

Technological Empowerment for VET trainers. An Open Educational Resource (OER)
to train VET trainers in the design and use of m-learning methodologies.

TRAINERS' GUIDE

For mobile resources to be used in the classroom

This **Trainer's Guide for Mobile Resources to be used in class** has been prepared as part of the project "M-TECH - Technological Empowerment for VET trainers. An Open Educational Resource (OER) to train VET trainers in the design and use of m-learning methodologies", co-financed by the Erasmus+ Program, KA2: Cooperation for innovation and the exchange of good practices, Strategic partnership for VET and training.

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Introduction

M-learning is the latest method of learning (in any environment), with the use of mobile devices (Mobile, tablets, etc.) and a wireless network (Pacheco and Robles, 2006). This learning environment has some unique attributes that can enhance education beyond the “anywhere, anytime” learning (Shuler, 2009). There are many other functional advantages: direct interaction between student and trainer, collaborative learning, cheaper technology, etc.; m-learning also has pedagogical advantages: it allows individual or collaborative learning, teaches problem solving skills, allows access to information in the moment of need, etc.

Nevertheless some barriers restrict its implementation in education:

- Most of teachers/VET trainers are not aware of the potential of mobile devices as a tool for learning;
- Mobile devices, and specifically smartphones, have a poor reputation: “the majority of people on Earth believe mobile phones, beyond not being conducive to learning are in fact a barrier to it” (UNESCO Mobile Learning Week Report, 2011, p.11);
- Most teachers/VET trainers do not have the necessary competences or knowledge to use mobile devices for learning.

The aim of the MOBILE-TECH project is to make mobile learning a reality in education, especially in VET centres, by supporting teachers, trainers, educational staff and youth workers in acquiring digital skills and improving the use of mobile learning with the help of an Open Collaborative Learning Platform.

The “Trainers’ guide for mobile resources to be used in the classroom” is a teachers’ resource to support mobile learning in education. It is intended to be complementary to the trainers’ course: “How to develop new training resources and teach mobile learning (m-learning)”.

INTRODUCTION

The integration of ICT into European education systems is seen as crucial to the health and renewal of the European economy and forms a key component of the region’s educational policies (EACEA/Eurydice, 2011).

The first component of the guide will offer a description of what mobile learning is and which devices, tools, media, apps could be used in education.

In the second component you will find an illustration of the abundant pedagogical benefits and advantages of m-learning. The theory will be underpinned by the description of good practices collected in 5 European Countries (Germany, Spain, Great Britain, Greece and Finland).

The third component will be dedicated to demonstrating how to plan your mobile learning approach.

Finally, we will present future scenarios and opportunities for mobile learning and some useful links for more information and tools.



1. What Is Mobile Learning

“Mobile learning involves the use of mobile technology, alone or in combination with any other Information Technology and Communication (ITC) to facilitate learning anytime, anywhere” (UNESCO 2013, p. 6).

It is an “educational model that facilitates the knowledge construction, learning, problem solving and skills development, autonomously and ubiquitously, thanks to the medium of portable mobile devices” (BRAZUELO; GALLEGO, 2011, p. 17).

Mobile 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.

The implementation of mobile learning does not replace classroom teaching, but complements it. The most common solution is a “blended learning”, or in most cases, the coexistence of both systems in parallel. It facilitates study possibilities and access to content, and promotes new relationships between students and teachers.

Mobile learning also encompasses efforts to support broader educational goals such as the effective administration of school systems and improved communication between schools and families.

Mobile technologies are constantly evolving: the diversity of devices on the market today is immense and tomorrow there will be even more available.



WHAT IS MOBILE LEARNING

For this reason, we embrace a UNESCO definition of mobile devices, recognising simply that they are “digital, easily portable, usually owned and controlled by an individual rather than an institution, can access the internet, have multimedia capabilities, and can facilitate a large number of tasks, particularly those related to communication”.

The presence of mobile devices in formal education systems is growing. The most popular models for mobile learning in schools are:

- **One-to-one (1:1) programs**, through which all students are supplied with their own device at no cost to the learners or their families;
- **Bring Your Own Device (BYOD) initiatives**, which rely on the prevalence of learner-owned devices, with schools supplying or subsidizing devices for students who cannot afford them.

The goal of 1:1 programs is to supply every learner with his or her own mobile device – be it a laptop computer, tablet or smartphone. The main barriers are the high costs associated with purchasing and maintaining a device for every student, and the need to work closely with education ministries to ensure effective roll-out.

BYOD programs have economic advantages but the critical issue is that they may widen the digital divide between students from different socio-economic backgrounds. While schools implementing BYOD strategies pledge to provide devices to students who do not have their own, sceptics argue that there is a stigma attached to borrowing school devices.

2. Mobile Devices To Be Used In Education

Mobile activities are grounded in technological learning materials that connect students to the world outside classrooms and that require them to critically analyze and create content.

Below you can find the description of the main mobile devices.



Mobile phones (also known as cellular phones and cell phones)

They are used to make and receive phone calls and SMS text messages. Most of today's mobile phones have a number of additional features like MP3 player, short-range wireless communications (Bluetooth, infrared), e-mail, internet access, and a camera. They can be used for group discussions via text messaging or for photography-based projects as well. Students can also record themselves reading stories aloud for writers' workshops or practicing speeches.

Smartphones

While there is no standard official definition of the term "smartphone" (and it's sometimes hard to distinguish it from a cell phone), we assume that a smart-phone is a device that combines the functionalities of mobile phone, personal digital assistant and computer. It is based on an advanced operating system that allows you to install and run various applications, record audio and video, access the internet, send and receive email and texts. This functionality can easily be channeled into classroom activities and projects.



eBook readers

Devices designed primarily for the purpose of reading digital e-books and periodicals. They use electronic paper technology for better readability of their screens especially in bright sunlight. The disadvantage of electronic paper is that currently it can display content only in black and white and has no ability of displaying video content. Thus, their fundamental function, is to read books and store entire libraries. They also provide easy access to dictionaries. Many students also use their e-book readers as a replacement for the daily paper, since they can read various editions and magazines on it.



Notebook and netbook computers

Not everybody considers laptop/notebook and netbook computers a part of the mobile ecosystem. But as they become smaller, thinner and easier to carry around they can be used as mobile learning devices that are generally more powerful than smartphones and equipped with full features of PC computers. On the other hand, they allow full-feature, first generation e-learning without design restrictions typical for mobile content.



3. Mobile Solutions, Tools, Media, Apps

The next step will be the analysis of the main mobile tools, media and apps. The scope of availability is truly vast. It is the teacher's responsibility to choose the most appropriate solution to their educational and training objectives.



Phone call

Can be used for communication between learners and teachers, to ask questions or provide feedback as well as motivational performance support. The advantages are the low cost and ease of accessibility.



SMS

Short text messages are the simplest and cheapest way to deliver small pieces of text-based information and learning content, for example, daily pieces of advice or language lessons alerts and reminders. It works on every type of mobile phone. You can also assess learner's progress asking them questions via SMS.



