#3 Policy Paper on mobile Learning (m-L)

The Palestinian Authority with support from the Belgian Development Cooperation implemented from 2011 till 2015 the project "E-learning Curriculum in Primary and Secondary Education" in several hundred Palestinian schools. The aim of the project was to utilize ICTs in school education in order to enhance student-centred learning and stimulate 21st Century Skills in Palestine.

An Intervention Action Research was conducted in 2014-15 with the main aim to provide upstream policy advice to the Ministry of Education and Higher Education towards improving and advancing E-learning resources and practices for teachers, students and families. The Action Research was assigned to a consortium of the Open University of Cyprus and the Al-Quds Open University which produced the following Policy Papers:

0. Policy Paper on Information and Communication Technology in Education (ICTE)
1. Policy Paper on School-led Initiatives (SLI)
2. Policy Paper on Digital Educational Resources (DER)
3. **Policy Paper on mobile Learning (m-L)**
4. Policy Paper on Teacher Professional Learning (TPL)
5. Policy Paper on 21st Century Skills (21CS)

The policy papers are based on a "Most Significant Change" study from over a hundred school communities (teachers, students, headmasters, parents, administrators) that participated in the e-Learning project, on two 4-month long Action Research projects in two sets of ten schools, on extensive discussions and feedback from supervisors and MoEHE staff, and detailed review by the staff from the Belgian Development Agency. A two-day seminar was held by MoEHE in April 2015 in Jericho in which initial versions of the papers were presented and reviewed by policy makers and practitioners. Thus, although the authors of the papers have full responsibility, they cannot take full credit. In December 2015 the results were presented and discussed publicly in Ramallah.

Each policy paper includes a subject definition, followed by objectives of the policy under discussion, continuing with policy issues, questions and decisions to be made; related challenges, risks and opportunities are outlined and the relation to the curriculum is highlighted, concluding with Policy Recommendations. The main detailed part is prefaced by a single-page outline.

The purpose of the six policy papers, to be used in combination, is to provide policy advice to the Palestinian Ministry of Education and Higher Education given its strategy, as specifically expressed:

• *"the shift from teacher to student-centred learning, considering that frontal teaching, lecturing and rote learning are still the predominant methods of teaching in Palestine"* (cf. MoEHE, 2008a, 34; MoEHE, 2008b, 8; PEI, 2009, 14)

• *"… that ICT in education plays an important role as an enabler for promoting pedagogical innovation and developing the quality of teaching and learning. … ICT may be an effective tool for learning or part of a learning environment designed to achieve specific learning objectives, often not related to ICT content"* (Strategic framework of the Palestinian Education Initiative)

• *"… special focus on quality improvement in learning environments and students acquiring the so called 21th Century skills"* (ToR of the Action Research)

This series of Policy Papers was produced in 2015 by a team of educators from the Open University of Cyprus, Al-Quds Open University, the Belgian Development Agency (BTC) and the Ministry of Education and Higher Education of Palestine coordinated by Thanasis Hadzilacos, Professor of Educational Technology at the Open University of Cyprus.

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"Technology can amplify great teaching but cannot replace poor teaching.

Not a magic bullet to improve learning, it can play a role if applied better in the classroom;

of little help in bridging the skills divide between advantaged and disadvantaged."

(From the OECD study, 2015)

Information and Communication Technologies for Education (ICT@E) Policy Recommendations for

m-learning (tablets)

This page outlines the main recommendations for the utilisation of tablets as an instance of mobile learning, including objectives, related policy issues, challenges and opportunities.

If ICT@E were cars, m-Learning would be Rolls-Royce

Objectives
1. School Education beyond schools
2. Teacher media literacy education
3. Holistic learning environment
4. Personal ownership of learning
5. Inclusiveness of special needs

Policy Issues/Questions that must be decided upon

PR 1. An expensive, fragile and short-lived investment

PR 2. Personal use

PR 3. Policy for 'BYOD' (Bring you own device)

PR 4. In-School and Inter-School Network

Challenges, Risks and Opportunities related to …

C1.   Expense
C2.   Technology and content available
C3.   Tablet use mode
C4.   Not enough for all
C5.   Pedagogical utilization

Policy recommendations

PR 1. Establish a Palestinian School Network

PR 2. Preconditions for m-learning at each school

PR 3. Start with SLI and Action Research m-learning projects

PR 4. Cooperate with Universities for Research for m-learning activities

PR 5. Use m-learning beyond school

Mobile Learning (tablets)

m-Learning is the integration of several types of learning, typically with the help of mobile devices connected to the Internet: life-long, formal and informal, learning in class, library, at home or while travelling, laboratory and field learning. It allows adaptive teaching[1] and personalised learning. It presents serious economic, technological, organizational, political and pedagogical challenges, as well as significant learning opportunities, since it can be connected well to active, student-centred learning, geared towards 21st Century Skills.

