Developing Practical Guidelines for 1:1 Computing Initiatives
This set of practical guidelines has been developed by a team of experts at European Schoolnet following their work with 1:1 computing initiatives; in particular the experience gained in the practical implementation of the Acer-European Schoolnet Educational Netbook Pilot and the Acer-European Schoolnet Educational Tablet pilot. The guidelines are designed to be a starting point for school leaders, teachers, education advisers, policy makers and the research communities who are seeking to implement the use of 1:1 devices within learning and teaching. They will also support the work of commercial suppliers and industry. You can find further information and join in the discussion at http://1to1.eun.org

Using 1:1 technologies requires a robust ecosystem that will undoubtedly be challenged by the fragility of doing something that is different to what has been done before. The technologies are constantly changing, but we have to continually explore how we can change learning and teaching too, in order to prepare our students for tomorrow’s world.

We would like to thank the teachers’ community participating in the pilots for their commitment and engagement in using new devices for improving their teaching practices to benefit students’ learning.

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# Table of Contents

Introduction ...................................................................................................................... 6

1. The Role of the Commercial Supplier ................................................................. 9
2. Leadership ................................................................................................................. 10
3. Finance and Funding ............................................................................................ 13
4. Evaluation and Research ...................................................................................... 14
5. Access and Ownership .......................................................................................... 17
6. Scale and Size .......................................................................................................... 19
7. Maintenance and Technical Support ................................................................... 20
8. Training and Continuing Professional Development ........................................ 23
9. Classroom Management and Organisation .......................................................... 25
10. Teaching, Learning and Assessment .................................................................. 28
11. Resources and Content ....................................................................................... 31
12. Student Use ........................................................................................................... 33
13. Special Educational Needs and Inclusion ........................................................... 36
14. Beyond the School Day and Involving Parents .................................................... 38
15. Sustainability and Future Implementation ............................................................ 40

Pedagogical scenarios ............................................................................................... 42
What can you do now ................................................................................................. 45
Introduction

We have identified fifteen areas that schools will need to consider as part of their implementation of 1:1 technologies. In addition, e-safety is imperative and should be embedded throughout any 1:1 implementation. Under each of the main themes that are addressed, you will find a list of Questions and Suggestions that have arisen from our on-going work with teachers.

1. The Role of the Commercial Supplier
2. Leadership
6. Scale and Size
7. Maintenance and Technical Support
11. Resources and Content
12. Student Use
In some areas you will find practical illustrations of the topic based on the experience of the teachers participating in the Acer-European Schoolnet Educational Tablet Pilot. There are more examples and discussion available on the website [http://1to1.eun.org](http://1to1.eun.org) and you can contribute your thoughts and ideas too, we are continuing to learn from each other.
1. The Role of the Commercial Supplier

1. How can I contact the commercial supplier?
2. What kind of software is already installed?
3. How long is the warranty?
4. Does the device have a special pen/stylus?
5. Does the device come with a carry case?
6. Do I need to purchase anything extra?
7. What ports are available with the device that I may need?
8. Is there any training provided as part of the purchase?

• Make sure that you have the contact details of the company who you purchase your devices from. This should include the telephone number, the e-mail address and a website address.

• You will need to decide which programmes/applications are going to be installed on the devices ready for the users. Some projects have chosen to use a ‘standard software image’ which means that all students get the same. It also means that if there is a problem later, the device can have the image reinstalled.

• Consider the product refresh/replacement. It may be helpful to negotiate a two year warranty with your products as this will mean the device is protected for the main lifespan. Beyond this time, it will have been superseded by other models.

• Some students find it easier to work with a stylus/pen rather than using direct touch; check if your devices can use a stylus/pen. It may be cheaper to purchase these in bulk, rather than individuals buying them afterwards.

• You may need to purchase a carry case for each student to be able to transport the device between lessons and from home to school.

• Prior to the purchase of your devices, ask what training and technical support will be provided. This is particularly important for large scale purchasing.
2. Leadership

1. Who should lead the 1:1 computing initiative?
2. What is the overall vision for the project?
3. How often should the leadership group meet?
4. What policies will need to be reviewed in school to support the implementation?
5. Has an exit strategy been developed for the project?
6. Has a product refresh/replacement been put in place?
7. Why have you chosen to implement 1:1 devices for your project?

• 1:1 computing initiatives should be co-ordinated by a team. This means that it is not just the responsibility of a single person, but also the project activities can be easily communicated to different departments in school.

• Define the educational principles for the initiative in line with your ICT plan. You should try to link the technology to other areas of development in school.

• You will need to review school policies for ICT, Learning and Teaching, and Assessment to ensure that this documentation is aligned with your initiative.