Existing Content

You can have your existing learning content delivered via mobile devices. Depending on content type and target devices, you can use it "as it is" or adapt



Portable media players (such as iPods and MP3 players)

They are used for storing and playing digital media such as audio, images, video, documents, etc. Their clear advantage is the small size and light weight, but they have to compete in the market with mobile phones and smartphones, as well as other more specialized devices such as portable DVD players. Free lectures and short videos are available for downloading via the iTunes U app, or on the Internet at sites such as Brainpop.com, which has animated educational videos.

Tablet devices and computers

Half-way between smartphone and laptop computer, they take advantage of both kinds of devices. Having a screen big enough for browsing "traditional" e-learning content, they present some limitations (for example, many of them don't support Flash or other formats popular for Web) but also some advantages (like GPS or gyroscope, tactility and portability) over regular computers. Their popularity is growing very quickly and they are likely to substitute to some extent, e-book readers and netbooks. Many schools have started purchasing tablets for their elementary schools, however they're very useful for all learners. Tablets allow the individual active use of screens in class, without "visual barriers" that computers can present to teachers. The operational versatility of tablets, allows a high range of learning activities that allow high levels of active student participation.



This catalogue is not static. Every year new devices are introduced to the market and those which already exist change their parameters and usability features.

it for mobile browsing. Some may require more advanced devices like smartphones; some (like audio recordings) may be used on wider range of devices; note that visual content requires a bigger screen. Some mobile devices (like iPods or e- book readers) are developed for specific content types.

Existing Tools



There is a variety off-the-shelf apps that you can use for learning, many of them are free or available in freemium model like quizzes and assessments (e.g. Quizlet, Easy Assessment) office applications (e.g. Google Docs, iWork) flashcards (e.g. StudyBlue, Mental Case, Quizlet) location-aware applications (e.g. Foursquare, DoubleDutch, Google Latitude) presentations (e.g. Keynote, Prezi, Slideshare, present. me) file sharing (e.g. DropBox, Box.com, iCloud) note taking and sharing (e.g. Evernote, Springpad) dictionaries (e.g. dictionary.com, Cambridge Business Dictionary).

Devices' Capabilities



You can use your device's features to enhance learning. You can have your learners take pictures of their work (or document problem they encounter and share them with others asking for help), record voice notes for assignment, scan QR codes with information or instructions, or use built-in sensors for data collection.

Social Media



This can allow the setup of a Facebook group as a community of practice, create a wiki for Frequently Asked Questions or a collaborative knowledge base or use Twitter for fast performance support.

Mobile Website or LMS



Setting up a mobile version of your website is an easy way to deliver existing content to mobile phones. Even simple phones have a web browser.

Apps



At the moment the most popular way to disseminate the training content via mobile devices is creating a suitable application. There are two main approaches to adopting the education environment to mobile devices: adapting the web version to the mobile devices' requirements or building a native implementation in each compatible mobile phone. Each of these methods has its strengths and weaknesses, but there is also an in-between option.

Feature	Native	Hybrid	Web
Explanation of Mode	An application which has to be installed on the user's device together with all included content. Thus it does not require an Internet connection, but any change in the content requires updating or re-installation.	An application which has to be installed on the user's device; however, the contents are downloaded regularly from the online database. It requires an Internet connection.	An application which is accessed through a website, so nothing is installed by the user. It requires an Internet connection; however, the application itself is not installed.
Constant Internet connection	Not required	Sometimes required	Required
Access	Installation through AppStore, GooglePlay or AppWorld.	Installation through AppStore, GooglePlay or AppWorld.	Access through any www browser without the need to install anything.
Creating	Requires the complete process of creating the application. The application has to be created individually for each platform and placed in the developer service of the operator.	Requires a complete process of creating the application. The application has to be created individually for each platform and placed in the developer service of the operator.	Requires designing and creating a mobile www service which is shared by each platform, without the need to place anything in the developer service of the operator.

The growing number of applications that enhance the teaching and learning process have increased in recent years. This explosion of available apps sometimes makes it difficult to select those that may be more useful. Several educators have begun to categorise these. Some of the most relevant classifications are shown below.

Classification of Apps based on Bloom's Taxonomy (bit.ly/H9YZZB)

- Taxonomy "Remember": the app requires students to recall facts from previously learned material, referencing terms, basic concepts and answers.
- Taxonomy "Analyse": the app supports the efforts of students to analyze data, content and concepts.
- Taxonomy "Understand": the app requires students to demonstrate understanding of a concept.
- Taxonomy "Apply": using new knowledge, students solve problems in new situations by applying their acquired knowledge, facts, techniques and rules in a different way.
- Taxonomy "Infer": the student examines and distributes information into parts by identifying motives or causes. It makes inferences and seeks evidence to support generalizations.
- Taxonomy "Assess": the student presents and defends opinions and provides information, thereby validating ideas or work quality based on several criteria.
- Taxonomy "Create": The app allows students to create a variety of products showing evidence of their learning.

Apps classification based on skills (www.tcea.org/ipad)

- Linguistics: literacy, reading practice, handwriting, pronunciation, grammar, graphic organizers, literature, vocabulary, writing.
- Maths: counting, addition, subtraction, multiplication, division, time, money, fractions, decimals, problems solving, logical thinking, graphs, algebra, geometry, calculus, statistics, probability, calculators, reference material.
- Science: Energy and environment, earth science, physics, chemistry, life sciences, animals, human anatomy, space sciences.
- Social Studies: Geography and History.

Sample APPs that are beneficial in education

Smile

gse-it.stanford.edu/research/project/smile

Stanford Mobile Inquiry-based Learning Environment (SMILE) is a research and evaluation program that allows students to design their own research and create questions based on the learning they do in their daily lives. SMILE converts traditional classrooms into highly interactive learning environments that engage students in critical thinking and problem solving; it promotes generation, construction, contextualization and team collaboration. Students can include pictures, videos and audio as part of the process, which provides a multimedia experience. Educators, at all times have access to the creations of students for review and support.



SCRATCH



Scratched

scratched.media.mit.edu

Scratch lets students of all ages create games and animation, as well as master computational and mathematical skills.



Google Apps For Education

www.google.com/intl/es-419/edu/products/productivity-tools

Google has an extensive suite of applications that foster collaborative learning. Documents can be group edited and shared; teachers and students can back up lesson plans, notes, and other materials .

Edmodo

edmodo.com



EDMODO. Unify the classroom within a setting familiar to the students: a social network. Edmodo has tools to help teachers and students collaborate on projects, and the teacher can assess students' learning through quizzes, and then reward good work with badges.

Animation

Animation involves the users and is an interesting form of mobile learning. It can be combined with narration. Compared to videos, it has lower financial costs and is not that complicated when it comes to system requirements. However, different screen sizes of mobile devices, can affect the perception of the animation.