If ICT@E were cars, m-Learning would be Rolls-Royce

MoEHE has a special interest for m-learning and the use of tablets, which is why a specific Action Research with tablets was conducted. The conclusions from the Action Research are presented first in this Policy Paper.

Conclusions from the Action Research

1. The main conclusion from this Action Research is that the high learning expectations from their use (towards student-centred learning and 21st Century Skills) can only be realised after a long time and under several preconditions.
2. There are indications from the Action Research that appropriate use of tablets can help towards student-centred learning and 21st Century Skills. The communicative affordances of the tablets in particular are an important aspect to focus their educational use on. Communication in and out of the learning circles, between teachers and students, among teachers, between student groups as well as with others outside school, can relate education to the real life trends and jobs.
3. It is clear, however, that without the following preconditions, the mere use of tablets does not offer any measurable learning advantage beyond the initial enthusiasm:

    a. The small number of teachers per school using tablets reduces their educational effectiveness. If most teachers in a school use them in all subjects then the effort will concentrate on their educational and not on their operational use. When only a few teachers in a school use m-learning in their instruction:

        i. The investment is grossly underutilized; in this case it is better to have tablets as a laboratory for all students in the school rather than giving one per student.

        ii. There is no learning community formed among teachers in the school to support teachers in this difficult innovation.

        iii.The fact that 21st Century Skills are 'horizontal', i.e. across all subjects is lost for the students. If, for example, only one teacher encourages critical thinking and the others promote rote learning, then students do not cultivate the skill or, at best, see it as the teacher's peculiarity.

    b. Sufficient teacher quality education, much beyond the initial operational training for tablet use.

    c. Availability of digital educational resources related to a large part of the curriculum so that tablets can be widely used and not restricted to a couple of 'demonstrations'.

    d. Long-term educational activities suitable for a reformed curriculum, with sufficient time for deeper learning and advanced cognitive skills to be developed.

    e. In-school technical and pedagogical support, since technical problems appear all the time, especially at the beginning and after initial teacher operational training, in-school pedagogical mentoring is indispensable –otherwise tablets will be used only a little and only to continue the current, teacher-centred instruction.

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1   "Adaptive teaching" is teaching differentiated for each student or group of students in a class, based on their personalised capabilities, needs, desires and learning styles.

4. The action research took place under a lot of non-educational restrictions as well, which are not characteristic of the action research conditions only, but are generally true in Palestinian Education:

   a. The occupation makes personal visits, hence mentoring and communication extremely difficult;

   b. The status of Internet in schools is far from satisfactory for appropriate use of tablets, which need to be connected via broadband in all school spaces (classrooms, labs, library, offices etc.);

   c. The small number of devices available as well as administrative decisions did not allow students to have the tables as personal devices to use at school and home.

5. These conclusions are in accordance with international experience. (See the recent 2015 study by OECD.)

Objectives regarding the use of tablets (m-learning)

1. **School Education beyond schools**

Through the use of mobile devices connected to the Internet, to extend student learning beyond school time and beyond their classrooms. Tablets can make available to teachers and students diverse learning resources and facilitate the use of multiple media. They can be used to integrate horizontal skills (21CS) with subject-specific knowledge in a multidisciplinary approach and to adapt educational activities to individual student needs and learning styles.

2. **Teacher media literacy education**

By making tablets personally available to teachers inside and outside school, to facilitate broad teacher acquisition of media literacy and 21st century skills.

3. **Holistic learning environment**

To allow for holistic learning activities that integrate

- classroom learning with
- library learning (on-line access to learning resources), with
- learning while at home or traveling (continuing and extending classroom activities), with
- laboratory learning (through virtual worlds environments) and
- field learning (where students take tablets to a museum or environmental site)

4. **Personal ownership of learning**

By making educational technology personally available to all students, to strengthen their personal involvement in their learning (ownership of learning) and change their attitude towards modern ICT devices to include formal learning in addition to informal communication and entertainment.

5. **Inclusiveness of special needs**

Mobile learning allows the implementation of an inclusive policy for special student categories, such as those traveling, at home, in prison, or with special needs. It can also be used to overcome mobility problems connected with the occupation.

Related Policy Issues-Decisions-Questions

PR 1. **An expensive, fragile and short-lived investment**

A policy is needed for dealing with an expensive, fragile and time-limited investment with a high demand for maintenance and renewal. The proposed Palestinian Institute of Educational Technology will work out the details the policy and monitor its implementation. MoEHE needs to give the overall guidelines. The following 'stories' highlight the issues for coping with constant technological developments:

The arrival of colour monitors: A story from the past

Stand back thirty years ago: Computer monitors are black and white. New colour monitors come in the market. How useful colour for education is! Initially very expensive, the new screens become cheaper. In some cases screens are integrated with the computer.

