

The ALECSO Smart Learning Framework

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Abstract. The review of existing literature, surveys and studies on the status of smart learning and ICT use in education in Arab countries uncovered disparate levels of readiness and preparedness, embracing both strategic and implementation sides. In that regard, a set of key elements meeting the demands of smart learning in the Arab region need to be defined, namely: policy development, raising awareness and capacity building, technological infrastructure (mobile technology, cloud computing, and smart classroom infrastructure) and open learning. These key elements encompass the basis of the proposed ALECSO Smart Learning Framework. This paper gives an overview of that framework and presents its related projects and activities towards supporting and developing smart learning in Arab countries.

Keywords: ICT in Education, Open Learning, Mobile Technologies, Cloud Computing, Mobile Apps, Smart Learning, OERs, MOOCs

1 INTRODUCTION

The Arab League Educational, Cultural and Scientific Organization (ALECSO) is a specialized organization working within the Arab League, and has a membership of 22 Arab countries. Premised on the values of tolerance, moderation, respect for others and cultural diversity, ALECSO organization coordinate several projects and activities in the Arab region in order to promote education, culture and science. Being involved in the international movement to support and develop education [1], the ALECSO organization endeavors, through the projects that it leads in the Arab region, to improve education and make it more thoughtful, engaged, open, accessible and smarter. According to ALECSO vision and plan for the development of education in the Arab region, the effective use of Information and Communication Technologies (ICT) in education is considered as a primarily avenue allowing to reach not only the objectives of enhancing education and its quality, but also to reach the Sustainable Development Goals SDGs in the long run. There is no doubt that, for a long time ago, education has been changing following the rapid growth of ICT and the tremendous advancements in technologies. This

rapid evolution makes actually expectations of enhancements in education more pressing. Accordingly, several new learning terms, and notions, and concepts have appeared and used in different contexts, namely, e-learning, online learning, blended learning, mobile learning, pervasive and ubiquitous learning, social learning, flipped classroom, open learning, open educational resources, open licensing, MOOCs, SPOCs, etc. From this perspective, lots of new opportunities in learning context are provided thanks to technologies' advancements, which makes learning process smarter, with further possibilities of individualization, adaptivity, effectiveness, efficiency, engagement, flexibility, thoughtfulness and accessibility [2] [3] [4] [5]. In fact, in the last recent years, the emerging concept of smart learning, aiming initially to make learning more learner-centric, effective, individualized and tailored [6], becomes the new umbrella under which all the aspects related to the effective use of ICT to support smart learning can be placed, including policies and strategies, raising awareness, capacity building, IT infrastructure, educational content, learning tools and environments, etc.[7][8].

Based on the analysis of several surveys and studies on the status of ICT and its use in education in Arab countries, and being involved in a regional and international synergy aiming to enhance education harnessing educational technologies [9], the ALECSO ICT Department, has proposed an entire framework for smart learning empowerment. This framework is based primarily on three key dimensions, namely, open learning, mobile technology, and cloud computing. Each of this highly topical dimension embraces a number of projects. Actually, this framework and all related projects and activities meet very well the mainspring of the organization and its current guidelines since ALECSO is indeed leading the implementation of a "Plan for the Development of Education in the Arab Countries"[1]. The overall goal of this plan is to develop the Arab educational system, mainly through empowering the effective use of ICT in education. This paper gives an overview of the ongoing ALECSO Smart Learning projects, and a profound description of its implementations and related activities. The paper is arranged in the following way: In section 2, we give a quick overview of ICT use in education and smart learning status in the Arab world. In section 3, we describe the ALECSO Smart learning framework, and all underlying projects and activities. Finally, a conclusion is presented.