• Define critical interest groups - this should include teachers, students, parents but it may also include relevant commercial suppliers, research groups, and other groups who work with the school on a regular basis.

• Keep stakeholders constantly informed – this could be achieved via a newsletter with articles from students and practitioners.

• Define the school and student’s responsibilities - this should be done using a signed agreement between parents, students and the school. For example:
  - The student should make sure that he/she brings the device to school in a suitable case.
  - The student should make sure that the device is charged and ready to use.
  - The student should use the device for learning in lessons and remain on task.
  - The school will ensure that all students have access to the applications required for lessons as part of the standard software image.
• The school will provide a replacement device if the student’s own device is not working.
• The school will provide technical support between 8am and 8pm each day. This will be delivered through telephone support or the technical support centre which is open in school hours (8am – 4pm).

• Ensure governance of your project/initiative is clear. Make sure everyone knows who is responsible for the different aspects of the project. For example: Does everyone know who to ask to find out about financial support? Who is leading on technical support? Who is leading on curriculum content? Encourage team members to meet regularly.

Example from the Acer – European Schoolnet
Educational Tablet pilot:
Jewish School in Milan, Italy

A structured ICT plan for the whole school – supported by teachers, students and parents

The Jewish School in Milan has been implementing ICT based on a structured plan since 1987. This plan aims at the progressive digitalisation of the school and at educating students in the safe and correct use of ICT. Students start learning ICT from the first year of primary school and continue their ICT education throughout their entire school path. The implementation of the ICT plan has been possible thanks to the synergy between head teachers and teachers, with a leading role for the ICT coordinator. One technician and the ICT coordinator give in-house support in case of technical problems and also organise in-house training. The ICT coordinator also had an important role in the implementation of the tablet pilot. The tablet pilot was carried out in conjunction with other ICT projects focused on the professional development and improvement of teachers’ leadership. Students also became very active, as they launched the initiative to create a website (https://sites.google.com/site/icript) containing materials for different subjects. Many parents contributed to fund the improvement of the ICT Plan. The school set up an online grade system and an online school portal, which is used for communication among teachers and between teachers and parents. Moreover, the school uses different national online portals, alongside ‘Facebook’ groups, ‘Dropbox’, ‘Google Docs’ and the website created by the students. The school put in place a well-equipped classroom which provides the students with an innovative learning environment divided into several learning islands. Each learning island is equipped with 4PCs connected to 4 electronic writing tablets. This classroom setting allows teachers to divide students into several groups and to involve them in an interactive lesson.
3. Finance and Funding

1. Who should pay for the devices used by students in school?
2. How much will students pay to own their device?
3. Can students receive financial support?
4. What funding options and finance models are available?
5. How can schools demonstrate cost effectiveness?
6. Are there any existing initiatives that can support with finance?

- Develop a clear finance model.
- It may be helpful for schools to work as part of a consortium to purchase devices. Check if other schools in your area would like to be part of the same initiative. It can be useful to work at a regional level.
- Some projects have offered incentives to practitioners and students. This can mean a financial cost. You may need to consider whether any incentives are required for those who participate, particularly if there is extra work involved.
- It is important to remember that even if you are working with a commercial supplier, you need to be accountable for how any monies are spent.
- More projects are beginning to encourage students or parents to pay something towards the cost of ownership.

For example, some schools are making the initial purchase of devices, but parents then pay a small cost towards the device each month. At the end of the project, the device then belongs to the student. However, you will need to make sure that you have met the requirements of tax on goods purchased.

- Consider the product refresh/replacement. It may be helpful to include extended warranty in your negotiation with your products as this will mean the device is protected for the main lifespan. Beyond this time, it will have been superseded by other models.
4. Evaluation and Research

1. Who will evaluate our work using 1:1 computing?
2. Who should be involved with the research?
3. What kinds of research can teachers do?
4. What kinds of evidence can teachers collect?
5. When should the evaluation and research take place?
6. Where can I learn about the research that others are doing on the use of 1:1 computing?

- Ensure that an external evaluation is in place at the beginning of the initiative, you may want to work with a local University or Research Centre. This can be of mutual benefit, as students within initial teacher training may be able to be involved in the project.
- Encourage teachers and students to be involved with their own action research projects.
- Work with partners throughout all areas of the initiative as this will enable you to develop critical interest groups and support one another.
- Encourage students to share their viewpoints. The student council may ensure that the student voice is represented.
- It will be useful for teachers to work together to observe lessons in order to learn from each other’s practice.
- In the Educational Tablet Pilot, the teachers also kept blogs to highlight key areas of their practice and to reflect on their progress.
- The European Schoolnet website for 1:1 computing (http://1to1.eun.org/) has a list of references and access to research literature.
Example from the evaluation of the Acer-European Schoolnet Tablet Pilot