Audiovisual production systems

Is based on the availability of recording and assembly devices. The new smart phones and tablets use such devices. The product can then be developed using laptops. It can enrich students' work with their own creations. At the same time, students can learn to improve their communication and media skills.

Quizzes and surveys

These are easy to prepare and additionally do not require a lot of space. Using them you can check learning progress, revise the material or increase the participant's involvement in the process of education. The forms can be simple or complex and enable contact with the user. However, in older devices big amounts of text can be problematic to read.

Just-in-time tools

E.g. calculators and dictionaries. Their name reflects the fact that you to use them anytime they are needed. They are particularly useful for specialists, e.g. when they want to have access to specialist knowledge.

Games and simulations

A very fashionable trend which is becoming increasingly popular in the e-learning area. Edutainment is simply the combination of education and entertainment. The games involve the participant in the process, yet there is the risk that education blends in the background. A disadvantage of this solution is the relatively high costs.

Educational social networks

Digital systems that allow the association of teachers and students, as well as resource and content sharing. These social networks usually benefit from the existence of general social networks but, in recent times, there are emerging specific communities both for teachers and students who act as active groups in the creation or distribution of resources, experience and knowledge. Educational social networks facilitate the exchange, cooperation and development of community spirit and promote participation in joint tasks and content creation, encourage communication between students and teachers and increases student motivation.

Blogs and microblogs

These are automatic systems for publishing and distributing information. Some of them work as communities and function as social networks, interest groups and opinion leaders. They can be used as vehicle of expression, creation or development of, for example, projects, workshops, etc. but also presentation of the activities of the group and as a group-class cohesive. They are a good complement to other cooperative virtual systems.

eBooks

The simplest version is a conventional book “translated” into a digital “digitized textbooks”). However, there are digital books that include interactivity, audio, exercises, content creation platforms and provide countless other tools. Some of them allow customization and adaptation to class group, groups of students or an individual student by facilitating the attention to diversity. Some digital textbooks enable collaboration and participation in the production of new content and in some cases facilitate learning and analytical exercise.

Digital OER

These are databases of educational resources (learning objects, lessons, etc.) that can be used in teaching practice. Also open resources that are not strictly educational can support education (for example virtual libraries). They are accessible and free and are really useful in information research and problem solving focused activities.

Virtual classes

The participation in virtual classes enables solving the tasks together in groups, access to the same documents and allows communication with the trainer and other participants. Also, virtual or online meetings allow for directly assisting the student, if required. However, it is important that there is a good Internet connection and the participants’ are motivated.

New digital educational services

These offer new possibilities for the study, collection and systematization of information, the design of learning tasks, assessment, communication and teamwork.

Learning Management Systems (LMS)

These management systems allow the management of students and the organization of learning goals, activities and sequence. They incorporate and integrate many devices, tools, languages and functionalities that combine learning management and monitoring and assessment contents (Moodle, WebCT, FirstClass, eleven, weclass, etc.). LMS allows teachers to organize systematically the course and student management. It is useful when the classroom level of complexity is high and many of the activities can be done in a virtual way, and is especially good for the management, monitoring and evaluation of students.

Educational wikis

Websites that can be edited by multiple users and thus become a space that enables the sharing of resources and collaborative creation. They are currently developing many educational wikis in development. Allows a class group to become the creator of a wiki and supports collaborative work.

Cloud computing storage

Located on remote servers which allow storage of data provided by the user. It facilitates the creation of repositories of educational resources and collaborative networking, in addition to the collective resource generation.

Augmented Reality

It is the name given to the combination of a direct view of the real environment combining reality with “virtual” information. These tools improve information or increase your environment knowledge. It is a system that allows teachers to guide and improve learning experiences based on direct experimentation, visits and in fact all activities usually outside of class - with a concrete learning purpose.

Interactive simulators

Digital systems represented - by moving images - objects, situations, contexts and processes that are analogous to reality and that the student can, to some extent point, interact. Such systems allow play situations in which the user must act as if it were a real case, but without the risks. There are simulators that can play driving a car, an airplane, or a physical or chemical lab. Simulators are very useful from a pedagogical point of view. They allow reproducing real situations freely and safely; they stimulate trial and error strategy; they help student motivation and involvement in the learning activity.

Educational games

Interactive video games have proliferated in recent years. The latest generation of such games has the advantage of allowing network participation of many players simultaneously. They allow the presentation of situations, raise the need to address them, to find solutions, testing, so that users can learn from mistakes and rectify them. If the purpose of these games is educational and the system is well constructed, the educational benefits are clear: learning becomes more effective and motivating, allowing active student involvement, strengthening of group learning, etc.

4. Pedagogical Benefits And Advantages Of M-Learning

The next step will be the analysis of the main mobile tools, media and apps. The scope of availability is truly vast. It is the teacher’s responsibility to choose the most appropriate solution to their educational and training objectives.

Mobile technology can be used as a supportive tool for learning thanks to its main characteristics and properties:

- **Ubiquity:** enable anytime, anywhere learning. Because people carry mobile devices with them most of the time, learning can happen at times and in places that were not previously conducive to education.
- **Flexibility and portability:** intelligent mobile devices, many of which are already in the pockets of millions of people, can give students greater flexibility to move at their own pace and follow their own interests, potentially increasing their motivation to pursue learning opportunities.
- **Affordable:** Compared to other tool cost are lower, it is easy to use and is integrate into students’ lives.
- **Active and motivating:** When learners utilize mobile technology to complete passive or role tasks such as listening to a lecture or memorizing information at home, they have more time to discuss ideas, share alternative interpretations, work collaboratively, and participate in laboratory activities at school and other learning centres.
- **Personal:** Mobile technologies, by virtue of being highly portable and

relatively inexpensive, have enormously expanded the potential and practicability of personalised learning. The flexibility to engage in learning at many different times and locations provided learners with 'choice over and ownership of their learning', while the anonymity of mobile devices provided learners with 'a safe, private and non-judgmental environment' to test ideas and make mistakes.

- **Allows use of games and Apps** and offer multifunction sensors that enrich and support in the learning process.
- Far from increasing isolation, mobile learning **allows people increased opportunities to cultivate the complex skills** required to work productively with others so they can build new communities of learners and help students pose and answer questions, complete collaborative projects, and, more generally, engage in the social interactions which are the foundation of learning.
- **Enhance seamless learning**, defined as uninterrupted learning across different environments – including formal and informal settings. Research has resulted in the identification of ten dimensions of seamless learning, which include: formal and informal learning, personalized and social learning, learning across time, learning across locations, ubiquitous knowledge access, physical and digital worlds, multiple device types, multiple learning tasks, knowledge synthesis and multiple pedagogical models.
- Provide learners and teachers more immediate **indicators of progress** and can make educators more efficient by automating the distribution, collection, evaluation and documentation of assessments. By speeding up or eliminating tedious logistical tasks, educators can spend more time working more effectively and directly with students.
- **Minimize educational disruption** in conflict and disaster areas. Mobile devices can help ensure the continuation and continuity of education during times of crisis.
- **Assist learners with disabilities**. Thanks to the integration of text-enlarge-

ment, voice-transcription, location-aware and text-to-speech technologies, mobile devices can dramatically improve the learning of students with physical disabilities.

