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## Informatization as a Measure for Improvement of the Education Policy – Case Study: Electronic Content Portal

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**Abstract.** The intensive development of information technology in the new millennium has redesigned the functioning views, rules and principles of educational organizations. They have been set to the challenge of how and in which way information technologies influence the improvement of the effectiveness of the educational surrounding. As a result of this process, the overall improvement of the education system, analyzed as a whole, as well as its compliance with modern trends and needs, inevitably leads to the necessity of improving the process by applying information technologies. The extent by which a geographical area, an economy or a society is becoming information-base, increase in size of its information labor force, is referred to as informatization, whereas the principles and government policy-making in educational sphere, as well as the collection of laws and rules that govern the operation of education systems is an education policy. In this paper, the need of creation of educational policy by using information technology is examined, with particular reference to one of the measures for improvement of the education policy, such as an online resource ([www.skool.mk](http://www.skool.mk)), as a case study, on the bases of which appropriate conclusions and recommendations are drawn.

**Keywords:** Information technology, education policy, informatization, Software as a Service (SaaS), electronic content portal, Republic of Macedonia.

### 1. Introduction

Informatization refers to the extent by which a geographical area, an economy or a society is becoming information-base, increase in size of its information labor force, whereas education policy are the principles and government policy-making in educational sphere, as well as the collection of laws and rules that govern the operation of education systems [1], [2]. The creation of public policy is an interdisciplinary activity that incorporates the transformation of political decisions in real solutions that are implemented inside the society. One of the key stages in the development of every new policy or adjusting the existing one is the process of adaptation and transformation of the legal framework, the legislation on which the policy is implemented. Bringing

new legislation, or analyzing an existing one, should have one single starting point: effective address to the problems of a certain area for both the directly involved, but also and for society as a whole. To achieve this goal, it is necessary to perform a comprehensive and detailed analysis, including internal and external circumstances of the problem being treated, to find regulatory or non-regulatory solutions, to make analysis of the involved parties and most importantly, to determine the most favorable decision in terms of the economic justification for the decision.

In the remainder of this paper, the need of creation of educational policy by using information technology will be examined, with particular reference to one of the measures of improving education policy, such as an online resource – [www.skool.mk](http://www.skool.mk), as a case study, on the bases of which appropriate conclusions and recommendations will be drawn.

## **2. Related work on the creation of education policy by using ICT**

One of the priorities of modern living is putting information technology for improving the process of monitoring students' achievements as well as their general adaptation to novelties caused by information-technological reflections. The usage of ICT in education should be stressed as a need for it to be seen as functional modern tool rather than as an imposed technological trend.

The new changes in the sphere of information highlighted and emphasized the need to create a policy that strives for efficient education and realistically measurable results and more transparent work of those involved in education, that led to the step of policy-making and defining of electronic society. The information society is the result of changes in the use of new information and communication technologies, in order to overcome the shortcomings or problems.

This policy underlines the importance of information technology to enhance the level of effective and quality teaching in the educational process, through full access to educational digital content on the global Internet network. This policy aims to increase the efficiency of the educational process, to maximize the usage of computers and Internet, as well as to improve the IT skills of the parties involved in the educational process.

According to [3], the overall objective of the *Attracting, Developing and Retaining Effective Teachers Activity* is to provide policy makers with information and analysis to assist them in formulating and implementing teacher policies leading to quality teaching and learning at the school level.

By offering a valuable cross-country perspective, the report based on an OECD study of school leadership policies and practices around the world [4] identifies four policy levers and a range of policy options to help governments improve school leadership now and build sustainable leadership for the future.

Similarly, the OECD "Schooling for Tomorrow" scenarios [5] combine different elements – trends, plausible inter-relationships between clusters of variables, and guiding policy ideas. They are thus neither purely empirical (predictions) nor purely normative (visions). However, to arrive at a more accurate picture of views about educational futures, many more would need to be surveyed and drawn from a wider cross-section of relevant stakeholders.

### 3. Case study: Electronic Content Portal

Software as a service (SaaS) is a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted, and is typically accessed by users using a thin client via a web browser. SaaS has become a common delivery model for many business applications, including office and messaging software, DBMS software, management software, development software, collaboration, customer relationship management (CRM), management information systems (MIS), enterprise resource planning (ERP), human resource management (HRM), content management (CM), service desk management, etc. [6], [7].

In a SaaS manner, the Ministry of Information Society and Administration (MISA) of the Republic of Macedonia started implementing a new IT configuration, the use of educational software and application of ICT in teaching. The usage of digital content enables more successful implementation of educational programs and curricula and makes it clearer. In this manner the aim is completed, i.e. the use of ICT in teaching and its convergence to the modern and international educational systems. One of the pilot projects of the Government of the Republic of Macedonia and the Ministry of Information Society and Administration was the [www.skool.mk](http://www.skool.mk) portal [8] to see how much the web application will be visited and how much it is being used.

