ON THE NATIONAL EDUCATIONAL TECHNOLOGY STRATEGIC PLAN 2012-2017: THE IMPORTANCE OF ESSENTIAL CONDITIONS AND RIGOROUS PILOTING

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Abstract

The National Educational Technology Strategic Plan 2012-2017 of the Ministry of Education and Higher Education (MEHE) advocates access to and integration of technology in Lebanese public school classrooms to support curricular goals. The rationale for the plan is grounded in research based on a literature review. Considering the critical task of technology integration currently underway in Lebanon, this paper explores associated problems, namely ineffective piloting and procurement procedures. Recommendations are made to help ensure a data-driven ICT selection approach and essential conditions for achievement in the context of local public schools considering Lebanon's challenging education landscape.

Introduction

In the context of the digital age and curricula for building 21st century skills, technology is viewed as pivotal to providing current and supportive learning environments and competing in the global market. While the Lebanese National Curriculum does not yet address this, educational institutions around the world, and even some local private schools, have been integrating technology in their classrooms for years. To that end, the Ministry of Education and Higher Education (MEHE) published a National Educational Technology Plan in 2012. The plan proposes that all students must have suitable access to technology in class to support curricular goals by 2017. The foundation of the plan is mainly a literature review with limited local practical, empirical evidence on information and communication technology (ICT) integration to draw upon. Two national pilots are mentioned in the plan. However, they do not form a major basis for the recommendations, possibly due to their small size. To quote, in describing the plan the authors write:

> If followed, this document serves as a guide or what to do – and what not to do – to assure a greater likelihood that educational technology can support reforms in teaching and learning. This does not mean that mistakes will not occur nor false starts be taken…rather, it means that program designers and implementers can draw upon, and contribute to, a reservoir of usable knowledge about how to use technology to improve teaching and learning and design programs for the Lebanese educational system that build on best practice. (MEHE, 2012, pp.9-10).

This is an appropriate initiative in terms of strategic planning. Possible *false starts* or *mistakes* can be costly and hinder the learning/teaching process. In

any such endeavour, technology selection and piloting is pivotal whereby efficient decision-making is critical within the local education landscape. To that end, the purpose of this paper is twofold:

1. Focusing on selection and piloting, explore problems related to desirable classroom integration of ICT.
2. In light of Lebanon's National Educational Technology Strategic Plan and in the context of desirable classroom ICT integration for Lebanese public schools, make recommendations to help ensure essential conditions and a technology selection approach with rigorous piloting.

Background

To ground this work, an overview of the National Educational Technology Plan 2012-2017 is presented in this section. Documented complexities of a general nature and those related specifically to Lebanese schools are then considered with a focus on ICT integration, essential conditions, and key activities such as piloting.

The National Educational Technology Plan

The MEHE published a National Educational Technology Plan for 2012-2017. The plan proposes that students must have sufficient access to technology in class to support curricular goals by 2017, with detailed implementation plans to be outlined incrementally starting with cycle 1. This is dependent on the curriculum review currently taking place with a new competency-based rather than knowledge-based curriculum to be developed by the Center for Educational Research and Development (CERD); it is estimated that this will be completed in 2017.

The rationale for the technology plan is grounded in literature based on a literature review commissioned by the MEHE prior to the development of the strategy (MEHE, 2012). Overall, six areas for guidance are presented in the strategic plan: procurement; placement and maintenance; support for curriculum, content, instruction, and assessment; ongoing professional development, formation, and support; implementation and support; and evaluation. Well-known challenges currently faced by public schools in Lebanon are also documented. In terms of ICT, these challenges include the absence of any national curriculum or standards for technology and uneven technology infrastructure. Further, related challenges are: excessive focus on content-based official exams along with a perceived lack of high-quality instruction, inadequate teacher training, a shortage of qualified teachers in certain regions, a dearth of local research data, and low achievement of students. The strategic plan discusses how technology may assist in addressing these weaknesses; given the lack of local, reliable, empirical research, the literature on which recommendations are based consists mostly of related learning theories and research on educational technology conducted outside Lebanon. Two national pilots for integration of ICT devices initiated in 2012 are mentioned. However, their relevance to implementation plans is not discussed in depth. The plan notes that these pilots, or new ones, could be expanded due to their relatively small size of 400 students (MEHE, 2012).