- **Improve administration and communication** between teachers and students, teachers and parents, teachers and management, students and student. Allow the creation of new interaction and cooperation systems.



Depending on the support degree to teacher or student work of the mobile devices, we can identify the following levels, on the inclusion of ICT model developed by Telefonica Foundation:



Level 1: Mobile phone is used by teachers to support the delivery of their classes through supplementary material: lectures, exercises, videos, podcasts...



Level 2: Students learn through the exercise with multimedia applications that allow them deepen and compare their level of knowledge about a certain content.



Level 3: Students participate in the design and development of a project and uses a variety Apps ICT or tools for the creation, publication and dissemination of content through networks.



Level 4: Students explore tools for group work in the classroom: e.g. Dropbox, calendars and Google Docs to share and work collaboratively; Eduloc, QR codes and Augmented Reality for both indoor geolocation outdoors.



Level 5: Students networking with colleagues from other learning sites using mobile technologies and social networks.



Level 6: Students use mobile phones to learn informally in any place and any time. Not only in learning centres.

Mobile learning enhances as well as supports other educational methodologies that are increasingly being used:

Collaborative learning: It is an active pedagogy focused on shared tasks and teamwork. In this active learning system the student participates actively in the design of the different learning experiences. Therefore, collaborative learning facilitates and stimulates motivation and involvement. At the same time, it empowers teamwork and leadership, as well as dialogue and mutual understanding. The use of digital devices enables this active collaboration or community work.

Project work: Is a pedagogy that requires cooperative work and organized learning processes based on achievement of specific objectives through tasks and progressive steps. It boosts pragmatic sense, problem solving skills, coping mechanisms, specific learning and critical thinking development.

Pedagogical skills approach: A set of knowledge, attitudes and abilities that are configured to enable a person performing a task or a job. Based on this approach, the education system is aimed at increasing the skills of students. This approach is an adequate response to scientific progress against fixed standard content of learning systems. On the other hand, it makes learning more practical and oriented to students' comprehension.

Analytical learning: This type of learning is a specific development of computer-assisted learning or, on occasion, adaptive learning. It is based on the possibility of a user-computer relationship that allows provision of content, exercises or experiences adapted to the user requirements and his/her performance ratio. It is based on the systematic evaluation of student performance and continuous improvement learning strategies based on that assessment.

Learning focused on problem solving: A method that organizes activities in order to solve a problem or barrier that is presented for the

achievement of previous goals. At the same time, it invites experiential knowledge of reality and practical action. This method introduces critical and pragmatic sense. It allows students to learn more about real life and stimulates student curiosity, exploration and motivation. Moreover, it empowers teamwork.

Learning by exploration: This aims to enhance the student’s innate curiosity, by facilitating conditions where students can explore reality and experiment with it. It empowers active interest in learning, curiosity, inventiveness, creativity and consequently, the critical sense.

Flipped Classroom: This process creates learning materials and distributes them to students before classes. Thus, the activity in the classroom is not concentrated on the presentation, but in the learning discussion, reflection and exercising the knowledge already acquired or in the solution of specific problems. This methodology changes the traditional order of the classes, proposes to focus the classroom work in practice and problem solving and allows better management of classroom diversity.



5. Good Practices On M-Learning

e-Classroom, www.doukas.gr

Country	Greece
Target group	Teacher and students from VET center
Purpose	Supporting in classroom learning to help students learn in a more creative, pleasant and effective way using specially designed applications.
Mobile devices	iPad (tablet device).
Description	Learners are so familiar with the specific technology that they are able to get hands-on experience with immediate applications and apply them to their projects. They take their iPad in the art room and film their sketches while they create them, take pictures and work over them, make 3-D animated movies of their work and just email them.
Resources	Skills: basic usage of the Internet and the iPad. Devices: iPads for teachers and students. Tools and apps: classroom management tools for time organization, managing the learners, creating groups, creation of statistical learning process, managing grades, access to digital educational material; content management tools for creation and distribution of the learning material and file management; design of work space of trainees; communication Tools for synchronous and asynchronous communication such as e-mail, chat rooms, audio/video-conferencing, blogs creation; assessment tools for creation, distribution and management of assessment actions (eg. electronic submission of homework, solving self-assessment exercises and storing the results in student’s electronic files).
Success elements	Teaching with an iPad provides effective motivation to learners in order to become more cooperative and creative. The management of information is much more efficient.
Criticities	It can be expensive to equip a classroom with iPads.

Pinterest, www.pinterest.com

Country	Greece
Target group	Teacher and students from VET center.
Purpose	Supporting classroom and outside classroom learning.
Mobile devices	Any mobile device: smartphone, notebook – net-book, tablet.
Description	<p>Pinterest is great for organising vast quantities of information and brainstorming ideas. Its visual nature makes it particularly suited to engaging learners. You can use it to:</p> <ul style="list-style-type: none">• Compile content, including educational video;• Organise and store ideas;• Connect and comment on students' work;• Make connections with other teachers and• Get ideas for future projects;
Resources	Skills: basic usage of the Internet and the smartphone.
Success elements	<p>One of Pinterest's main advantages is its ability to save in a visual way, links to resources that you discover on the web (such as interesting articles, images or videos which would be useful for another day) under a relevant topic title. You can even write a note to yourself as a reminder of why you chose this particular resource. This can be particularly useful for teachers when planning lessons and for collating ideas for future lessons.</p> <p>Pinterest boards can be a great way to collaborate with other teachers. You can share ideas, resources, videos, news articles, infographics and images with students from other learning sites or even other Countries.</p> <p>Pinterest boards can be used to provide a structured list of resources for students writing about a certain topic rather than</p>

leave them searching through masses of information.

Students can work together on a group project, putting together a board of ideas and resources, working independently and pinning ideas onto the board to create a group collage. The teacher can then visit the board, leaving comments and feedback on the resources put together.

Criticities

Every student needs an internet connection outside the class.

Gamification in Education

Country	United Kingdom
Target group	School kids from P4 – P7 (age range 8-12) and Further Education students (young adults).
Purpose	Support classroom learning activities using external materials via websites and deliver curriculum to students through college Virtual Learning platform.
Mobile devices	Android and IOS tablets and smartphones.
Description	In today's digital generation gamification has become a popular tactic to encourage specific behaviours and increase motivation and engagement. Using games which are delivered through mobile devices such as tablets and smart phones the college has developed a programme that strives to encourage students to learn programming skills through the use of games. The games are progressive and teach kids/students the concepts behind programming in a fun and engaging manner.
Resources	Devices: Tutor – Tablet/Smartphone for tutors and students. Internet access. Tools and apps: blockly-games.appspot.com
Success elements	The students are engaged immediately as they enjoy the practice of playing games. They interact with their peers and discuss the concepts involved. They learn core programming skills that are relevant to their education. It improves attendance and attainment.
Criticities	Need of internet connection.