Engaging teachers in reporting practice, qualitative insights from case studies and online evaluation

During the educational pilot project, European Schoolnet provided pedagogical advice to schools and carried out an independent evaluation of the pilot project via two online questionnaires to teachers and cases studies. During the pilot project teachers were encouraged to report on the implementation of the project three times via an online blog. This was documented in a ‘project postcard’ style which outlined:

- their project ideas and challenges faced
- mid-term achievements and top tips for using 1:1 devices
- evidence of impact and future plans.
The entries have guaranteed an on-going documentation and exchange of practices by and for the participating teachers. Link to the blog: http://1to1.eun.org/web/acer/teachers-blog/

The main objective of the online evaluation of the pilot was to document and understand better teachers’ use of tablets in an educational setting following an explorative approach. Themes addressed:

- Information about the teacher and the school
- The use of the tablet at school and at home
- Professional collaboration activities with the tablet
- Teachers confidence and competence using the tablet
- Impact of the tablet on teaching and learning processes

The case studies sought to explore more deeply ‘how’ teachers used the tablets in a specific school and class context, as well as enablers and barriers for their use. The protocol for the case study visits included interviews with the head teacher, teachers, students and classroom observations. The evaluation report and the case studies are available at: http://1to1.eun.org
5. Access and Ownership

1. Is this device to be shared at all?
2. What are the risks and benefits giving it to a student?
3. Can teachers access the same device?
4. What if students have their own devices?
5. Have students been given access to relevant and up to date information about digital safety?

- Have a policy on how the device should be used and if the students will need to return the devices. In some projects, the students take ownership of the devices after a certain period of time.
- Make sure students and teachers know how to use the devices. For example, it may be useful to provide some training workshops prior to the schools receiving the main supply of the devices.
- Define a minimum technical standard for the devices school will use. This means that if students are choosing their own devices, they know the specification of the devices that will be used in school.
- Consider access to learning materials and resources, not just the hardware.
- State how devices will integrate into existing systems. For example, how will the students be able to submit work and receive results on their device?
- Students should have high quality access to the Internet in their classroom and in the cafeteria area (social spaces) in school.
- You have to think long term; the equipment will need refreshing and replacing.
- Students should be able to swap or borrow a device if they are having technical problems or they have not brought the device to school.
6. Scale and Size

1. How many students will use 1:1 devices at the beginning of the initiative?
2. Which year groups will be involved?
3. Which subject departments will be involved?
4. When will students receive the equipment?
5. What happens when students leave the school?
6. How will you partner with other initiatives both locally and nationally?

- 1:1 Computing initiatives should define a minimum standard for learners – this then means that, regardless of the size of the project, stakeholders know the level of resources that are required.
- The commercial suppliers also have to demonstrate an educational strategy and recognise that this is about more than the provision of devices.
- Address the potential size of the initiative from the very beginning – plan for progression.
- Try to link with other projects both locally and nationally. This could include joining networks, linking with commercial suppliers and using conferences as an opportunity to disseminate your work.
- Think about targeting specific students. For example, if you want to be able to measure student outcomes over the two years, consider which year groups would work best. Some students may be due to leave the school during the project lifespan, and this may mean that it is difficult to collect data or evidence of use.
7. Maintenance and Technical Support

1. Do you have sufficient WiFi capabilities?
2. How long is the battery life for the devices?
3. How will students charge the device in school?
4. What is the weight of the device?
5. Will the students need to use a particular case to transport the device? Who will provide these?
6. How do the devices connect to other devices for example: interactive whiteboards/projectors/printers used in school?
7. How reliable is the wireless connection?
8. Will you lock down app stores?
9. Who will be responsible for technical support in the school?

- It is important to establish technical support databases to monitor the support required and solutions given. Be aware of common problems. Develop Frequently Asked Questions (FAQ).
- Projects may benefit from being able to provide support both within and beyond the school day. For example, some projects have provided a call centre for technical support beyond school hours.
- Students should be encouraged to deliver first level support to solve small problems. For example, a student may not be able to access a particular programme, or may need to make small changes in the settings to improve functionality.
- Teachers welcome on-site technical support.
- Always have some replacement devices available to ‘swap’ – even on a temporary basis.
- Make sure your licenses for applications are covered for home use too.
Plan for future maintenance costs.

Establish maintenance and security protocols with students and staff.

Ensure that students and parents know who is responsible for providing insurance for the devices. The school may be able to include the insurance as part of the initial package.

Example from the Acer–European Schoolnet Educational Tablet pilot: IES Tomás Bretón (Salamanca), Spain

The maintenance of the technical devices organised internally and externally

The IES Tomás Bretón has 80 netbooks and 34 tablets, several Interactive whiteboards and a wireless internet connection for the entire building.