An important aspect of the plan is cultivating digital literacies along with integration of technology into curriculum and deepening of content knowledge with competencies based curricula. This is pivotal in the current global, digital age where students need to keep up with required and changing skill sets. Throughout the text, the *centrality of learning* is emphasized, where the vision is that every decision made will focus on improving all students' quality of learning. Areas addressed by the plan required for a holistic approach are:

- Procurement
- Placement and maintenance
- Support for curriculum, content, instruction, and assessment
- Ongoing professional development, formation and support
- Implementation and support
- Evaluation (MEHE, 2012)

As for the national procurement policy for ICT advised to be set up, in summary the focus of goals is to establish clear guidelines for procurement, transparency and fairness for bids, maintenance and support, training and solicitation of feedback from stakeholders. The plan calls for political pressures to be neutralized; this is well placed given the local culture of referrals and possible relation of public figures to privately owned vendor companies. Placement and maintenance refers to introduction of technology into schools and its upkeep. These activities complement technology integration into the curriculum and necessitate professional development to help educators use technologies effectively. Evaluation is a key component to help assess and calibrate technology use in line with learning goals.

Complexities of Classroom ICT Selection and Piloting

Research shows that for effective technology integration, teacher training in tandem with decision-making at the administrative level both play a significant role. With the growing plethora of educational technology products on the market, there is often not enough data to inform decision-makers when procuring technology for school use. Furthermore, purchasing can often be based on referrals; due to this, vendors are not inclined to carry out empirical studies on their products (EIA, 2014). Therefore, evaluating technologies for educational use to yield useful data for integration decision-making is left to academicians. Effective piloting is to be considered in this case.

> 'Piloting' of an ICT project is defined as the implementation of an ICT technology, software, or related project on a small controlled scale to allow for its full impact, benefits and weaknesses to be evaluated before implementation on a regional or nationwide basis. (GeSCI, 2009, p.6)

With the lack of empirical data to inform procurement decision makers, in districts in the USA, research shows a reliance on both referrals and pilot studies conducted on an independent basis within districts that wish to procure technology for classroom use. Interviews with educators from various districts indicate that the pilots conducted are more or less informal, like "tryouts" (EIA, 2014). Furthermore, rigorous pilots tend to present extra work for

teachers. One challenge when trying to implement pilots is attempting to keep the work limited or simple enough such that it does not present a heavy load for teachers. Guidelines for structured pilots that do not appear taxing for teachers to yield empirical data were considered helpful by interviewees in the EIA's study. Overall, the results of pilots may not be reliable, lacking "structured, data-driven approaches with clear and inclusive decision-making processes within pilots" (EIA, 2014, p.14).

Alongside this, lack of empowerment or *inclusive decision-making* is prevalent in centralized systems. The feedback of students and teachers is highlighted as central to the piloting and evaluation process. However, teachers and students are more often than not some of the least involved stakeholders in the process, even when assessing instructional needs (EIA, 2014; UNESCO, 2002). Ministries draw up plans to equip schools with ICT, but ICT's are often considered a solution for a problem that is not clearly defined. Infrastructure and acquisition of technology is often given more importance than content, in some ways putting the cart before the horse: for instance, the purchase of tablets before thoroughly considering the specific learning problems to be solved or even properly considering potential disadvantages. Decisions about infrastructure are often separate from educational needs and made by technology professionals or administrators (UNESCO, 2002). Formal, instructional needs assessments are essential and must be the first step. Often, these are informal, incomplete, or non-existent (EIA, 2014).

Given the complexities of decision-making related to technology procurement for classroom integration, Global e-Schools and Communities initiative (GeSCI), presents a system-wide approach for effective deployment of technology in schools (see Figure 1).

