11.9

POLICY FROM A GLOBAL PERSPECTIVE

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Introduction

In the previous chapters of this section, an overview has been given about major policies introducing and implementing IT in different regions of the world, mainly focusing on the school sector. The only region not included is the former Soviet Union and parts of Eastern Europe.

In the introductory chapter by Moonen (2008) and the next chapter about comparing policies by Kozma (2008), a general framework has been developed to describe policies developed in countries around the world. Eventually a specific matrix (see Moonen, 2008) was chosen to serve as organizational support to position different clusters of countries with respect to the introduction and implementation of IT in the school sector.

In this concluding chapter, the matrices developed for the regions of the world by the different authors of the regional chapters in this section are combined to get a global perspective about the use of IT in the school sector around the world. In this matrix, clusters of countries per region are categorized. Moreover, remarks made in the preceding chapters in addition to some personal observations are converged toward a conclusion about the success or failure of the policies developed, and for suggesting a path toward the future.

It is obvious that the level of introducing and implementing IT in schools depends on the level of economic development in and within the different regions. In the developed countries, mainly in Europe, North America, and in parts of the Asia–Pacific region, introducing and implementing IT has reached a point where the concept of IT-supported learning in education has been replaced by the concept of e-learning or by a comparable concept such as online learning or virtual learning environments (VLE). This change in terminology is not only a change in words but underlines implicitly the change from a focus on implementing hardware and software infrastructure toward a focus on communication and incorporating IT in the

teaching–learning process. The latter also implies that the explicit policy focus on IT and education is fading. Using IT in education is becoming more implicit and incorporated in a broader policy context, especially around needed qualifications and competencies of citizens in a knowledge society (Anderson, 2008; UNESCO, 2005). This is most explicitly visible in the European region (see Delrio and Dondi, 2008).

It is also remarkable that in the different chapters of the Section, not much emphasis is given to explicit results, effects, or impact of the policies described. This is not a lack of focus by the authors, but because of a lack of convincing evaluation and assessment results. This is confirmed by a recent study by Bruns and Ungerleider (2003) as they conclude in their research of over 800 studies that "Simply put, we don't know enough about the impact of the use of ICTs in elementary or secondary schooling" (p. 47), further implying that there are too few studies of sufficient rigorous design to permit informed policy choices.

It remains, therefore, a question if this shift from explicit to implicit policy with respect to IT and education in the developed countries is being made as a reaction to the lack of satisfying results after many years of explicit IT policies to improve the teaching–learning process. This aspect is particularly highlighted in the description of the North American case, especially in the United States, where Patrick (2008) comes to the conclusion that the inclusion of IT in education will only be perceived as a success when it transforms the educational system, allowing education to deal appropriately with the needs of the twenty-first century.

The situation is much different in the other, less-developed countries around the world. Also because of economic circumstances, the drive to use IT in education has often just started. In many countries, this means a clear focus on implementing hardware and software infrastructure and dealing with teacher training issues. Moreover, also in those cases there is a lack of convincing evidence about the impact of those policies on the daily practice in schools.

Combined Overview

In Table 1, the results appearing in the matrices in the earlier chapters of this Section are combined. To improve the overview aspect of the results, the following symbols are used: each region of the world is symbolized by two letters; the first letter indicates the region (A = North America, E = Europe, P = Asia–Pacific, S = Sub-Saharan Africa, M = Middle East and North Africa; summary data were not reported in the regional chapter for the Latin America and Caribbean regions); the second letter refers to the evolutionary status of countries in a region with respect to implementing IT in education (L = Lower, A = Average, H = High). When combining the results of the matrices in the different chapters, the following results appear.

This overview indicates that only in the North American region and some countries in the Asia–Pacific region, there are existing policies explicitly striving to a transformation of the educational system. Given the comments in the previous paragraph, the question remains if a transformation effort has already become a success, or if the wish for a transformational effort is being implicitly supported and advanced. Most

Table 1 Synthesis of regional policies, by dimension and level

	No policy yet	Emerging policy	Applying policy	Infusing policy	Transforming education by policy	Definition
National/subnational policy document for IT in education	SL	PL, SL	EL, PL, PA, SA, MA	EA, EH, PA, PH, SH, MH	AH, PH	A policy document that provides for the mandate, goals, objectives, strategies and activities, organizational structure by the government (Ministry of Education) regarding IT use in education
Master plan with a time frame		PL	EL, PL, PA, MA	EA, EH, AH, PA, PH, SH, MH		A blueprint that transforms the policy into action as scheduled including who, what, where, when, how to achieve objectives
Budget plan and appropriations		EL, PL, PA	EA, PA	EH, AH, PH, SH		Budget allocations as included in the national and subnational or local budgets. It also looks into other sources of funds apart from government funding
Organizational structure responsible for implementing the master plan		EL, PL, PA, SL	EA, PA, SA, MA	EH, PH, SH, MH		Refers to organizational structure with item positions, job descriptions, and salary scale as either department, unit, or sector in the ministry with the primary function of implementing policy of IT for education based upon master plan. This structure could be either permanent, sub-contracted agency, or a committee