2 Status of ICT in Education and Smart Learning Readiness in Arab Countries

The review of various literature on the status of ICT and its use in education in Arab countries uncovered disparate levels of readiness and preparedness among various countries. These differences embrace both strategic and implementation aspects. It is also worth noting that existing initiatives in the Arab region are mostly governmental initiatives, sometimes involving partners from the private sector and

in some cases non-governmental organizations. Furthermore, a survey was conducted in collaboration between ALECSO and (International Telecommunication Union) ITU, Arab Regional Office, in November 2014, and addressed to both Ministries of ICT and Ministries of Education in the Arab region. This questionnaire survey aims to assess the status of Smart Learning in the Arab countries as a first step towards a new Regional comprehensive Initiative on Smart Learning. This initiative should include all the aspects related to the effective use of ICT in Education, especially harnessing new technologies (e.g. mobile, cloud computing, etc.) to improve access to education and to make the learning process more open, personalized, flexible, thoughtful and engaged. The survey contained questions related to the current state of ICT use in learning and teaching, smart learning strategies, existence of various related policies and the future roadmap, and details of any learner-centered initiatives. In summary, it was reported that there are some strategies already in place in many countries promoting online lessons and assessment in schools, web-based tools and platforms for enhancing educational experience. There are several areas where efforts are currently underway, which would help countries move forward in the realm of smart learning. Authoring tools, digital content development, content repositories, evaluation tools, content quality, etc. are areas with still ongoing efforts. More advance web-based tools for improving classroom education and school administration represent also current priority for some countries. There seems to be a greater recognition towards involving various stakeholders in education process, including parents. While informal learning is not a priority, access to digital content outside of the classroom within the context of formal education is also on the radar. The Survey also revealed emphasis on newer technologies and methodologies, such as Big Data and cloud computing. Several countries also reported national level smart learning pilot projects. However, as seen above, and based on literature, these are isolated initiatives that have not yet materialized into large implementations, or partly implemented but not properly used so that they do not come really to fruition. In the same context, ALECSO, in collaboration with ITU Arab regional office, have conducted a specific study entitled “Guidelines for formulating national strategies on smart learning in Arab countries” [10]. This study aims to provide a holistic view of how various Arab countries can approach towards formulating their national strategies for smart learning, mindful of the aforementioned dimensions, and taking into account existing differences in the preparedness at both national policy and implementation level. A draft of this study was presented in the first ALECSO-ITU Forum on Smart learning held in Dubai in December 2015. In short, based on the analysis of survey findings, the outputs of the study, and the review of literature, a set of key elements meeting the demands of smart learning in the Arab region can be identified, namely : policy development, raising awareness and capacity building, technological infrastructure (mobile access, cloud computing, and smart classroom infrastructure) and open learning. These key elements compose in fact the basis of the proposed ALECSO smart learning Framework.

3 ALECSO Smart Learning Framework

Based on the recommendations issued from the analysis of the ALECSO survey and studies on the status of the ICTs' use in education in Arab countries, and being already involved in a regional and international synergy aiming to enhance education harnessing new technologies, appropriate tools and open educational resources, ALECSO, via its ICT Department, has proposed an entire framework for smart learning empowerment. This framework is based primarily on three dimensions, namely, mobile technology, cloud computing, and open learning. Each of this highly topical dimension embraces a number of projects that we intend to describe briefly in what follows. All of these projects encompass commonly three key milestones: Policies, awareness and capacity building, and technical infrastructure.

3.1 ALECSO Mobile Initiative

In spite of an increasing techie Arab young population, highly interested and even addicted to mobile devices and smartphones, the number of Arabic language based mobile applications developed so far is still few, especially educational applications and serious games. This fact could be explained based on the following:

- Lack of relevant regional initiatives and policies to promote Mobile Technology and mobile learning and to develop the 21st skills, especially for Arab young developers;
- Difficulties to access and reach well-known app stores from Arab countries ;
- Few commercially-successful Arab Mobile markets ;
- Inadequacy of curricula in schools;

Endeavoring to address some of these drawbacks, ALECSO organization has proposed a comprehensive and strategic initiative (ALECSO Apps) aiming to provide the necessary technological and institutional environment for the promotion of an emerging digital creative Arab Mobile industry, related to the fields of education, culture, science and serious games. The ALECSO mobile apps initiative has started in 2015 and it is still running. This initiative involves 22 Arab countries members in the Arab league. Some partners including universities, and ministries of education and ICT, and mobile phone and telecommunication companies in the Arab region are included in this programme. The ALECSO Apps initiative is composed of the following four key component parts [11]:

- ALECSO Apps Store, a web-based application aiming to host and gather Arab Mobile Applications. This platform is also installable on supported mobile devices that run Android OS. This Arab marketplace provides the opportunity to Arab developers involved in Mobile Technology to innovate and to share their creations without any fees, restrictions or barriers.