When should we start buying colour monitors for schools? When should we start replacing the old black and white monitors with new colour screens? Should we wait until we can buy colour screens for all schools or buy colour screens for some schools each year? Should we develop digital resources that utilize colour even though not all schools have colour screens?

It is clear that:

- This process never ends, it is a continual problem as ICT advances at a fast pace
- We can never have 'the latest' technology in (all) our schools
- We cannot have all schools at the same level all the time
- Pedagogy changes much more slowly than technology

It is less obvious that:

- Cost is not the most important factor
- Educator (re)training is required as well
- It is not always educationally beneficial to follow technological developments

New software demands more hardware: An eternal story

A new version of an educational piece of software is developed.

It is much better than the previous one -but it requires more memory in the computers to run.

Should we buy the new version and more memory? When?
For new computers only? Upgrade the old ones? When?

Expensive new hardware: A story from the present

Interactive whiteboards just came into the picture. They are too expensive to put one in each classroom. Besides, a lot of teacher training is required for their utilization which will take a long time to complete.

Should we put one in each school? Should we fully equip some schools only with a whiteboard in all classes? Should we only give them to teachers who utilize them? Should we wait until they become cheap enough to buy one for each classroom?

PR 2. Personal use

Personal use, by teachers and students, of public expensive fragile mobile devices requires a policy to deal with the following:

- What is the legal status? Is tablet ownership transferred or is it a loan?
- Are there limits to the use of the tablet by its holder? Can it be used for personal purposes unrelated to school? Unrelated to education?
- Who owns the data (content) on a tablet given out to a teacher? To a student?
- Under what conditions can the school recall the tablet? How can it enforce the call back?
- What happens when a student damages or loses her tablet and cannot participate in school activities? What if it is confiscated by the occupation forces?
- What are the school responsibilities when a given out tablet is used in a way that brakes the low?

PR 3. Policy for 'BYOD' (Bring you own device)

The 'BYOD' (Bring you own device) method has some clear advantages; at the same time it raises issues to be dealt with. A policy is needed to guide use of personally owned devices in schools.

Advantages:

- The school does not have the economic, administrative, and legal burden of dealing with the tablets.
- The students already know how to work their device.
- Devices are naturally upgraded as new students bring in newer devices.

Problems:

- The devices are not identical; some may not work with the school network, the software or the content necessary.
- Not all students have one. Instead of acting as an equalizer, school accentuates the differences between richer and more disadvantaged students.
- The teacher will not be familiar with most devices.
- Such devices in school can be used for purposes other than learning; they become uncontrollable.

PR 4. In-School and Inter-School Network

Although there is some use of tablets without Internet, the educational value of m-learning is greatly diminished. Internet availability must be ensured in schools; it should be reliable (over 99% availability), wirelessly available in all school spaces, and with sufficient bandwidth for several classes to be using it at the same time. Where this cannot be guaranteed, it is better to look for alternative utilizations of ICT@E. Establishing a school network is a European best practice[2] that will help both for the overall network and by providing assistance for individual schools and teachers.

Internet and the Web present serious safety and ethical issues. The availability of Internet at schools for students should be viewed as an opportunity to teach safety and ethics. At the same time there are real risks and a broad campaign and training for safe and wise Internet use should be undertaken.

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2   http://www.sch.gr/tieinaitoschmenu/english

Tablet-Related Challenges, Risks and Opportunities

Along with the important affordances of m-learning come its serious economic, technological, organizational, political and pedagogical challenges:

C1. **Expense**

M-learning is expensive in the large scale, in spite of the relative low cost of each one device. The cost of e-learning includes continuous, reliable Internet access in all places, including of course all school spaces. It also includes maintenance and provisions for damage and replacement.

C2. **Technology and content available**

In order to reap the educational benefits of m-learning, the level of both technology and content available must be raised. Network (broad and local), hardware, educational software and environments, learning object repositories in good working order must be accessible.

C3. **Tablet use mode**

M-learning can take place in several 'modes':

a. Devices are given out to students for limited time, in-school, and time-shared with other students
b. "tablet-per-student", given personally for students to keep at school only.
c. "tablet-per-student", given personally for students to keep and take home.
d. BYOD – Bring Your Own Device

All modes present serious organizational and legal issues for the school to deal with.

C4. **Not enough for all**

No country has sufficient tablets for all of its students; Palestine is no exception. This is a serious political issue everywhere and especially in countries where "equal opportunities" is an ideological cornerstone of education. Further political issues arise from the (statistically certain) risk of damage, loss or theft of some tablets given to students.