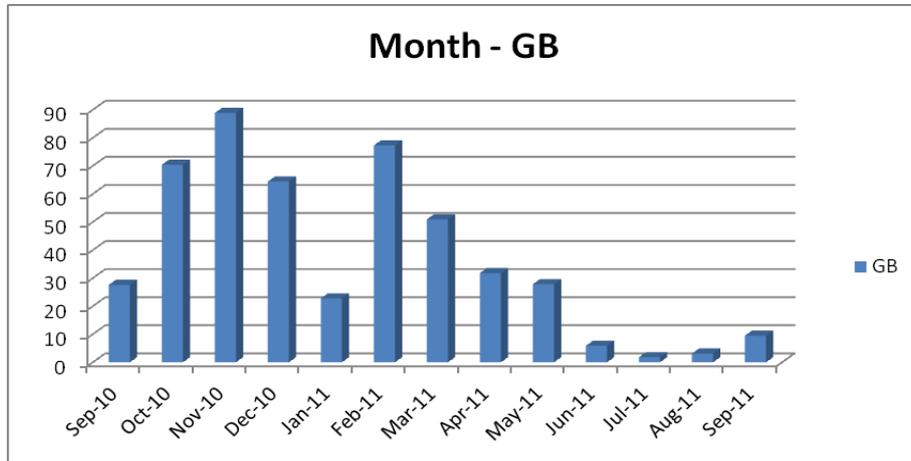
Skool.mk is an online resource prepared by MISA and the “Bureau for Development of Education” and a part of the network [skool.com](http://skool.com). The web-site provides tools and content in the fields of mathematics, physics, chemistry and biology. The site contains interactive audio and video materials that can be applied in teaching. Activities offered include these subjects in primary and secondary education in relation to the content curriculum in Macedonia under that instruction in these subjects. The website offers concise notes for users in the field of mathematics and natural sciences.

All the e-content during the month of July 2015 were set and published on the portal and can be accessed online and used in teaching [9]. In addition statistics are presented regarding the usage of the education content portal (Figs. 1-3). The presented data provide diagnostic picture of the conditions that represent our educational system when considering the introduction and use of modern educational technology and the need of introduction and innovation of the education system with new educational ICT.

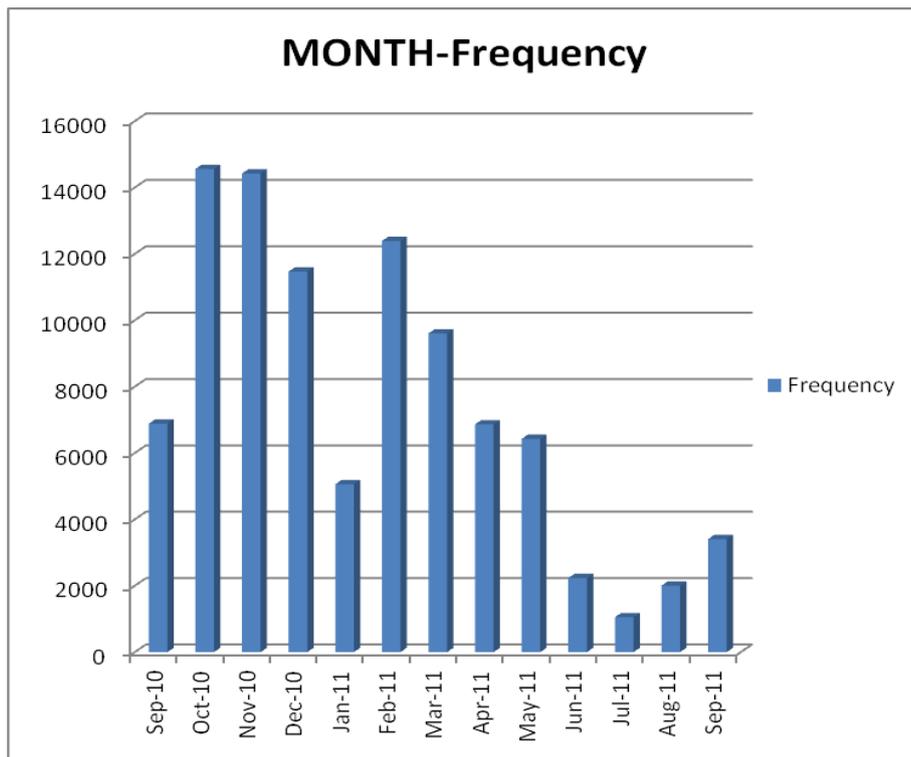
Regarding the temporal dimension, Fig. 1 and Fig. 2 show that both the *data volume* and the *number of visits* of the electronic content portal is significantly higher during the first and the second half of the academic year, which clearly emphasizes the need of the application of information technologies and underlines the importance level of it as an applicable tool.

On the other hand, Fig. 3 highlights the bigger need of electronic content in the field of natural sciences – digital aid was useful, it made the work easier, it was clear and simple for pupils, tasks were presented practically, therefore they were meaningful in practical sense. Theoretical information was illustrated by visual examples, and tasks were differentiated, therefore all the pupils involved themselves into activities.