GOOD PRACTICES ON M-LEARNING

Mobile apps for adult learners with additional support needs

Country	United Kingdom
Target group	VET students (young adults) with additional support needs in further education.
Purpose	In class and external learning support for student with additional needs using mobile devices and Virtual Learning Environment.
Mobile devices	Android and IOS tablets and smartphones.
Description	Smart phones and tablet devices can provide students who have physical, cognitive or sensory limitations with a portable alternative to specialist hardware and software. There are a wide range of downloadable apps to support successful learning. Apps can help these learners to plan and organise their studies as well as supporting them with reading, writing and note taking. In addition there are a growing number of discrete apps that support students with more complex learning needs. One particular example is apps that support alternative and augmentative communication (AAC) for learners with speech and language difficulties, by providing them with visual symbols and images to help them express their moods and needs. Many devices even come with built in accessibility features that provide a range of options to adapt the way that they can be used. For example iOS devices have become very popular with students who are blind or partially sighted because they offer as standard a Voiceover screen reader function, which allows them to navigate the web.
Resources	Devices: Tutor – Tablet/Smartphone for tutors and students. Internet access. Tools and apps: smart board; relevant Apps (eg. www.apple.com/accessibility/ios/voiceover).
Success elements	Students feel included in lessons and can overcome the barriers to engaging with tutors and their peers to maximise their educational experience.
Criticities	Tutor must be familiar with the using the relevant apps.

BaiBoard®, [youtube.com/watch?v=TwD0TDJt9QM](https://www.youtube.com/watch?v=TwD0TDJt9QM)

Country	Germany
Target group	Teacher and students from all class levels in secondary school.
Purpose	Supporting classroom learning and integrating the lesson with supplementary materials and media.
Mobile devices	Tablet and apps: iPad (IOS® or MAC-based).
Description	Carrying out of the didactical unit “Medieval foundation of the town” through BaiBoard, that is a cloud based collaboration app that enables users to visualize, create and collaborate on educational content, through the use of collaborative whiteboard, voice conferencing, document annotation etc. BaiBoard is integrated with cloud services including Dropbox, Google Drive, iCloud Drive and Evernote. Devices: tablet with relevant apps for each student and teacher.
Resources	Tools and apps: WLAN, possible Beamer for presenting the results; Padlet®, BaiBord®, GoogleMap®, GoogleDocs®. www.BaiBoard.com , itunes.apple.com/us/app/baiboard-collaborative-whiteboard/id490534358?mt=8 .
Success elements	<ul style="list-style-type: none"> • Collaborative working on one file from several mobile devices; • Working at the same time or time delayed; • Allows moderation and has function to allow comments. • Can send the results in several file formats; • Corrective administration from tutor, moderator or teacher; • Documentation: “save-as-board”, “snapshots”.
Criticities	Tablets in school change the whole school and it generates a need of concept and rules, infrastructure, trainings, communication and planning.

Skitch

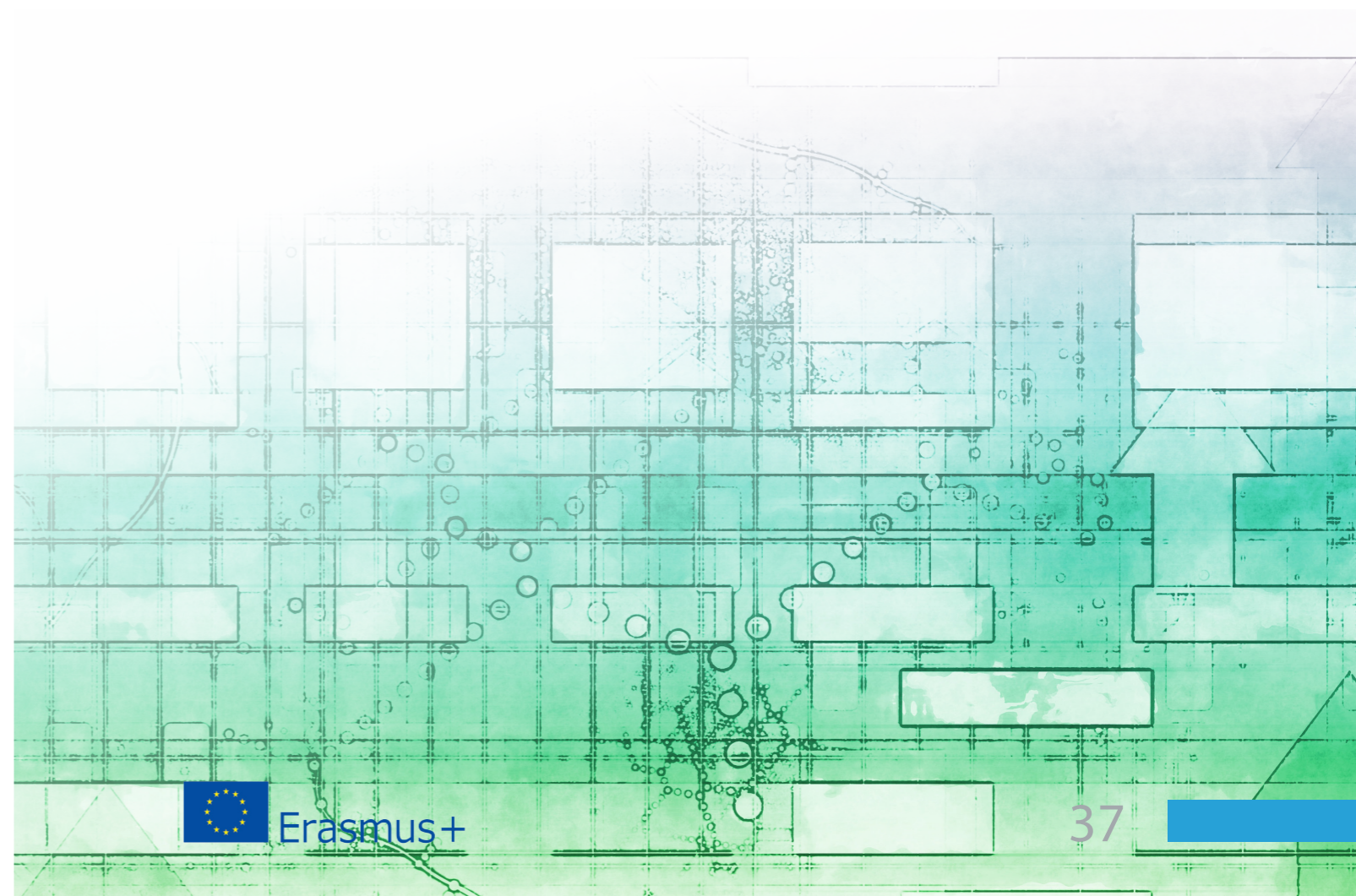
Country	Germany
Target group	Teacher and students from all class levels in secondary school.
Purpose	Supporting classroom and outside classroom learning (e.g. homework); integrating the lesson of a special unit with supplementary materials and media.
Mobile devices	Tablet
Description	Skitch ® is a screenshot-tool with several features. Using an existing image or a captured new one, you can then add shapes, write on it, draw on it, annotate it any way you like and save it to your Evernote account so that it is available everywhere Evernote is. Facebook and Twitter are integrated. You can work different lessons with work sheets: <ul style="list-style-type: none"> • Music: superscript the piano keypad; • Geographic: annotate maps; • Mathematics: example of method of calculation; • German/Languages: explanation of the correction rules on an example.
Resources	Devices: tablet with used apps for each student and teacher and WLAN. Tools and apps: Skitch in Apple Store or Skitch for Windows (evernote.com/skitch/?var=c&noredirect).
Success elements	Easy to use for students that can learn to use the tool quickly. As Homework it can easy be sent e.g. per mail to the teacher or can be shared with class mates.
Criticities	Difficulties in reaching a pedagogical integration in an overall concept of lesson.