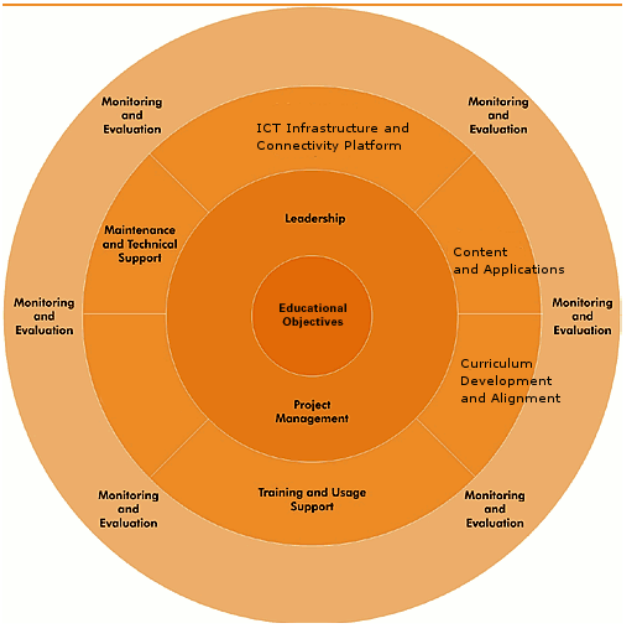

Figure 1. GeSCI system-wide approach.

The parts of this approach form a non-negotiable whole, which must be "comprehensive, demand-driven, efficient and well-coordinated" (GeSCI, 2009, p.5).

Educational objectives are central to any endeavour and so it is with the strategic plan. Therefore, procurement of virtually any sort of technology before determining curricular and learning goals along with learning problems to be solved can end up being ineffective: "It is important to not mistake infrastructure decisions for implementation planning, which may cause the system-wide transition to fall short of student engagement and achievement goals" (ISTE, 2015). Certainly, implementation planning is essential in any process; it grounds technology deployment (ISTE, 2015). In fact, 14 essential conditions to support technology in education are listed by the International Society for Technology in Education (ISTE). These include implementation planning, training, shared vision, evaluation, skilled personnel, curricular alignment, technical support, and empowered leaders. Essential conditions provide the means and support needed for sustainable and effective ICT integration (Roblyer & Doering, 2013; Smaldino &Lowther, 2012). In Figure 1, it is clear that essential conditions form part of the system-wide approach. Similar areas are recognized in the strategic plan as detailed in the previous section of this paper. Essential conditions add multiple layers of complexity to the selection and procurement process as internal factors making them critical for successful, sustainable integration. In support of a system-wide approach, effective piloting and selection of ICT are indispensable for long-term achievement.

Selection of ICT in Local Private Schools

Many private schools in Lebanon integrate technology to support learning activities. To compete in the digital age and global marketplace, integration has become necessary and expected, especially in schools demanding high fees. However, it is safe to say there are numerous challenges and shortcomings. For instance, the need for piloting as well as training and support is recognised in the strategic plan and highlighted in essential conditions and the system-wide approach (ISTE, 2015; Roblyer & Doering, 2013, GeSCI, 2009). However, a study of technology selection at four local private schools by Assaf (2015) indicates piloting is not prevalent on the agenda when it comes to ICT integration. At the administrative level, hardware such as interactive whiteboards was purchased without prior piloting or a clear indication of how it would serve to meet learning challenges or solve well-defined learning problems. Teachers are seldom asked for feedback regarding procurement decisions and in most cases lack sufficient training to contribute and integrate technology meaningfully. Training provided has focused mainly on the technical aspect of using given technologies such as the interactive whiteboard rather than on integration to address learning problems and curricular goals. Therefore, although technology may be provided, its use is limited. When integration of ICT was discussed in interviews, teachers did not have an agreed upon strategy or criteria for selecting applications. Though

the sample of interviewees is limited, it reflects the shortcomings documented in literature on poor technology integration approaches and decision-making. In terms of training, Ali (2003) purported that teachers should be trained to use and integrate technology before any sort of technology is provided in the school. With the cost of technology placement and the need for effective integration of technology, this approach merits consideration.