Table 1 (continued)

	No policy yet	Emerging policy	Applying policy	Infusing policy	Transforming education by policy	Definition
Monitoring and evaluation scheme or mechanism		EL, PL, PA	EA, PA	EH, AU, AM, PH		Detailed plan to monitor and evaluate progress of implementation of activities based on master plan as evidenced by monitoring and evaluation schedules, instruments, plan of data gathering and analysis of monitoring and evaluation data and presence of reports
Statement of inclusion of women, minorities, and those with special needs in IT policy		PL	EL, PA, PH, SA	EA, EH, AU, SH		A special statement in the IT policy on education for inclusion of these special groups
Manner by which the country and schools implement IT for education if no IT policy exists		PL, SL	EL, PL	EA, EH		Often, countries are implementing IT activities or projects and using ITs in schools even if there is no national IT educational policy
Definition	No policy	Governments are thinking about it or planning it	Small scale (more or less ad hoc, or on a small project basis) implementation	Large scale (in a planned systematic way) implementation	Implementation is transforming fundamental structure of education	

The first letter stands for Region (A, North America; E, Europe; P, Asia-Pacific; S, Sub-Saharan Africa; M, Middle East and North Africa; summary data were not reported in the regional chapter for the Latin America and Caribbean region); the second letter refers to the evolutionary status of countries in a region with respect to implementing IT in education (L, Lower; A, Average; H, High)

probably, the latter is the case, which can also be experienced in the European region where explicit policy about IT in education fades as the overall embedding of IT in society occurs.

As is indicated in the matrix, most countries of the world are actively pursuing policies in support of the use of IT in education. A logical sequence of events is followed: After initiating a policy, the next step is to provide hardware and software, or more generally, technical IT and communication infrastructure. When the infusing stage arrives, the policy has to deal more explicitly with pedagogical factors. Issues become much more complex and at the same time, much more intangible in terms of measuring their impact. Not surprisingly, countries that are "high performing" in the IT-implementation sequence are often experiencing an implementation "dip," as it is known in the pedagogical literature (Fullan, 2001). Trying to get out of the dip often leads to looking for new ideas, or in the case of IT implementation, looking for new technological functionalities. Combinations of such arguments then lead to the appearance of e-learning and/or its companion terminologies.

Another argument explaining the current situation is the lack of some of the essential ingredients necessary for a transformational change of the educational system. Reference is then made to the need for a policy that incorporates all of the aspects mentioned in the vertical dimensions of the matrix, or in more detail, the activities, described by Kozma (2008) as operational components of IT policies, and by Tilya (2008). Mentioned are activities such as infrastructure development, teacher training, technical support, pedagogical and curricular change, and content development. However, such comprehensive approaches have been applied in the past, not bringing the success that was expected either. A typical example is the IT-in-education policy developed in The Netherlands. In The Netherlands, a comprehensive policy plan called the Informatics Stimulation Plan (INSP) (Plomp et al., 1987) was introduced and implemented over a period of many years starting in the 1980s. The plan was supported by a very generous financial scheme. In the plan, five clusters of activities (infrastructure development, school sector-specific activities, in-service and preservice teacher training, and research) were created. After its expiration after five years of operation, the INSP was followed up in the 1990s and in the beginning of the new century by new schemes emphasizing the integration of IT into the school curriculum, teaching, and learning. After 20 years of explicit and comprehensive IT stimulation in the school sector in The Netherlands, a research report (Kennisnet ICT op school, 2006) about its impact indicates that much attention is still very much focused on technical aspects such as acquiring hardware, educational software, and content. The report concludes that there is a need for vision and competent teachers who are sufficiently equipped to use IT facilities in a pedagogical responsible way.