Google Classroom for Flipped Learning, www.maristak.com

Country	Spain
Target group	VET students
Purpose	Supporting outside classroom learning
Mobile devices	Android smartphone.
Description	Flipped classroom is an instructional strategy and a type of blended learning that reverses the traditional educational arrangement by delivering instructional content, often online, outside of the classroom. It moves activities, including those that may have traditionally been considered homework, into the classroom. Students watch online lectures, collaborate in online discussions, or carry out research at home and engage in concepts in the classroom with the guidance of the instructor. The teacher creates some content (preferably video etc.) explaining the lesson (theoretical), and the students work those contents on their own outside product the class. After that, the whole group collaborates on those contents. Google Classroom sends notifications to the students whenever a new activity is published, and makes it possible to follow the lesson using their own smartphone. The teacher can also assess the work of their students (a summary of the video content, for example) using their smartphone as well.
Resources	Skills: basic usage of Internet and smartphone. Devices: teachers' and students' smartphone. Tools and apps: Google Apps For Education; Secondary platform for sharing the video contents (YouTube could also be a valid solution). en.wikipedia.org/wiki/Flipped_classroom , www.google.com/edu/products/productivity-tools/
Success elements	Students can choose when and where to take the lesson, and

this makes it a very flexible solution. They receive notifications of new activities directly to their smartphones and they can collaborate and learn in group by using their preferred social applications.

Criticities Every student needs an internet connection outside the class.



ClassDojo for classroom management, www.maristak.com

Country	Spain
Target group	VET students.
Purpose	Managing the classroom, assessing the students and contacting parents.
Mobile devices	Android or Apple smartphone.
Description	ClassDojo is a classroom management platform for teachers, parents and students. It helps teachers to encourage specific classroom student behaviors, through real-time teacher-to-student feedback through the web and mobile devices. The software automatically generates behavior reports that can be shared with parents and students. Behaviours tracked by the app include hard work, persistence, teamwork, creativity and curiosity.
Resources	Skills: basic usage of Internet and smartphone. Devices: teachers' and students' smartphone. Tools and apps: classdojo account; email account. www.classdojo.com
Success elements	The student like how positive classes are and are encouraged to participate, teamwork and collaborate. The teacher can see an evolution of student's progress. Easy and direct contact with parents.
Criticities	Every student and the teacher needs an internet connection inside the class.

QR codes in wood industry studies: electronic work instructions for building a stool, goo.gl/wnv3hV

Country	Finland
Target group	Students of wood industry (VET).
Purpose	Creation of mobile content by students, to enhance and support classroom learning.
Mobile devices	Smartphone or any mobile device with a QR code reader.
Description	Students prepared electronic work phases for building a stool as an exercise. The aim was that future students would be able to perform the same exercise more independently, and the teacher would have more time to teach the actual working methods. Each work phase is published in a QR code and attached to the part of the stool. The work phases for that part can be accessed via the QR code. The instructions are implemented and shared via free online services (Google Drive, YouTube, Flick etc.). The instructions have been optimised for smartphones, because using them while working is easier than using tablets or computers. The aim is also that the instructions can be accessed with any mobile operating system and in other schools as well.
Resources	Skills: basic ICT skills.
Success elements	The method makes it easy to follow instructions while doing practical work tasks, it is very illustrative and makes independent work easier. The method can be used for any instructions that needs to be observed in phases, requiring versatile demonstration.
Criticities	Preparing the instructions takes quite a lot of time from the students or teachers working on them. Work safety should always be taken into consideration in independent work.

Online work shifts for practical nursing, goo.gl/wnv3hV

Country	Finland
Target group	Students of Turku Vocational Institute, Finland.
Purpose	Outside classroom learning, use of the tool to train practical skills and knowledge.
Mobile devices	Any (smart) mobile device – smartphone, notebook, tablet etc., e-mail address.
Description	Nursing work shift online is a study module in the Practical Nursing curriculum, where the student can perform a part of the work remotely in a “virtual hospital”, using a computer or mobile device. There are 7 work shifts per week (based on Roper-Logan-Tierney’s model) that are case-based and help the student learn in depth about preparing a treatment plan, supporting daily functions, patient guidance and evaluation of professional competence. The cases copy real-life cases as closely as possible. Information acquisition, patient guidance skills, systematic approach and problem-solving skills are considered essential. A tutor and a teacher will evaluate the completed work shifts in writing, and the student can also refer back to the tasks later on.
Resources	Skills: basic ICT skills. Human Resources: each student will have a tutor and a teacher evaluating their work.
Success elements	The method supports the integration of theory and practical skills. The students found the method useful, as the cases corresponded with practical situations they encountered later. The teacher found that the method made individual support easier to provide. The method can be applied in other subjects.
Criticities	The virtual hospital is on Turku Vocational Institute server, which may become busy if there are many users. The links for the work shifts can only be sent once, and therefore the links must be saved carefully.

GOOD PRACTICES ON M-LEARNING

“Socrative teacher” app and “Socrative student” app, www.socrative.com

Country	Finland
Target group	Students of Secondary, VET and higher education.
Purpose	Socrative helps to engage and assess students as learning happens.
Mobile devices	Smart Phones and/or tablets.
Description	Interactive quizzes during the class made by the teachers and sent out to the students. Teachers can design and edit their own library of assessments and share them within their personal learning network. They can also tag them by Common Core standards. Student results populate the teacher’s screen as they submit answers to multiple choice, true/false, graded short answer, or open-response questions. Through the use of real-time questioning, result aggregation, and visualization, teachers have instant insight into levels of understanding so they can use class time to better collaborate and grow as a community of learners.
Resources	Skills: Basic knowledge on downloading and using apps. Devices: Socrative is available on iOS Apps, Android Apps, Chrome Apps, Kindle Apps, Windows Apps, and all web browsers making it accessible in all educational technology settings; Internet connection for downloading the apps; Registration online.
Success elements	Review student understanding in a variety of report types: whole class overview, student-specific results, or question-by-question breakdown. All the reports can be downloaded, emailed, or delivered to your Google Drive folder at any time. They are also always accessible in your reports section of Socrative.