From the above submitted, it can be noted that e-learning systems must adapt to the changing lifestyles – this tool highlights and emphasizes the importance of the application of information technologies, acquisition of new skills for universal and continuous approach in order to improve skills needed for participation in a society where knowledge is of great importance.



**Fig. 1.** Statistics of visits at skool.mk by months (data volume)



**Fig. 2.** Statistics of visits at skool.mk by months (frequency)

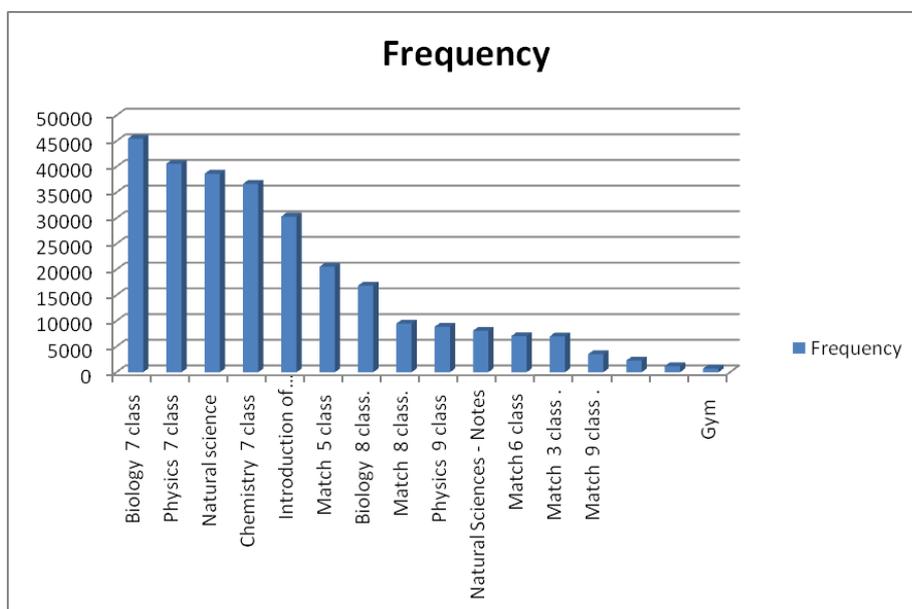


Fig. 3. Statistics of visits at skool.mk by subjects

#### 4. Conclusions and recommendations

The world is being moved by the paradigm: from a learning society into a society of knowledge. It means a society in which education plays a key role. For this purpose and the application of Information technologies are a major engine towards reforming education, as metaphorically prejudiced the famous philosopher Edgar Morin “a head that thinks, not one that remembers”.

One can conclude that the use of information technology positively affects the level of awareness, the faster access to all necessary information on curricula, as well as in saving time on searching the required information. The usage, the upgrading of usage implementation of such tools, visibly eases the work in the education system. The application of digital contents enables more successful implementation of educational programs and curricula, as well as provides an opportunity for it to be clearer, more interesting and clearer for perceiving, thus students to be more interested in the adoption of new contents and to form knowledge more efficiently.

This tendency of using and application of information technologies will contribute to increased efficiency and effectiveness in education. In this manner, the purpose of the application of ICT in teaching and bringing it to closer to the modern European and world educational systems, is accomplished, as well.

How can we know what our position is in the process of global informatization? What development strategies should be taken? To solve the above problem, we propose a nationally unified *education informatization index* system that conforms to the reality of our country and communicates with the international community.

## References

1. Fischer, F., Miller, G. J. and Sidney, M. S., "Handbook of public policy analysis: theory, politics, and methods", *Implementing Public Policy*, Taylor & Francis Group, LLC (2007)
2. Fridman, A. L. and Miles, S., "Stakeholders Theory and Practice", Oxford university press (2006)
3. Mulford, B., "School Leaders: Changing Roles And Impact On Teacher And School Effectiveness", A paper commissioned by the Education and Training Policy Division, OECD, for the Activity Attracting, Developing and Retaining Effective Teachers (2003)
4. Pont, B., Nusche, D. and Moorman, H., "Improving School Leadership", Volume 1: Policy and Practice, OECD, DIRECTORATE FOR EDUCATION, Education and Training Policy Division, [www.oecd.org/dataoecd/6/52/40545479.pdf](http://www.oecd.org/dataoecd/6/52/40545479.pdf) (2011)
5. OECD: What schools for the future? Paris: OECD (2001)
6. Wikipedia, "Software as a Service", Retrieved February 17, 2012, from Web site [http://en.wikipedia.org/wiki/Software\\_as\\_a\\_service#cite\\_note-0](http://en.wikipedia.org/wiki/Software_as_a_service#cite_note-0)
7. Bunch, C., Navraj, C. and Chandra, K., "AppScale: Open-Source Platform-As-A-Service", UCSB Technical Report #2011-01, Computer Science Department, University of California, Santa Barbara (2011)
8. <http://www.skooool.mk>, Ministry of Information Society and Administration of the Republic of Macedonia; last visited on May 22, 2016
9. <http://www.stat.gov.mk/>, State Statistical Office of the Republic of Macedonia; last visited on May 22, 2016