialist | August 2017 |

## How do we know we’ve got there?

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| --- | --- | --- |
| *Objective in ten words (as above)* | *Measures of success* | *How measured* |
| 1: less down-time | We have less down-time (no more than twice a year) as far as server services and internet connection is concerned. In case an incident happens, it can be solved in less than 30 minutes (so far several hours). | Intentional attacks on the LAN network to check its stability. |
| 2: students and staff regulary check their devices | Teachers get regular safety instructions. We implement safety checks in our curriculum and watch the use of safety measures.  About half a year we install a honey pot for our students and see how many are ready to take a security risk. | Safety workshop for teachers;  Server protocols for security program;  Students pass an online test about online security. |
| 3: | Additional software installed and successfully reacting to triggers (e.g. repeatedly failed logins, new device trying to access the server, …) | Software reacts properly to triggers without causing to many false positives. |

# 5: Management

Covering budgeting, technical support, fault-fixing, maintenance; your and colleagues’ competence building and personal development

## Where the school is now

|  |  |  |
| --- | --- | --- |
| *Topic (suggested)* | *Current situation* | *Critical commentary, explanation* |
| 1: Budget, cost saving | This year we are going to invest heavily in individual devices because we outfit two thirds of our students. In the long run we hope to save costs by not having to replace outdated technology and by reducing the numbers of photo copies (mainly time saved). | The amount we have to spend this year is so big that we had to invite tenders which was very time consuming. In the coming years a replacement schedule will hopefully prevent such an occurance (depending on how durable the devices are). |
| 2: Technical support, maintenance, replacement | As we are replacing most of our hardware this year, we hope not to face to many replacement demands. Technical support will reach its peak in a few months. Once most teachers now how to handle basic problems, the need for support will decrease. | We already have an online document in place where tech-savy teachers describe the most common problems and how to fix them or whom to consult when it is no good to try oneself. |
| 3: Professional development: ICT administrator and others | From summer 2017 on two additional teachers will be trained in administration of the school’s ICT department and support. | Because the complexity of our systems is increasing at a fast rate, training of new teachers might not be enough. The contact to external (paid) professional will stay of crucial importance. |

## Where do we want to be?

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| --- | --- | --- | --- |
| *Objective in ten words* | *Description* | *Priority level (1 high-5: low)* | *Explanation / justification* |
| 1: no major investments | After having bought the new devices, there shouldn’t be any need for major investments. | 5 | We think that we can use the devices for at least three years, before we have to think about replacing them (depending on the state of the devices). |
| 2: maintenance of devices bought | As soon as we have bought the new devices (April 2017), there will be no immediate need to replace a larger number of devices. | 3 | Once the new devices arrive there will be a peak in maintenance work to set them up and bring them into our overall system. Afterwards – from the experience we already have – maintenance will dwindle fast. |
| 3: training of new administrator | An additional teacher needs to be trained and another teacher will learn how to do first level support. | 1 | As our current administrator will go on pension in 2019, we urgently need somebody who can first shadowing his work and later take over. |

## How do we get there?

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| --- | --- | --- | --- | --- | --- |
| *Sub-Task description* | *Resources* | *Cost* | *Leader* | *Who else?* | *Deadline* |
| 1: The process of buying the new devices is entering its final phase. | Most of the work has already been done and the budget is in place. Within the next month we will have to decide on what device to choose. | Already covered  (SFR 170,000) | School head, administrator | Expert teachers | April 2017 |
| 2: Installation of new devices and functionality testing by expert teachers. | The administrator and a few expert teachers have already got some experience in introducing new hardware to the school. | SFR 20,000 | School head | Administrator, expert teachers | April 2017  Last time we deployed the devices within two weeks after arrivel. |
| 3: Administrator to be goes through official training for ICT staff in schools and uses additional training opportunities. | The new administrator will have an additional lesson for first level support at his hand beginning February 2017. Another teacher will go on a half year sabbatical to train himself. | 75,000 SFR for sabbatical (already covered)  5,000 SFR for additional lesson  8,000 SFR for ICT training | School board | School head | Starting February 2017 until July 2017 |