Criticities

In the beginning, a teacher might find the creation of quizzes a bit difficult, but there are tutorial videos online that will assist them (www.youtube.com/user/SocrativeVideos). Also, after you have created on quiz, you may also copy/edit it, share it with other teachers, so if this is an app used by several teachers who share their quizzes, then the creation of quizzes will be a much quicker process.

Aurasma app and study materials with Aurasma, studio.aurasma.com/home

Country	Finland
Target group	Students of Secondary, VET and higher education.
Purpose	Classrooms and individual learning.
Mobile devices	Any mobile device, e.g. smartphones or tablets.
Description	<p>Aurasma is a popular and cutting-edge augmented reality application that can be used for teaching and learning by creating augmented reality activities. It enables teachers to easily create and connect digital content such as video to images in books and classroom walls.</p> <p>Only a few steps are needed to create an Aura for students to be able to see it in Aurasma:</p> <ol style="list-style-type: none"> 1. Create an account in Aurasma; 2. Confirm your account using your email; 3. Enter Aurasma Studio 4. Choose to “Create a new Aura” 5. Select the image you want to print; 6. Add the video you wish the students to see; 7. Publish it; 8. Print the image 9. Students need to download the Aurasma App <p>9. Ask your students to add you as a contact at Aurasma.</p>
Resources	<p>Skills: Basic knowledge on downloading and using apps.</p> <p>Devices: Aurasma App is available for Android and iOS (8.0). It is possible to download it from App Store or Google Play onto iPhones and iPads, and Android phones and tablets version 4.0</p>

and above.

Success elements Easy accessibility; information load can be communicated freely of time and geographical locations; creating an Aurasma is free, as well as sharing it with your followers; it is easy to create and insert any kind of information; students can access it only by downloading the app into their cellphones and then just point the cellphone at the printed images to start learning.

Criticities Teachers need to have PC and portable devices to create/test the Auras, students need to have a portable device with Aurasma App installed.

QR code scanner app and study materials with QR codes, www.qr-code-generator.com

Country	Finland
Target group	Students of Secondary, VET and higher education.
Purpose	Classrooms and individual learning. To allow learners to quickly access information on their mobile devices.
Mobile devices	Smart Phones and/or tablets.
Description	The QR code (Quick Response Code) is a unique image, a type of two-dimension bar code that contains the information that was assigned to it individually.

The QR codes smartphone/tablet applications come in two modes:

- QR code creator/generator
- QR code scanner/reader

Creation of the learning material with QR codes requires using both QR code applications modes.

In education, the QR codes could be seen as an effective way to link a part of the educational material that would be de-coded by the learners individually.

Examples of using QR codes in classroom: placing a QR code with a link to the correct answer/help page in a paper test; using QR code as a way of getting more information about the topic or having access to additional material In posters and bulletin boards; attaching QR codes to text books and other printed material to provide more information e.g. about the

author or to provide the link to this material online; in Power-Point presentations, inserting a QR code with the link to this presentation so that the audience could download it; attaching the QR codes to the physical objects in class to provide more info about them, etc. QR codes can hold over 4000 characters of information, and thus are an effective means of saving paper and school resources.

Resources

Skills: Basic knowledge on downloading and using apps. Devices: QR code applications are available on most of the smartphone/tablet platforms: iOS, Android, Windows, Blackberry

Success elements

Easy accessibility; information load can be communicated freely of time and geographical locations; QR codes are easy to create and the Internet and the smartphone markets are full of free tools that help students to create their own QR codes and insert any kind of information; scanning and decoding the content of QR code is easy

Criticities

Teachers need to have PC and portable devices to create/test the QR codes, students need to have a portable device with QR code scanner installed.

6. Plan Your M-Learning Approach

Step 1: Define the learning objective to be achieved

Technology allows the creation of new tasks that were previously inconceivable but it is important to confirm that mobile learning experience really makes sense and provides advantages over other forms of learning.

- What form of mobile learning meets your needs?
- Will you use tools for cooperation, assessment or improving efficiency?
- What actions of the users would you like to evaluate?

Step 2: Assess the current situation

- Who are your users?
 - What mobile devices do they use?
 - What are their main ways of spending time with mobile devices (games, texting, creating and sharing contents, contact with others, browsing the net...)?
 - Are their devices connected to the Internet and if yes, in what way?

Finding the answer to these questions, even if they seem banal to you, is one of the key elements of organising training.

- What kind of experience have you and your team got?
 - Is there anybody in your school who deals with creating websites or has experience in applications or games?

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What kind of experience have you and your team got?

- Is there anybody in your school who deals with creating websites or has experience in applications or games?
- Who will deliver the content?
- Who will run the training?
- What competence should these people have?

PLAN YOUR M-LEARNING APPROACH

- Will they need to be trained?
- Will they need additional materials?

What are your resources?

Budget. Have you got all of the training materials required, the suitable specialists, or maybe you will have to buy some elements? Additionally what elements can you buy? What budget have you got and how can you dispose of it? Have you got the funds for the development of mobile learning?

Time. How much time have you got for designing mobile learning trainings, their implementation and the preparation of the evaluation of the first results? Is it enough time for the participants to reach the goals set for them?

Technology. Have you got all necessary mobile devices? Can everyone access them and do they work with JAVA, HTML5 or similar languages?

Content. Have you already got the training material which can be converted to a mobile format? Are the contents suitable for the mobile mode? Who will deliver the required content? Will it be easy to process them into mobile devices? Who will deal with the updating and changes in the content if necessary? What about the intellectual property – who will have the rights to the content?

What are the security requirements?

Define the security requirements.

Step 3: Choose the device which is available for each of your students.

Mobility is a chance, not a barrier. If somebody says, “I haven’t got a tablet or a media player”, it means they will not be able to use the contents shared in these devices.

To make the choice easier, we should focus on the previous analysis of the current

situation.

The devices are equipped with lots of options which can be used for learning. Think about which tools and devices (sound and video players, clock, calendar, contacts list, GPS, maps, navigation, Bluetooth, e-mail, browser, text message, phone calls, sound and video recorder, text editor, spreadsheet, social networks, extended reality, detectors) will be most suitable for the training activities that you are planning and make sure that everybody can access them.

We can also choose between:

- Blended learning system: Face-to-face classroom methods are combined with computer-mediated activities;
- 100% mobile learning experience.

Step 4: Build a prototype

Prototyping is an important part of the development life cycle of the m-learning process. This will improve the user experience and if necessary modify the course.

