ARABIC DIGITAL RESOURCES IN THE SERVICE OF LEARNING: ENRICHMENT OF RESOURCES AND STUDY OF THE IMPACT ON THE MOTIVATION OF LEARNERS

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ABSTRACT: Video-pedagogy knows a growing popularity, due to its many supposed virtues. Compared to static documents, the animations have the power to attract attention and increase the interest and motivation of the reader. Un-fortunately, the resources available on the Internet in Arabic language in this area do not reflect its position as a language used by more than 300 million people.

Our aim in this contribution is to present a project that was designed and steered in this context. This project is motivated by the desire to integrate vid-eo animations as educational support for learners of the OFPPT (Office de Formation Professionnelle et de Promotion du Travail) as well as to contribute to enrich the Arabic content on the Internet by quality products in this area. We then, in collaboration with a team of practitioners and with the participation of some learners designed and tested a series of video animation in Arabic language allowing the acquisition of theoretical concepts taught in the classroom. The final product has positively impacted the assimilation of courses. This contribution will return to all the components of this project.

KEY WORDS: Arabic language, Arabic digital resources, Video-pedagogy, reverse class.

1. INTRODUCTION

The use of animations in pedagogy began well before the introduction of the computer, especially through the emergence of television and the movies in the educational field. It has known an evolution recently because of the rapid development of digital technologies. Today, personal computers allow a wider use of animations through illustrated texts, dynamic images, graphic animations and video films. These animations have the advantage of facilitating the presentation in a concrete way of complex listed phenomena, as the architecture of molecules, the interaction of the electrons the functioning of network protocols, to mention just a few examples.

The use of video animations in learning is structured after its adoption in the educational approach called 'reverse class' [Maz97, BS14]. This pedagogical methodology reverses the nature of learning in the classroom and at home. In other words, learners imperatively study their courses, via videos, outside the classic places of learning, in order to render classroom activities more concrete and easy to understand.

Also, this method allows the learner to adapt the flow of information to their pace since the video can be paused, and looked at several times. It is, moreover, time and effort saving in class. Teachers can use their time and attendance to focus on coaching and interaction.

The creation of short instructional videos was previously limited to professionals in the field. Today, with a computer or a Tablet, this practice has be-come accessible to all. The creation terms of a training video are multiple: by virtue of a built-in camera a teacher may appear and speak in front of his audience, as he can remain invisible and just explains some scrolling screens. He can also comment on an already existing video.

With the emergence of the Internet and the digital revolution, teaching has under-gone a great change especially the traditional roles of learning. Refocusing is, increasingly, on the learner, rather than on the trainer. Current teaching methods are there-fore facing a wide range of challenges.

This article examines the status of Arabic digital productions in general and especially those related to video-pedagogy. The goal is to participate to the enrichment of the Arabic language resources and to contribute to its development and its influence in addition to the transmission of knowledge.

The main contribution is a project designed and steered in this perspective. The challenge here is to encourage teachers and students from the Arab world to use the potential of technology to create multimedia communications in this language.

In the first part of this article, we present the production state in the Arabic language over the Internet especially in the domain of learning and video-pedagogy to explain the constraints and

challenges. In the second section we present a concrete experiment in the form of some episodes of educational video animations. Finally we study the impact of using of the Arabic language as means of communication to address difficulties and better acquire all the treated aspects before concluding.

2. CONTEXT OF THE STUDY

Like non-latine languages, the Arabic language has benefited from the development of new technologies, to meet the needs of users, in different areas. However, the available resources on the Internet in this language remain generally very modest. In a multilingual context, the Arabic language is therefore confronting a struggle "for Existence." Currently, the definition of "modern" languages was reconsidered to include the total number of digital documents that are indexed on the Internet, realized by the websites, books, videos, or other online information produced in that language. A language is, therefore, classified as "present" on the international scene when it has both a quantitative and qualitative digitized production that are made available to users of the virtual world.