## How do we know we’ve got there?

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| --- | --- | --- |
| *Objective in ten words (as above)* | *Measures of success* | *How measured* |
| 1: no need for new equipment | The school doesn’t have to buy major new equipment. | Within the next two year no need for more than 15% replacement of existing ICT infrastructure. |
| 2: students can use the new devices | Students and teachers can use the new devices beginning from latest May 2017. Out of 20 devices (class size) not more than 2 (better only 1 or less) aren’t operational in a certain lesson | Informal questioning of teachers  Questionnaire for students (already in place) |
| 3: increasing ICT competence | The teacher who receives ICT training graduates successfully from the course (CAS) and can prove that he has done additional training in the field (e.g. Certificate for online course.)  The other teacher brings his experience into school by providing helpful support and advising other teachers how to deal with problems. | Certificate  User satisfaction with trouble-shooting (questionnaire, not yet available)  Number of informal consultations reduced (other teachers) |

# 6: New tools

Current and future tools, devices, apps and services; how ICT will be used to promote inclusion, for example by supporting pupils with special educational needs and by developing home-school links

## Where the school is now

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| --- | --- | --- |
| *Topic (suggested)* | *Current situation* | *Critical commentary, explanation* |
| 1: Alignment with trends and, opportunities in technology (e.g. mobile learning, makerspaces) | Every student will have his/her own device (from April 2017, respectively August 2017). Because of the building in progress, there will be no addition investments in additional technologies (hardware). | One third of the students already has a device, the other students will phase in over the next months. |
| 2: Applications, software, digital content | Most teachers had a first contact with Office 365 and all students use or have used the Learning Management System and Office 365 (especially OneNote). | As with all software tools some teachers and students are more proficient in using them. It is vital that all teachers show a minimum of competency in the daily use of those tools (criteria list in place). |
| 3: Access for students with special needs and disabilities | At the moment, we don’t have any students with special disabilities. For learning difficulties expert teachers and a number of supporting technical tools are in place. | As we built most content of our learning management system ourselves, we can quickly react to needs due to learning disabilities. |

## Where do we want to be?

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| --- | --- | --- | --- |
| *Objective in ten words* | *Description* | *Priority level (1 high-5: low)* | *Explanation / justification* |
| 1: using digital devices for learning | As the new devices are introduced in the classroom, we want them to be used in a meaningful and engaging ways. | 1 | Our school is going through a digital transformation. We want to leave boring paper work behind and replace it by more meaningful types of activities. |
| 2: competently handling software services | For students and teachers to make best use of the devices (working collaboratively, doing what was not possible before, …) they need to be proficient with the basic functions of the software and tools provided. | 1 | At the moment, some teachers are still reluctant about the use of devices in their classes, either because they don’t see the potential, or because they are not sure how to handle the technology themselves. Only very are against the devices based on ideological reasons. |
| 3: helping overcome learning difficulties | Tools like screen readers (built-in software) already help students with certain learning disabilities. Additional training might be provided through the school’s LMS. | 5 | (depending on actual needs priority might change)  Right now, there are no students who need the support of external specialist. All of them are within a spectrum which doesn’t go beyond what a good teacher should do anyway. |

## How do we get there?

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| --- | --- | --- | --- | --- | --- |
| *Sub-Task description* | *Resources* | *Cost* | *Leader* | *Who else?* | *Deadline* |
| 1: introduction of devices to teachers (functionality, use) | In an evening or afternoon session teachers receiving the new devices attend an introduction showing them the basic functionality of the new device. | 2 h training for involved teachers | School head | Expert teachers | April 2017  August 2017 |
| 2: teachers learn how to use crucial software and services | Teachers already using devices show their fellow teacher how they use them in their lessons.  Expert teachers provide introductions to specific functions of the available tools. | 2 days (4x 3h)  Regular meetings | School head | Expert teachers | August 2018 |
| 3: (special) teachers know useful functions to overcome learning disabilities | Experts teacher recommend best practices and online courses. | On demand  Online courses | School head | Expert teachers | August 2017 |

## How do we know we’ve got there?

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| --- | --- | --- |
| *Objective in ten words (as above)* | *Measures of success* | *How measured* |
| 1: All teachers feel comfortable in using devices. | Teachers regularly use the devices in meaningful and engaging ways in their lessons.  They shift from replacing old working routines to enhanced learning activities, only made possible by the use of devices. | Questionnaire for students  Visits by school head |
| 2: All teachers can deploy content and assess students work online. | Teachers can actively use tools like Office 365 (especially OneNote) and passively make use of the schools learning management system (look up grades of students).  They develop new ideas how these tools can increase the value of their lessons. | Portfolio of teachers (best practices shared in market place) |
| 3: Special teachers no special functions. | (Special needs) teachers know how to use built-in functions like a screen reader and additional tools provided by the school (mostly through the LMS). | Use of screen readers and similar functionalities (questionnaire for students) |