The teachers have the possibility to reserve any of the equipment for their use. Two IT teachers dedicate part of their time to the technical support of the school. In general, the school tries to fix broken equipment itself. For more difficult cases, the school has a service contract with a company to do the maintenance of the hardware, software and infrastructure. For the protection of the software on the computers, the school has a “frozen system” which ensures that nothing is recorded during a student’s session at the computer. Hence, the computers are better protected against viruses. In general, several solutions for antivirus protection exist for different zones in the school. For example, the administration has a stricter anti-virus protection. Finally, the school has security cameras to protect the equipment. So far no thefts of equipment have been reported.
8. Training and Continuing Professional Development

1. How do you make teachers want to use devices? Do you need to make it compulsory?
2. Who is paying for training?
3. Who organises the training?
4. What training do teachers need?
5. How do you make training fun and useful?
6. Are there other partners who can help with the training?
7. Do you need to provide some initial training for student, teachers and parents?
8. Can you provide opportunities to share ideas and practice after the initial training?

- Some schools have suggested it can be useful to have a group that is responsible for the training.
- Form an innovation team to share practice.
- Deliver a group presentation to the whole school about the use and application of the devices, develop scenarios and ask teachers to try these out. This will encourage your teachers to share their ideas with each other.
- Make training relevant for professional assessment – it may be useful to link with a University to see if there are any options for accreditation.
- Work with partners in Initial Teacher Education.
- Recognise that it can be a big step change in teaching and the changes will take time.
- Professional development will need to be on-going. Link to your existing training programmes if possible.
- Teachers certainly see a value in being mentored – especially if this can take place in their own school.
• Use a blend of face to face, virtual meetings, webinars and electronic support and regular workshops.

• Encourage teachers to be involved in blogs, forums and online communities.

**Example from the Acer-European Schoolnet Educational Tablet pilot:**

**Strong support for Spanish pilot schools at national level**

The Ministry of Education in Spain took a leading role in supporting the teachers participating in the Educational Tablet Pilot. It drew on the experience of the previous Acer-European Schoolnet Netbook Pilot, where students were equipped with netbooks. The tablet pilot aimed to explore the additional advantages associated with the use of tablets in the teaching and learning process, as well as in the daily work of teachers, in and outside the classroom, compared with the netbooks used in the previous pilot. The educational project of each participating teacher had to include scenarios that explore the autonomy offered by the new device and to explore during field research new features like touch screen, screen sharing; a webcam to add video and images as new ways of working with ICT. The Spanish national institute for educational technologies and teacher education (INTEF) ensured the proper implementation of the pilot and that it achieved specific outcomes in the Spanish context as regards improving teaching processes. These outcomes should be potentially transferable to other schools and help education authorities in deciding on most appropriate type of equipment for schools.

INTEF ([http://www.ite.educacion.es/](http://www.ite.educacion.es/)) coordinated online working sessions and organised training courses for teachers. Teachers’ participation in the pilot project was recognised through training grants. Teachers’ participation in this pilot was certified with 60 hours of training. Moreover, INTEF provided a platform to facilitate the exchange of ideas and the discussion on the methodology and resources between teachers. The collaborative working space was provided by the INTEF server on a Moodle platform.
### 9. Classroom Management and Organisation

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<th>Question</th>
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<tr>
<td>1. How can teachers establish classroom routines?</td>
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<td>2. What works best?</td>
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<td>3. How do teachers monitor what students are doing?</td>
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<td>4. How do teachers assign tasks?</td>
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<td>5. How do teachers ensure differentiation?</td>
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<td>6. What programmes are teachers using to prepare materials?</td>
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<td>7. Where do you save/store materials?</td>
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<td>8. How do you share materials with others?</td>
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<td>9. Have you got Internet access in the classroom?</td>
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<td>10. What do you do to ensure e-safety?</td>
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<tr>
<td>11. How are students organised during the lesson activity?</td>
</tr>
<tr>
<td>12. Do teachers need to change the classroom layout?</td>
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</table>

- You may choose to create a set of class rules with your students. This could be a whole school policy, but you may also want to consider whether you would prefer students only to work on their own devices at particular points during the lesson.
- Consider the resources and content that the students will have access to from the beginning.
- It is important to ensure that you have delivered advice about e-safety; this is an on-going topic ([www.saferinternet.org](http://www.saferinternet.org)). You will need to make sure that you have a system in place to report and record any e-safety issues.
- Connectivity at classroom level is essential; many schools have WiFi, but there are still large numbers that have Internet access in school, but not in every classroom.
- You may need to change the layout of your classroom.
- You will need to consider whether your students need access to power and storage.
• If you are using particular resources within the lesson, how will the students access this on their device? You could make the materials available in a particular web-space. It is good practice to make your lesson materials available using a virtual learning environment.