- ALECSO Apps Editor, a comprehensive mobile applications development Studio enabling users to create their applications in few intuitive steps. The main specificity of ALECSO Apps editor is its ability to build Arabic mobile apps based on a set of embedded easy-to-use tools. The process of generating the final mobile app is done in a transparent way where the user receives the compiled app according the target platform that he specifies.
- ALECSO Apps Award, an annual Pan-Arab competition aiming to motivate and encourage Arab developers to meet high-level standards in terms of Mobile Applications quality, innovation and Entrepreneurship. The competition is set over two stages: The first stage is national, lead and held locally in Arab countries. The second stage is rather at a Pan-Arabic level: wining applications are selected among those getting successfully the first round. The amount of the ALECSO Apps Awards is about 50 000 \$US. The first edition (2015) of the competition was held in Doha, Qatar; and the second edition (2016) is going to be held in Dubai, UAE.
- ALECSO Apps training programs, aiming to introduce adults and youth people in the Arab region to the mobile technologies realm, and build and reinforce capacities in Mobile Apps development, ALECSO offers varied training programs ranging from short workshops to specific mobile development programs for a wide range of trainees from all the Arab countries. ALECSO Apps training programs provide trainees with continuous and consistent access to training, technology, and networks. The educational resources, material and activities used during training workshops and covering the required skills for the development of Mobile Apps are available online via the ALECSO online training platform¹. So that discussions and interactions via the platform can continue after the official duration of workshops. Trainees are mainly teachers, students and developers from Arab countries. The ALECSO Apps training Programs are ensured basically via three modes:
 - Face to face training workshops;
 - Online learning, in the form of SPOCs and MOOCs;
 - Blended learning, in partnership with Academic and industrial partners in the region.

A specific hybrid training programme (M-Developer) based on blended learning has just started in ALECSO when writing this paper. The pilot experience of this programme is being held with the partnership of the Tunisian Ministry of communication technologies and digital economy, and Tunisian universities, aiming to train 500 students enrolled in graduating class or newly graduated, on mobile apps development. The programme includes a training of Trainers workshop, a face-to-face phase, an online learning phase via dedicated SPOC (Small Private Online Course), and a coaching phase to define the Apps' ToRs and to

¹ <http://training.alecso.org>

develop and finally deliver and publish the Apps. As a second stage, ALECSO organization intend to duplicate this pilot project for Arab countries expressing an interest in disseminating and localizing mobile technologies. Moreover, an Arabic version of the MOOC on mobile development is under preparation and the first Arab based MOOC initiated by ALECSO is going to be launched next December.

3.2 ALECSO Cloud Computing Project

As for the cloud computing technology dimension, the ALECSO ICT department conducts a project aiming to improve the use of cloud computing technology in education and research in Arab countries. To this end, several activities are proposed in order to shed the light on the multiple benefits of this innovative technology in Arab educational institutions whenever well planned and deployed. It is in this perspective that ALECSO, jointly with ITU Arab regional office, endeavor to achieve the following objectives of the cloud computing project:

- Raising awareness on cloud computing technology and its benefits and advantages for the education field.
- Developing specific guidelines to ensure a cloud migration taking into account several parameters and national contexts for Arab countries.
- Delivering a cloud migration policy for decision makers.
- Defining and Implementing an Arab cloud computing pilot project for education and research.