C5. **Pedagogical utilization**

By far the most serious challenge in utilizing m-learning effectively is pedagogical. There are some educationally trivial uses of tablets: although carrying a lot of textbooks is literally a burden for students, transforming them to digital files and storing them on a light tablet does not constitute m-learning. Similarly, educationally sound ICT activities which can be done with any personal computer but are carried out with tablets, do not constitute m-learning. Any non-trivial m-learning requires disruption of the usual model of school education[3]. Design of complex, cross-disciplinary activities with advanced learning goals and their execution is very demanding from teachers and the school system.

Relation/Coordination with the Curriculum

1. M-learning is par excellence the opportunity to broaden the curriculum with interdisciplinarity. Design broad interdisciplinary learning activities with broad teacher engagement (see DER policy paper).
2. The opportunity for adaptive teaching and personalised learning through tablets exists, but requires a lot of effort from the teachers.
3. Multi-modal texts and multimedia resources suitable for tablets should enhance the curriculum (see the Policy Paper on DER – Digital Educational Resources).

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3   See Blended: Using Disruptive Innovation to Improve Schools, by M. Horn and Heather Staker

Who gets tablets?

At the beginning "schools with tablets" will be privileged –which is politically bearable, especially if these are schools that have taken the initiative (School-led Initiatives - SLI), or if they are underprivileged schools.

As tablet distribution becomes frequent, however, it is schools <u>without</u> tablets that will feel underprivileged –and this is politically untenable. At that point, which is at least about ten years away, m-learning should be accelerated.

A <u>phased approach</u> in which schools periodically obtain infrastructure and therefore 'privilege' rotates is a possible solution. Priority to underprivileged areas also helps.

Policy recommendations

The policies recommended here for m-Learning are interdependent with those in the other policy papers (for School-led Initiatives, Digital Educational Resources, Teacher Professional Learning, 21st Century Skills and the overall policy for ICT in Education). They should be read and implemented in combination.

PR 1. **Establish a Palestinian School Network**

A Palestinian school network is needed to help connectivity of schools, teachers and students, provide the infrastructure for m-learning services, their maintenance and continuous development.

PR 2. **Preconditions for m-learning at each school:**

m-Learning and the use of tablets is very expensive, very difficult and very promising. it should be deployed gradually over a period of many years and only when the following conditions have been met in the schools, classes or subjects where it is applied.

1. Extensive and appropriate teacher education. Operational skills (using the tablet) and ownership by teachers (they should have it available at school and at home several months <u>before</u> their students have it) are necessary but not sufficient. They should have the opportunity to be trained in new instructional methods using educational software, learning objects and instructional activities within <u>a reformed curriculum.</u>
2. M-learning used in student-centred learning for 21st Century Skills is a radically new type of instruction which calls for a different curriculum. Much more teacher freedom should be allowed for.
3. A good number of appropriate learning objects and learning activities (scenarios of use) should be available, so that the use of tablets is not just "once off" activity but a regular one, leading to a community of "critical practice".
4. Stable Internet and in-school area network should be operational. School infrastructure for tablet use includes:

    a. Internet everywhere, sufficient for dozens of concurrent users

    b. Suitable physical storage for devices at school

    c. Structured cabling and wireless devices
5. In-school technical support and pedagogical guidance for the modern pedagogy required; this mentoring should be provided by 'advanced' teachers with suitable education and practice.

PR 3. **Start with SLI and Action Research m-learning projects.**

Year-long Action Research projects will help a lot. Mentors supervising tablet use should be regularly available to help teachers and monitor that technology is not just use for the old teaching model.

1. Promote such projects (school conferences and creative competitions; success stories in media).
2. Use all modes of m-learning: individual tablets given out to students; time-shared tablets; BYOD.
3. Establish the position of "in-school ICT mentors": active teachers with reduced teaching load (or extra salary or other incentives) who will pull forward their colleagues as teacher-researchers or teacher-designers or mentors.
4. Clear policies regarding use of devices in and out of school, including follow-up, assessment and evaluation.
5. Go very slowly to the large scale and only where preconditions are met at the school level.
6. In order to start m-learning gradually, an invitation could be sent to schools (like the 'SLI' School-led initiatives) in which a major requirement would be that either the majority of school teachers or at least all teachers of one subject area (in large schools) would commit to utilize m-learning. It is very important in any school utilising m-learning that many teachers do so and that they become a learning community themselves.

PR 4. **Cooperate with Universities for Research for m-learning activities**

Cooperation with Universities and Research Centres would greatly help in developing Digital Resources as well as in-service and pre-service teacher education. Distance education is becoming the norm world-wide.

PR 5. **Use m-learning beyond school**

Use m-learning beyond school and formal education, in new instructional paradigms. Include people in Israeli (and Palestinian) prisons. It may sound like a phantasy, but the demand for prisoners to have access to education will have strong international appeal. Distance education through tablets and other devices makes it technically feasible.