• All schools could use classroom management, supervision and monitoring software that allows the teacher to see what is on each screen and distributes personalised learning content.

• Provide opportunities for the students to use the devices outside of school. Create learning pathways where students involve their individual interests. For example, can they use the device to support an existing hobby or to learn something new?
Example from the Acer-European Schoolnet Educational Tablet Pilot: Marco Polo School in Bari, Italy

Creating multimedia content with the tablet during the class

The teacher introduced the practice to record everything that happened during the lessons with voice recording and videos. The aim was to raise awareness about the following aspects of the lessons:

- Who speaks for what reasons and for how long?
- How are visuals used in class and how do they influence interaction?
- How are the lessons managed in general?

In addition, the aim was to teach students how to create documentation during classes, how to archive information and to revisit them later for study purposes. The teachers connected the tablet to the interactive whiteboard using a HDMI cable in order to show the results at the various stages of the documentation to the whole class. As a result, the students made progress in skills like note-taking (the tablet was passed around so that different students were responsible for note taking). Moreover, the students paid more attention to speak clearly and to the point, because their interventions were recorded. The development of these skills was of particular value to the language classes. Generally, students appreciated the opportunity to put themselves to the test.
10. Teaching, Learning and Assessment

1. Who is responsible for creating lesson materials?
2. How long in the lesson do the students use the devices?
3. How can teachers be encouraged to share their work and ideas?
4. Do the students learn more by using the devices?
5. Can you teach any lesson with the devices?
6. Should devices be included in your teaching and what for?
7. Will I be able to register my students on the school portal?
8. Can I access the software at home as well as in school?
9. Are the students more motivated when they use the devices?

- The students need to know how to use the appropriate tools for their work. For example, what note-taking programmes are available on the device?
- Make sure that the teachers are familiar with the student devices. The teacher needs to know what is possible on the student’s device.
- Prior to the lesson, check that the materials you want to use will work on the devices your students are working with as well as on your own device.
- Students and teachers should be critical about information from the Internet. Plan a session on ‘Safe use of Internet’ and distribute material to take home and share with parents.
- Look for opportunities to showcase student work.
- Consider the implications and benefits for making classroom monitoring software readily available as it can be compliant with a range of devices.
- You will need to think about the role of the teacher within the classroom and within the lesson activity.
• Students will need to be given advice about whether the activity can be completed collaboratively or if it is an individual task.

• You will also need to consider how the students will access the digital activities within the lesson. Students will need to be familiar with finding digital content and also understand where they need to put completed tasks.

• Assessment needs to be planned for as part of the initiative and this may require changes to how something is done.

• Individual devices mean that you can now make use of formative assessment opportunities using web-based assessment software

Example from the Acer-European Schoolnet Educational Tablet pilot: Tallinna Kristiine Gümnaasium, Estonia

Using the tablet in various subjects and for cross curricula activities outdoors

The teachers used the tablet in various subjects, such as handicraft lessons, English, technology and during national projects following a cross-curricular approach. In handicraft lessons, the tablet was used to prepare practical projects by gathering ideas from handicraft blogs online and design the idea of the project as a sketch on the tablet. In English, the teacher used the tablet to check how well students have studied, for example, with tests, pop quizzes and crosswords, using the software ‘Hot Potatoes’.

In home economics classes, the tablet was used to search for recipes, make menus and calculate the nutritional values and caloricity of foods. In technology classes, it has proved to be helpful tool, because it could be used as e-book for instructions, sketches and technical drawings.

Finally, the tablet was also used during project work for “photo hunting” in the city. Students got pictures of different landmarks and buildings on paper and went out to the city to find them and to take a picture. When they had collected their photographs using the tablet, they met in a cafeteria in the city and presented them on the tablet, together with historical illustrations of
the places and buildings. The project aimed to develop students’ competencies in IT, history and Estonian language. Students liked this lesson very much and were highly motivated. Overall, the tablet has made teaching more efficient, more flexible and mobile.
11. Resources and Content

1. What programs/applications have you been using?
2. What websites have you been using?
3. Have you purchased any subscriptions to new resources?
4. What do you use to create materials?
5. Are there any specific websites advising how to use programs that are easy to use?