3.3 ALECSO efforts towards promoting Open Learning

Open learning aims to provide learners with all the necessary requirements for success in a flexible lifelong education system centered on their needs, preferences, and objectives. Open Educational Resources can support largely Open Learning. According to the UNESCO description, Open Educational Resources (OER) provide a strategic opportunity to improve the quality of education as well as facilitate policy dialogue, knowledge sharing and capacity building [12]. In fact, the term of Open Educational Resources was coined at UNESCO's 2002 Forum on Open Courseware and designates «Teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions²». It was likewise formally adopted at the 2012 World OER Congress (Paris declaration), which marked a historic moment in the growing worldwide movement for promising Open Education. The number of institutions offering free or open courseware has been increasing since the organization of the OER first Forum. Besides, the most powerful asset of Open Educational Resources remain in its ability, when digitalized, to be easily accessed and shared online.

² http://www.unesco.org/education/news_en/080702_free_edu_ress.shtml

This refers to open licensed resources that can be legally used and re-used in an educational context. To this end, one of the best known legal framework, governing how OER are licensed for use, is the Creative Commons licensing framework. Indeed, the Creative Commons (CC) license³, which has become widely used thanks to its flexibility to content authors and publishers, provides a set of sublicenses giving people the right to share, use, and even build upon a work they have created [13].

In the Arab world, there exist different level of awareness and master of using and developing OER, in the absence of an explicit vision or policy to empower and encourage such movement. Aside from some digital educational content repositories, mostly not open, existing through Arab virtual and/or classic universities, and schools, consortiums, and initiatives (Tunisia, Morocco, Egypt, GCC countries, etc.), there is a real lack in terms of OER development and use in Arab countries, especially in Arabic Language. In most cases, most of initiatives and projects are mostly issued from specific organization acting in the field of education such as UNESCO and OIF. However, those initiatives lack from sustainability and durability and after a number of years, projects generally fade away. As for regional projects and initiatives for the promotion of openness in education in Arab countries, we describe briefly in the following the Open Book initiative⁴, and some of the ongoing ALECSO and UNESCO regional projects and activities.

The Open Book Initiative

In 2013, secretary Clinton Launched the Open Book Project, which is an initiative of the U.S. Department of State and the Arab League Educational, Cultural and Scientific Organization (ALECSO), leading education innovators to expand access to free, high quality open educational resources in Arabic, with a focus on textbooks in science and technology. It was considered that offering access to these resources will help to expand educational opportunities, further scientific learning and foster economic growth. The U.S. Department of state and ALECSO serve as the primary coordinators for activities on the project. In this perspective, an action plan representing main activities to be undertaken through the project was proposed. These activities covered mainly the aspects of capacity building, and the creation and dissemination of Arabic OER, and the expansion of the OER Community in the region.

Collaboration on Regional and International OER activities

Besides its participation and co-coordination of former projects aiming to promote OER in the region, namely the open book initiative, ALECSO has also joined the ongoing OER regional activities led by UNESCO. In this respect, ALECSO participated and/or co-organized recently several seminars and workshops, including:

³ <http://creativecommons.org/>

⁴ <http://iipdigital.usembassy.gov/st/english/article/2013/01/20130128141555.html#axzz2vr6NP51W>

- The regional seminar on Open Educational Resources for GCC States and Yemen, held in Doha, Qatar - 18-19 March 2015, Organized by UNESCO and funded by William and Flora Hewlett Foundation.
- The UNESCO-ALECSO inception meeting on 'ICT-CFT: contextualization harnessing OER', held in Tunis, Tunisia, 17-18 August 2015.
- The OER National Meeting in Doha, Qatar October, 27th – 28th 2015.
- The international expert meeting, towards preparing the OIF action plan on OERs, held in Tunis 18 - 20 November 2015, and organized by the International Organization of Francophonie OIF, with the collaboration of the Virtual University of Tunis and participation of UNESCO and ALECSO Organizations.
- Open Educational Resources Road Map Meeting, held in Paris, 30-31 March 2016, and organized by UNESCO.