Discussion and Recommendations

Given the limited integration of technology in Lebanese public schools, it is wise to tread carefully. In general, one problem with centralized approaches is that many ministries and governing bodies have limited experience in broad scale technology deployment and integration. Therefore, rigorous piloting and selection as well as guarantee of essential conditions must serve to support this process if the hope of *improved learning with technolo*gy is to be reached.

Selection, Piloting, and Integration

Complete implementation plans for ICT integration into Lebanon's public schools are to be finalized incrementally. For decision-making to be adequately informed, and to support desirable ICT integration practices, pilots can provide local, empirical data that reveal needs and suitability of technologies. Pilots should also be straightforward enough for teachers to participate in without having to fill in laborious amounts of data or perform overly complex tasks themselves or with students. At the same time, paying adequate attention to feedback from students and teachers who are actually involved in the teaching/learning process is key. Ensuring a well defined, sustainable process to actively seek and use structured feedback and empirical data from the classroom on a larger scale than previously acquired will require adequate training of staff to undertake the pilots. Lack of proper piloting and feedback at various institutional levels (from student to teacher, to administrators and ministries) often reflects centralised decision-making in the education sector whereby decisions are made in an autocratic fashion by an *oligarchy*. For example, before deciding that equipping all schools with interactive whiteboards or students with tablets, pilots would take place at multiple grade levels in different regions and school tiers; student learning experiences and achievement based on learning outcomes would then be evaluated to assess the benefit of this technology. National pilots thus far have been small and focused only on particular grade levels, possibly with contributing factors of lack of trained staff and budget to implement large pilots. Differences in the needs of grade levels and schools should be considered. Individual schools or areas may exhibit different needs in terms of access to resources and ICT infrastructure as well as teacher training. These would need to be studied for integration to be effective and sustainable. In terms of classroom learning, pilots should be conducted in answer to a well-defined learning problem existing in Lebanese schools rather than be rooted in an idealistic or perhaps general view of what ICT integration *should* look like. Re-exploration and definition of learning problems would be needed with implementation of the new curriculum. Furthermore, for pilots to be carried out effectively teachers would need to be well trained, and adequate funding

would have to be allotted. These factors also possibly contribute to the previously small size of pilots.

Essential Conditions and the Local Education Landscape

Successful ICT integration is closely tied to essential conditions. The *essential conditions* in developing and post-conflict countries such as Lebanon may go beyond the 14 defined by ISTE but may be considered in what ISTE defines as supportive external context. These cannot be ignored, when looking at return on investment (ROI). One must ask whether there are other essential areas where funding and effort are required to create learning spaces conducive to 21st century learning. For instance, appropriate training of teachers before technology is introduced into schools should be considered to maximize efficacy of resources. Without a guarantee of essential conditions including but not limited to training, incentives, resources, shared vision, and supportive external conditions, ICT integration initiatives, including pilots, will fall short. Given the education landscape in Lebanon, external conditions and incentives are challenging as already mentioned. For instance, teachers in public schools have held multiple strikes demanding increases in remuneration; the latest strike took place on Thursday, April 23, 2015. Public school teachers along with some private school teachers took to the streets demanding that Parliament address the long-awaited wage hike ("Teachers go on Strike," Apr 24, 2015; Naharnet, 2015). Motivation and incentive to integrate technology and learn new skills is critical, as teachers tend to show reluctance towards updating their skills (UNESCO, 2002). Public schools in this sense are at a disadvantage, as private schools are often able to pay higher salaries and provide additional remunerations. Therefore, these private schools have the potential to attract the most highly qualified of teachers.

Not only is teacher remuneration problematic, but also general public school funding is an issue. Many public schools are barren and ill equipped. To add, the influx of Syrian refugees amounting to one quarter of the population and the highest refugee per capita in the world (UNHCR, 2014), with many children needing to join public schools, has taxed budgets and made conditions in all public services even more challenging than before. According to UNHCR (2014), half of the Syrian refugees are children, with school-aged children at over 400,000. Lebanese public schools have accepted around 100,000 Syrian students. After Pestalozzi's example, before teaching hungry children, we need to feed them. Although this may be an extreme example, its moral still applies. Likewise, expectations of technology should not be unreasonable, and are to be considered with external, environmental factors, such as the political situation (Hennessy, Ruthven, and Brindley as cited in Mndzebele, 2013) and capacity of national resources. Thus, alongside discussing technology integration, basic needs and comforts should be provided for students and teachers. This is by no means to say that ICT is extraneous, but rather that timing and support for education as a whole is also of the essence and that for long-term, sustainable achievement and successful implementation of any initiative including ICT, the most basic of conditions must be satisfied.