- Common applications need new types of licensing; educational licenses are usually installable only on school equipment and so new license models are required.
- Students need access to a range of digital tools.
- Students may benefit from access to specific software to address learning needs. For example, is there any kind of mind-mapping software available to the student?
- Administrative rights need to be defined.
- Teachers will need to consider how much time must be given for students to learn how to use identified software and applications.
- Schools have portals – regional authorities and ministries have also developed portals, often containing free/open educational resources – this is important for students to be able to easily access learning resources.
- Look at the importance of other technologies in the classroom, particularly, interactive technologies and learning platforms.
- Consider also that because content is online parents and teachers may expect it to be free. They are not always familiar with paying for digital content. The school will need to determine who is responsible for the cost of the content. Parents are still more willing to pay for hard textbooks than online content. You have to demonstrate the quality of digital materials.
Software and Hardware recommended by the Guercino School in Bologna, Italy

- **GeoGebra** ([http://www.geogebra.org](http://www.geogebra.org)) offers free learning materials such as interactive graphics, algebra, statistics and spreadsheets.

- **Hot Potatoes** ([http://hotpot.uvic.ca](http://hotpot.uvic.ca)) offers six applications to create interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises for the World Wide Web. It is freeware, but not open-source.

- **Celestia** ([http://www.shatters.net/celestia](http://www.shatters.net/celestia)) is a free space simulation enabling students to explore the universe in three dimensions. The software makes it possible to travel throughout the solar system.

- **Cmap Tools** ([http://cmap.ihmc.us](http://cmap.ihmc.us)) is useful to design any type of relational charts, concept maps and any types of diagrams. It works in a very intuitive way: double click on the screen to create a new element and right-click to customize its appearance.

- **Windows Live Movie Maker** ([http://www.windowslive.de/movie-maker](http://www.windowslive.de/movie-maker)) is video creating/editing software. It enables its users to create HD videos and to publish them on SkyDrive, Facebook, YouTube, and Flickr.

- **Camtasia** ([http://www.camtasia.com](http://www.camtasia.com)) is a tool to customise and edit videos. It contains possibilities to record on-screen activity, add imported media, create interactive content and share HD videos. It is free for 30 days.

- **Engrade** ([https://www.engrade.com](https://www.engrade.com)) unifies all people, tools, data, and curriculum of the school on one platform. Available tools are, for example, grade books, attendance lists and seating charts.
12. Student Use

1. How is work assigned to the student?
2. How is student work shared?
3. Does the student have the opportunity to lead the work?
4. Are you going to have one device per student?
5. How are you going to ensure that the students pay attention when you are talking? (Not using other programs/applications etc.)
6. How can students share work?
7. How do you ensure e-safety?
8. Do you make use of social networks with the students?

- Provide opportunities for the students to share their work. For example, you may provide time in lessons for students to share what they have been doing at home with the devices. You may also provide a space on your learning platform for students to discuss and share new ideas.
- Encourage students to take responsibility for ‘first fix’ of any technical problems with each other.
- You may find it useful to give the students access to an e-portfolio to allow them to keep a digital record of their work and achievements.
- Make it possible to borrow a device if students do not bring their device to school.
- You will need to consider the types of social networks the students use and ensure that your school has clear guidance about accessing these.
- You should develop a home/school agreement to encourage responsible use of the devices both in and out of school.
- You should give students examples of activities that they can do at home to support their learning in school.
- Ensure that you address the use of 1:1 devices in school as part of your e-safety. Students
and parents need e-safety advice and this needs to be given regularly as part of the school curriculum. You should also make students aware of additional support that is available to them. For example: www.saferinternet.org

Example from the Acer-European Schoolnet Educational Tablet pilot: Lobdeburgschule in Jena, Germany

Using the tablet for the simulation of physical processes and astronomical observations outdoors

Teachers of the Lobdeburgschule in Jena used the tablet in their physics and astronomy classes. In physics classes, the teacher connected the tablet with the interactive whiteboard in order to visualise complex physical processes, using videos found on the internet. Moreover, the students used software programmes to simulate such processes themselves. Some hardware-based requirements had to be created first. In astronomy classes, the students used astronomical software to carry out observations online. In addition, they prepared evening excursions in class. The students prepared the settings on the tablet in order to enable the telescope to zoom into specific objectives they had chosen before. During the evening excursions, the students used the tablet to control the telescope via WiFi. The aim of the exercises was to transfer knowledge already required to a real life learning context. The students really enjoyed this exercise. The tablet was very useful for both, the physics and the astronomy classes.
13. Special Educational Needs/Inclusion

1. What support is available for students with Special Educational Needs (SEN)?
2. Who provides expertise for assistive technologies that may be required?
3. Is particular hardware or software required?
4. Do our lessons provide enough challenge?
5. Where can teachers identify suitable content?

- Projects should identify key people to support SEN issues.
- Technology can become an enabler for SEN – i.e. visual impairment, larger screens, voice recognition, language aids, etc.
- Devices should be available to suit individual needs, your project should show how you are supporting student individual needs.
- Provide learning opportunities for gifted and talented students.
Examples from the Acer – European Schoolnet Educational Tablet pilot: Guercino School in Bologna, Italy, and St Luke’s School in Redbourn, UK

Supporting individual student’s learning needs

A student with learning and communication difficulties used augmentative communication devices involving tables created with Boardmaker software to communicate with the teacher and other students. The student could easily access his communicative tables saved on the desktop of the tablet to communicate with others. Access to the tablet was very useful for the child and facilitated his integration.