Some basic principles should be adhered to in Mobile Learning content creation:

- Segment information in blocks of less than 5 minutes;
- Simplicity and speed of loading. M-learning access is performed in short times and with a reduced screen, so you should prioritize what's important;
- Include multimedia, audio, video, games, etc.;
- The content must be continually updated, should not be static but include the latest information;
- The delivery has to be colloquial: style should be adaptive. The student considers

his mobile advice as something “personal”;

- Include elements of collaboration;
- Include applications.

Step 5: Testing the process

Testing mobile learning approaches is a key action, which should not be omitted in any case. It is this stage which decides on the success of the training with the use of mobile devices or mobile learning courses. For now, you have the opportunity to check if it meets yours the users' expectations.

It is important to watch the test participants carefully and write down the problems they had, as well as to ask them to comment on the mobile learning process on the spot or after the testing session, in order to correct or modify critical aspects.



Examples of use of Mobile Learning in teaching:

- Finding information on Internet
- Use of multimedia
- Consultation digital dictionaries and encyclopedias
- Podcast
- Developing material
- Reading digital books
- Listening to audio books
- Note-taking, audio, video
- Taking photos, videos
- File sharing and interaction in social networks
- Access to the online platform where information is stored
- Underpinning exercises and activities
- Educational Apps for curriculum knowledge
- Sending additional information on the subject through mobile devices
- Recording the teacher’s explanations
- Recording an experiment
- Editing documents
- Create a library of sounds or images
- And more

Some suggestion:

- Be sure that all students have a mobile device.
- Encourage curiosity, initiative and autonomy.
- Mobile learning should be used as a support to other forms of learning and there should be an interconnection with other learning.
- It would be better to start with small experiments and then check its adequacy and efficiency.
- Continuously monitor how the learner experience is proceeding and confirm that the experience fulfills its educational purpose.
- Encourage action-oriented activities: the strength of the mobile learning is its portability and immediacy, so this feature should be an integral part.
- Mobile learning should be encouraged contextualised activities involving finding information, analysis, organization, etc.

7. M-Learning Scenarios and Future Opportunities

The expected progression of mobile learning approach is propelled by a combination of both technological advances and societal shifts.

From the point of view of technology:

1. Technology will become more accessible, affordable and functional: improved functionality, connectivity and memory at lower costs; increased availability and penetration of 'smart' mobile devices and cloud-based services with advanced functionality.
2. Devices will be able to collect, synthesise and analyse massive amounts of data in the future, devices connected to the cloud will have the capacity to synthesise significantly larger amounts of data and begin analysing them for patterns.
3. New types of data will be available. Devices will 'know' their owners and be intimately and intelligently connected to them, enabling more personalised and contextual learning through mobile technology.
4. Language barriers will be broken down. If translation apps improve significantly, learners will have access to a far wider range of educational resources and content.
5. Screen size limitations will disappear. This could, for example, allow a learner to see a large and detailed image in its entirety or better facilitate long-form reading.
6. Energy sources and power capacity will improve as batteries become smaller, cheaper, longer lasting and faster to charge, and as new energy sources emerge.



In a pedagogical perspective:

1. Changes driven and generated by the technological transformation will be inevitable: everything points to an active, creative, open world class.
2. The classroom activity will be extended beyond the education centers with the help of mobile devices. Extracurricular activities will increase and its educational value will be boosted with new devices and services.
3. The impact of the change will transcend the classroom. This is a change of educational culture.
4. The attitude of teachers and their training will be decisive to exploit the technological advantages and transform pedagogy. The more open to change, the greater its ability to adapt, deepen and increase the rate of development of the change of educational culture. The better the digital competence, the more effective will be the appropriation of new technological resources.
5. The key to educational innovation will be in the coherence between the adoption of new devices, new services and the implementation of new methods.
6. The use of students own digital culture in the classroom will be decisive. Systems

with many limitations and barriers will become dysfunctional. Teachers need to accept certain risks relating to controlling technology as this is part of innovation.

7. Educational communities and collaborative work can be an engine for accelerating innovation. The collective creation of digital resources will be a decisive factor for change.

Education and technology can and should co-evolve in mutually supportive ways. While people tend to think of education as perpetually lagging behind technology, there are numerous instances in which education has prompted technical innovation. For example, some historians argue that Alan Kay's 1968 Dynabook, an early prototype of the laptop computer, came into existence as a means of helping students learn through 'new media'. Ideally technology and education will co-evolve, with educational needs driving technological progress as well as adapting to it.



8. Useful Links

Professional Development:

Edutopia's "Mobile Learning: Resource Roundup" ([Bit.ly/Otjhip](https://bit.ly/Otjhip)) Get Ideas, Advice, And Tools From Educators Incorporating Mobile Devices In Classrooms.

The Mobile Native ([Themobilenative.org](https://themobilenative.org)) Teacher And Blogger Scott Newcomb Shares Classroom Resources And Helps Educators Make The Case For Mobile Learning.

Unesco's Working Paper Series On Mobile Learning, "Turning On Mobile Learning In North America" ([Bit.ly/Rhhape](https://bit.ly/Rhhape)) A Comprehensive Report Discussing Implementation And Challenges.

New Learning Institute ([Newlearninginstitute.org/Blog](https://newlearninginstitute.org/blog)) This Blog Is Sponsored By The Pearson Foundation And Covers The Latest In New Learning.

International Association For Mobile Learning (iamlearn.org) Find Examples Of Digital Initiatives In The Site's "Projects" Section.

Center For Digital Education's "12 Keys To Finding Quality Education Apps" ([Bit.ly/P5ing1](https://bit.ly/P5ing1)) This Article Can Help You Evaluate Apps For Your Classroom.

Twitter Hashtags - Mine Twitter.com For Tips On Mobile Learning Using These Hashtags: #Mlearning, #Mobilelearning, #Edapps, #Appsforkids, #Slide2learn, #Ipad-ed, #Ipadchat.

Find Apps And Other Web Tools:

I Education Apps Review (lear.org) Resources Are Organized By Grade And Subject By A Community Of Educators And App Developers.

Appitic ([Appitic.com](https://appitic.com)) A Directory Of Apps For Learning By Apple Distinguished Educators.

Common Sense Media's App Reviews (Commonsensemedia.org/App-Reviews) Extensive Reviews On All Types Of Media, Including Apps, With Information About Their Educational Potential And What Types Of Platforms They're Compatible With.

Teachers With Apps (Teacherswithapps.com) Two Teachers Write Easy-To-Read Reviews On Educational Apps For Educators And Parents.

Ipads In Education (Bit.ly/9Iurko) A Collection Af Apple Apps Clasified By Subject A Curriculum Area.

Bloomin' Apps (www.schrockguide.net/Bloomin-Apps.html) This Page Contains A Classification Of Many Applications According To Bloom Taxonomy. It Contains Usage Tips For Ipad, Google, Android, And Web 2.0 Applications.

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