Finally, challenges exist with respect to the national curriculum. The current curriculum was implemented in 1997, lacks any integration of technology and focuses on knowledge-based learning encouraging direct teaching approaches. The complete and much-needed curriculum review is currently underway and ICT integration will inevitably need to be connected to this process.

Impressions of Private School Practices

Related issues at local private schools can also bring to light undesirable practices in ICT selection and integration. Based on the four schools mentioned in the literature, not much attention is paid to pilots or evaluation of technologies such as software applications for classroom use. Furthermore, training often focuses on technicalities of using various technologies rather than integrating technology to enhance and improve learning experiences. Technology is continuously developing, and a versatile skill set with ongoing professional development, noted in the strategic plan, is needed for long-term achievement. With their professional development, teachers should be viewed as both stakeholders in the process and as one of the most valuable inputs of information for decision-making. However, decision-making in private schools appears centralized with little teacher and student involvement. Student feedback, which is often neglected, should be highlighted in importance for a democratic, participative integration in line with 21st century ideals, rather than a top-down, autocratic one. This problem is not only present locally, but is found widely in the literature on ICT selection and integration. Although there are local private schools that are ahead of others in ICT integration, the lack of national standards for ICT has most likely made it challenging for private schools to integrate technology, having little guidance and little opportunity for training in the field. Alongside this, learning problems must be well defined so ICT can be integrated more effectively.

Recommendations

Given the local context and dire circumstances affecting the education landscape in Lebanon, careful piloting for selection and procurement of ICT in line with well-defined learning goals is ever more critical.

Therefore, we may add basic, essential elements or conditions for consideration to the holistic approach discussed in this text to reinforce their prevalence:

1. Guaranteed supportive learning spaces conducive to 21st century learning (with and without technology).
2. Guaranteed teacher incentives for excellence in teaching to promote improved learning experiences with ICT integration.

Given that resources and teacher professional development are among the essential conditions for ICT integration, they need to be guaranteed. As the curriculum will be changing, definition of learning goals and clarification of learning problems through empirical evidence along with guaranteed, appropriate professional development will be pivotal to the effective integration of ICT. Data on classroom-level needs and educational objectives should lead the way. The above two points can contribute to readiness that is

mentioned numerous times in the strategic plan having various facets including willingness of teachers, school contexts, as well as a budget for ICT resources. Part of the recommended action plan described also includes the MEHE identifying necessary teacher incentives. In considering potential incentives, merit-based pay could be studied to encourage poorly remunerated teachers to participate in rigorous pilots, professional development activities, and ICT integration. Proper formation in these areas is essential for limited funding to be effectively allocated. It must be noted that existing political pressures and nepotism, a subject beyond the scope of this paper, would have to be adequately neutralized to achieve positive ROI. Furthermore, evaluation and accountability systems that are discussed in the plan, may prove to be frustrating without other incentives given the current landscape.

Conclusion

As the new national curriculum is still subject to development and implementation, and the current curriculum is sorely outdated, decisions at this point are critical. Researchers and technology vendors recommend procuring technology based on local instructional needs at the classroom level, not solely on an idealistic view of what learning is. An inclusive, non-autocratic, data-driven process with ample feedback from pilots bearing in mind grade levels and learning needs is imperative for decision-making. This being said, basic essential conditions play a pivotal role. For long-term achievement in ICT integration, incentives for teacher participation and excellence such as merit-based pay as well as fully supportive learning spaces must be considered in tandem with strained budget. In Lebanon's unique political situation, an external supportive context coupled with further consideration of the education landscape is fundamental to the success of initiatives and must be in place for appropriate ICT selection decisions in Lebanese public schools.

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