The tablet was successfully used by two pupils having difficulties working with a mouse/pointer. Using the tablet with the touch screen helped the first pupil to concentrate on the task instead of searching for information on his favourite topics on the internet, which he did previously. The second pupil used the tablet with a keyboard to access resources independently and to demonstrate learning. Generally, it is a good solution to offer both, using the keyboard or the touch screen in order to best accommodate each pupil’s individual preferences.
14. Beyond the School Day and Involving Parents

1. Are students going to be allowed to take the devices home?
2. What happens if the student forgets to bring the device to school?
3. What are students going to use the devices for at home?
4. How can the use of devices support home/school communication?
5. Can schools use the devices to increase parents’ participation and cooperation in the school activities and organisation?
6. Should schools provide training for parents?

- Parents need to be involved from the very beginning and be kept informed. Suggestions for this include holding an initial seminar or parents evening.
- Some project leaders also talked about providing opportunities for the parents to be involved and understand the types of devices that are available for the students. This may sound complex, but schools must consider that, as a growing number of parents already have access to their own devices, they are already bound by mobile phone contracts, insurance and Internet access contracts. Therefore, the more they are engaged in consultation earlier in the process, the more they are likely to work with the school to move the project forward.
- Parents need to be informed and they want to see the technology used. Experts have suggested developing written agreements on the extent of use of mobile devices in the classroom.
• Be transparent with parents – about problems that arise – timelines – expectations for your 1:1 project. Keep parents informed.

• Provide specific training for parents.

• Encourage parents to access lesson resources so that they can see what kinds of activities students are working on.

• Improve communication with teachers; this could include both whole school and individual student communication.

• Students should get access to the Internet at home very cheaply. The school should look to work with Internet providers to provide options for students.
15. Sustainability and Future Implementation

1. What platform can be used to support collaboration within the classroom, school or social community?
2. How can teachers initiate and maintain partnerships with other European countries?
3. What about test results? Can schools demonstrate a difference?
4. How can schools narrow the gaps and ensure equity?
5. What partnerships and networks does the school belong to? Can these support your work?
6. Is it possible to develop and draw a roadmap for implementation and continuation?

- Consider where the use of 1:1 computing sits as part of other initiatives in school. This should not be an ad hoc project; students will expect to have access to a device in school to support all their learning.
- Engage with external partners who can support your work.
- Provide opportunities to encourage parents to have access to the Internet at home, where this is not available.
- Make time to look at the future developments as part of your on-going activity – don’t leave it until the end of current work. For example: Do you have someone on your innovation team who is responsible for what happens in 2-3 years’ time?
- Encourage teachers in school to undertake their own action research projects; this will help the school to collate evidence of what is working and what needs to be improved.
- Find other schools that you can work with.
Pedagogical scenarios

<table>
<thead>
<tr>
<th>Using 1:1 Devices in Different Parts of the Lesson</th>
<th>What kinds of things can you do? What will the students do? This will help you to form your lesson objectives.</th>
<th>Examples Languages</th>
</tr>
</thead>
</table>
| **Starter** | • Introduce new concepts  
• Read  
• Watch or listen to visual/audio materials which are part of the objectives of the lesson  
• Explore evidence of existing knowledge – revisit materials from a previous lesson  
• Lesson; Recognise, Identify and Recall information  
• Connect Ideas  
• Confirm | In a languages’ lesson, the teacher gives the students opportunity to watch a video of someone checking in at an hotel. This could also be done on a single screen. However, the students will be able to have access to this on their own devices to enable them to revisit the materials. |
| **Main Activity** | • Develop  
• Communicate  
• Collaborate  
• Challenge  
• Create  
• Extend  
• Focus  
• Research your ideas  
• Report  
• Prepare  
• Show  
• Organise  
• Edit, Adapt, Restructure, Reorganise, Rewrite  
• Generate  
• Model  
• Produce  
• Compare and Contrast  
• Construct | In the main activity, the students will create a video or multimedia story of their own hotel visit scenario. Each pair will need to be given details of different scenarios. For example: You will need to check in for two people, for two nights with breakfast. You will need to check in for one night with no breakfast. You will need to check in for a family, for three nights with two adults and two children. This should take 20 -25 minutes. If students complete one scenario, they can try another, or create one of their own. Each pair should then join together with another pair to test their video. |
| **Plenary** | • Present  
• Showcase  
• Disseminate  
• Share  
• Test  
• Appraise  
• Assess  
• Critique  
• Evaluate  
• Conclude | The teacher will select some groups to demonstrate their scenarios. |
In these examples below, you will find some of the types of activities that you may ask students to do when using 1:1 devices. The blue column will help you to form your lesson objectives. You should ensure that access to the devices is purposeful. Whilst the student will have access to an individual device, some activities will require the students to work with others to produce something. You will be able to find more examples on the website [http://1to1.eun.org](http://1to1.eun.org)