The ALECSO OER project :

The ALECSO OER project aims to promote the effective use of OERs in school education at Pan-Arabic level, which presents actually several benefits related primarily to OERs':

- Exchange: OERs can be exchanged widely across borders of the different Arab countries;
- Scope: OERs that are developed at Pan-Arabic level have a wider scope, since they are not driven only by local/national needs or requirements;
- Community: educational communities across borders of the different Arab countries can be created around OERs, which can lead to the exchange of good educational practices;
- Quality: OERs that are developed and promoted at Pan-Arabic level can increase their quality through extensive authentic use, reflections and modifications from communities of educational practitioners.

In order to reach these aforementioned benefits, three main milestones are defined within the project:

- Policies for OERs: to support different stakeholders (decision and policy makers, institution staffs, unions/teachers' associations, administrators/school leaders, teachers, students and parents) in Arab countries towards using and developing OERs at both national and Pan-Arabic level, ALECSO should draw from international OERs' best practices and from existing guidelines [14]. These guidelines must be contextualized and localized according to each country's status and specificities, and should include:
 - o Best practices for sustainable development of OERs,
 - o Ensuring quality while developing OERs,
 - o Open licensing schemes during and after developing OERs,
 - o Developing national OER repositories.
- Raise Awareness and capacity building on OERs: It is of the utmost importance to raise awareness, inform and train different stakeholders about the added value of OERs and their expected benefits in accessing and enhancing education.

- Technical Infrastructure: Promoting OERs at Pan-Arabic level means somehow offering a Pan-Arabian OER Infrastructure where teachers will be able to search and retrieve suitable OERs. The proposed infrastructure could be deployed nationally at different Arab counties (as national OER Portals) and then it could be integrated into a federated Pan-Arabian infrastructure promoting interoperability of these national OER portals.

ALECSO MOOCs' Project

The Massive Open Online Courses MOOCs concept, which emerged from open educational resources and e-learning, represents currently one of the newest and latest trend in the realm of online learning [15]. Two key distinctive dimensions characterizing those courses can be drawn obviously from the term MOOC itself: "Massiveness" and "Openness". Indeed, by providing MOOCs, it is intended to offer open learning for free to a wide range of online learners through the Internet, with the aim to gain new knowledge and skills in a specific major. This new trend of learning fits also into the international movement of openness whose benefits in education are endless since it ensures actually several opportunities to open up access to learning [16], not only for deprived communities but also in a wider context of lifelong learning meeting thus SDGs goals towards knowledge societies' end events [17]. Actually, one can find varied online content and courses available through known MOOCs providers and/or open educational repositories. However, such high level and mostly non-Arabic based online courses are neither available nor adapted to the specific needs of a large range of applicants in the Arab region, especially in education. To address such shortcoming, and given the interest in promoting and empowering the use and development of Open Educational Resources and Massive Open Online Courses, whether in the scope of formal or informal learning, ALECSO organization expressed a need to develop a capacity in this promising field throughout the Arab World. In this perspective, ALECSO organization prepared a scope study in order to lay down the scope of the different activities to be undertaken under the ALECSO MOOCs project whose general goals are as follows:

- Mastering by instructors from institutions within the ALECSO member states of the MOOC approach to online learning and the technologies to develop them.
- Offering a Pan-Arab set of tools to form a platform for Arabic-language MOOC courses development, hosting and referencing (and supporting obviously Multilanguage).
- Using the MOOC platform to develop prototype courses.
- Evaluating of the developed prototypes of MOOCs on a set of students from the ALECSO member states.

4 Conclusion

In the last recent years, education has witnessed great shifts, with the tremendous growth of ICT, in particular, the use of smart and mobile devices, which enable learners to learn more efficiently, flexibly, anywhere and anytime, at their own pace, to meet their objectives and requirements. Being aware of these major changes, and mindful of the current status of education and ICT readiness in Arab countries, the ALECSO organization proposed an entire framework embracing a set of key dimensions with the aim to prepare Arab countries in order to seize the new educational opportunities and to support and empower smart learning. In this respect, many projects and activities are being carried out. This paper provided an overview of the ongoing and planned activities undertaken so far by the ALECSO organization towards promoting smart learning in Arab countries, drawing from international practices, former experiences, and collaboration with partners.

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