Although policy-supported schemes in many European countries had considerable impact on how schools' technological infrastructure changed over the years, the transformation effect on the pedagogy, and particularly the teaching–learning process within the boundaries of the school system, has not changed dramatically, or only on a small scale creating even then much discussion. Again, a typical example is from The Netherlands. In The Netherlands, much discussion is going on around what is called a "het nieuwe leren" ("the new learning"). The new learning approach

is based upon stimulating the self-directed activities of pupils in combination with a more specific emphasis on competencies. Often this new learning occurs within a project-based approach supported by IT (and in particular the Internet and its search capabilities). The new learning approach is certainly a road toward transformation of the current educational system. This new approach started years ago in The Netherlands in the upper part of secondary education and was named "het studiehuis" ("the study house"). However, after years of experimenting, many critical comments were raised (particularly from students), resulting in a slowing down and therefore reduction of the transformational impact of the study house (Gerrits and du Pré, 2005; Veugelers, 2004). Later a similar new learning was stimulated on a much broader scale in the preparatory professional education sector (MBO). However, to the surprise of many, much opposition was raised by a broad combination of pupils, their parents, and parts of the teaching profession. The protest was so strong, and became even so political, that the Dutch State secretary of Education had to officially postpone the introduction of the new learning approach in this sector until there was evidence that through the new approach pupils will still attain the goals of the educational system (Doorduyn, 2007). Thus, although it can be argued that introducing and implementing IT in schools will only become a success if this leads to a transformation of the educational system, there is at the same time some evidence that a transformation of the educational system is very difficult, as was proven in the past with reference to many pedagogical reform movements. And there is also the argument explained in the first chapter of this Section: a policy can only become successful if it applies to what is called a "core" technology of teaching and learning in a given context (Collis and Moonen, 2001). Regardless of the overwhelming availability of IT technology in society, IT has not yet become "the" core technology in education. IT remains a wonderful and exciting "complementary" technology in the educational system. Therefore, a policy to stimulate transformational changes in education based on the implementation of IT has, as yet, no chance of succeeding.

A New Policy?

Given the long period of time, many European countries have gained experience with the planning and implementation of IT policies in education and the rather disappointing explicit results with respect to the pedagogical renewal of the educational system as a whole; maybe, this experience can be a reference point for other regions about what to expect, and what road to follow in developing their own policies.

The previous comments mention the lack of dramatic pedagogical transformational changes "within" the existing school systems. On the other hand, it is amazing how youngsters, all over the world, make use of technology to do what they like to do and also learn. Typical examples in the developed countries are provided by what is called the Web 2.0 tools and processes, with specific applications such as MySpace or YouTube. No pedagogical or instructional approach seems to be necessary for the young people to get ready for intensive use of these applications. No formal learning activities are necessary and are not available. Informal learning supported by technology

and peer contact is doing the job. Only the widespread and user-friendly availability of IT is sufficient. No formal policy has been developed to stimulate these new attitudes. It is the availability of the technological infrastructure, its user-friendliness, its cheap price, and its philosophy of user control and contribution that is making it happen. These comments mainly refer to the pupils. Although many teachers are aware of these developments, there is still a serious lack of professional development in the teaching profession to facilitate these user-centered processes. Also within the teaching profession, informal learning through personal teacher networks instead of formal teacher training courses should become dominant (Inspectie van het Onderwijs, 2006; Pelgrum and Law, 2004). Also Valcke et al. (2007) conclude that "ICT policies are not well developed and reveal a partial match between policies, needs, and the actual in-service training."

Therefore for a sensible policy to improve the impact of IT on education, three main policy lines could be developed. First, basic knowledge and skills about IT should become available in basic education. Depending on the level of development of a country, teaching about it or supporting its use in daily school practice should be stimulated. Second, policy should support the creation and facilitation of informal teacher networks. Teachers (young and old) should be or become equals in attitudes and skills toward IT with their pupils. Third, policy should facilitate the use of IT by the new generation of pupils by providing Internet access as much as possible, not only in schools but in many different kinds of public institutions such as libraries, sport facilities, and homes.

Such a policy can only succeed if the necessary technological infrastructure is available and affordable. This is certainly a problem for less-developed countries that want to introduce IT in the educational system. The One Laptop per Child Project (OLPC) that aims to provide very cheap laptop computers to less-developed countries could be a step in the right direction (http://www.laptop.org). Also Microsoft has announced (International Herald Tribune, April 20, 2007) that it will sell a relevant Microsoft software bundle including Windows XP and Office Home and Office 2007 in developing countries for US $3. Policy makers in developing countries, therefore, should continue to focus on providing a sufficient technological infrastructure. They should be less concerned about the pedagogical/instructional and transformation approach intrinsically and rationally connected with the introduction of IT in education until their technical access problems are reasonably solved. The current experiences in the developed countries with transformational movements indicate very serious, almost existential problems arising from explicit goals for transformation through pedagogical change and the use of IT. It seems to be wise for policy makers to wait for a new balance to occur between informal and formal learning, based upon continuing technological developments, before expecting a transformation in learning that makes use of the affordances of IT to occur.

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