<table>
<thead>
<tr>
<th>Examples Science</th>
<th>Examples History</th>
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<tbody>
<tr>
<td>In a Science Lesson, the students revisit a diagram from a previous lesson. The students should look at the labels and check if they are correct.</td>
<td>Prior to this lesson, students will need to have found out six facts about a particular historical event/person. In the first part of the lesson students will work with other students and compare their information. The students should determine the six key facts they want others to learn about a particular event/person. The students should be able to show the sources of the information.</td>
</tr>
<tr>
<td>In the main activity, the students will edit the existing diagram and produce a 'digital presentation' which demonstrates that they understand the definitions of the labelled words. The teacher may choose whether the students work individually or in pairs.</td>
<td>In the main activity, the students should record a news’ item: “On this day in History…” Some students may choose to do this as a newspaper report / a diary, whilst others will record a news’ story. The students should also show where they have found the evidence to support their information.</td>
</tr>
<tr>
<td>The students will share their presentations. The teacher could also ask the students to upload their presentations to a shared area. Different students could do alternative diagrams; this would support revision for examinations.</td>
<td>In the plenary, students will evaluate only one other piece of work and design 3-5 questions that they would still like to know. This can either be agreed as a homework task or as a starter activity for the next lesson.</td>
</tr>
</tbody>
</table>
The teacher will need to consider whether the student will have the necessary technology skills to create ideas as part of the lesson. In the early stages of introducing 1:1 devices, this may mean that the teacher needs to give more time for specific tasks; it could also mean that the students are grouped differently to be able to support each other. You will also need to make it clear to the students that some tasks are not meant to be a ‘masterpiece’ in video production; it is equally about enabling the student to present their understanding. This means that the student will become familiar with collating draft work which may not require editing, but this will need to be checked by the teacher to ensure that the student has understood the task.

The most important part of all of this is that the teacher has demonstrated to the student where to access lesson content and where student work should be saved. The teacher will also need to make it clear how the student will be assessed.
What can you do now?

You can visit the European Schoolnet websites to learn more about the work we are doing on the use of 1:1 devices in schools.

http://1to1.eun.org: This website provides you with information and resources for your 1:1 lessons. It also provides exchange opportunities with other teachers including blogs and forums. You can find links to other publications and join the online communities looking at the use of 1:1 devices within learning and teaching.

You may also want to learn about some of our other projects including

http://itec.eun.org: iTEC: (Innovative Technologies for Engaging Classrooms) is a major, EU-funded project (2010-2014) in which European Schoolnet is working with education ministries, technology providers and research organisations to bring about transformation in learning and teaching through the strategic application of learning technology. The iTEC website provides innovative learning activities, practical tips on how to use ICT to enhance teaching and learning, and training and exchange opportunities to all teachers.

http://fcl.eun.org: The Future Classroom Lab has been created by European Schoolnet, its supporting 30 ministries and industry partners to help to visualise how conventional classrooms and other learning spaces can be easily reorganised to support changing styles of learning and teaching. You will find information about the professional development courses and networks that you can engage with.
Developing Practical Guidelines for 1:1 Computing Initiatives

Acer-European Schoolnet Tablet Pilot

During the Acer-European Schoolnet Tablet Pilot 265 teachers from 8 European countries explored the use of Acer tablets in their teaching between January and July 2012. The pilot was coordinated at European Schoolnet in cooperation with Acer, which provided tablets to teachers in a total of 63 schools in Estonia, France, Germany, Italy, Portugal, Spain, Turkey and the United Kingdom. In addition to teachers receiving tablets, 116 students in 4 classrooms in Spain and the UK were provided with tablets. The objectives of the pilot were to explore the use of tablets in schools and at home by teachers and students and to describe good practices from the participating countries including the key factors for successful integration of ICT in schools.

Acer-European Schoolnet Educational Netbook Pilot

The Acer-European Educational Netbook Pilot was aimed at understanding and documenting how learners and teachers can use netbooks and notebooks in various educational contexts. It explored how the introduction of netbooks and 1:1 pedagogy in schools could impact teaching and learning processes. From January 2010 until July 2011 a total of 245 classes in six European countries (France, Germany, Spain, Italy, Turkey and United Kingdom) were equipped with netbooks and notebooks.

Further information and evaluation results at: http://1to1.eun.org