In the following we will draw up, shortly, the state of digital productions in Arabic on the Internet in general, and those related to online teaching to justify the choice of this topic, and what prompted us to conceive and experiment with our project.

2.1 The indicator of the Arabic content on the Internet

The indicator of the given language content on the Internet means an approximate value of the size of the indexed pages in that language, available on the Internet. Such a value is of great importance for many sectors (scientific, commercial, etc.) as well as for simple users. In a study published in [CON12] by a specialized research center, using the data available from a number of international sites (ITU.int, Alexa.com, Google.com, HosterStats.com, Webhosting.info, Netcraft.com, icann.org, domaintools.com, isc.org and ripe.net), the value of this indicator varies between 0.16 to 0.19 percent which means that the Arabic content does not suffer only from a great shortage, but also a weakness in terms of type and quality, with the exception of a few limited cases. At the end of this study, several recommendations have been proposed to remedy this situation. We can mention among other things:

- The creation of a research center which will have as a mission to monitor the situation of digital content, carry out studies, propose solutions to Governments;
- The development of an Arabic search engine

with an option of English and French;
- The investment in the development of digital content translation tools;
- The launch of programs and multi-party national initiatives for Arabic digital content;
- The strengthening of information exchange, sharing and experiment between regional participants;
- The support of innovative private companies working in the field of Arabic digital content development.

Awareness occurred in some countries where other initiatives have emerged [ABD**, CUL**, TAG**] for the development of the Arabic content on the Internet, including the "Arabic e-content Award" created in 2009.

2.2 Online teaching in the Arab world

Higher education faces lately two major challenges, namely, the ability to offer both flexible access to information and quality learning. As a result, online education is an effective way to meet these needs. This form of learning is establishing itself more and more within universities and in particular those of the Arabic speaking world. One of the facilitating factors in these universities is the continuous development of the communication and information technologies (technology ICT).

Online teaching, which is dispensed with by higher institutions in the Arab world, is offered in three different modes :

- Online courses provided by universities as part of a traditional program, notably, in the form of digitized text ;
- Virtual universities, where the entire program is available online ;
- The platforms of Massive Open Online courses (MOOC) [LAW13], that provide learning through audio websites on the Internet, software, and television shows.

a. Virtual universities

According to the report of knowledge in the Arab world published in 2009 [Por15], the Arab world has 6 virtual universities. This number remains very modest compared to the United States for example, where the number of universities and colleges online revolves around 200.

Access to virtual universities in the Arab world is relatively recent and is facing a lot of challenges because of negative views and associated attitudes related to online teaching and the disparity of used technology infrastructure.

b. Platforms of Massive Open Online Courses (MOOC)

The platforms of massive open online course called "MOOC" is another form of this digital pedagogy in the Arab world. MOOCs, very popular in the world, have the advantage of offering free access to all interested parties. Several projects have been implemented in countries like Saudi Arabia, Kuwait among others. In Morocco, an agreement for the creation of a Moroccan MOOC platform was signed between the Ministry of Superior Education, Scientific Research and Professional Training, and 'France digital University' (FUN). Under the agreement, Moroccan universities will be able to have all the features of the FUN platform on an independent platform. This arrangement, which comes in a context of strong increase in the number of students in the Kingdom, also provides access to an additional tool to pursue higher education or to enrich their knowledge.

Also add the "Edraak" project [EDR**], which is an initiative of the Queen Rania Foundation (FIR). The project has the particularity to be based entirely on the region-al Arab skills to exploit technologies developed by consortia of Harvard-MIT and edX, in order to create the first non-profit Arabic MOOC platform. This MOOC plat-form is a concrete example of mutations in the teaching and learning that knows the Arab world.

3. PRESENTATION OF OUR CONTRIBUTION: THE PROJECT « SAMI IN THE DIGITAL WORLD »

3.1 Motivation of the study

The video became, currently, a cornerstone in the digital pedagogy. Its use, in a traditional course, in an online training notably or in the MOOCs training, is an opportunity to implement a teaching school project and, therefore, to demonstrate its worth as part of an educational policy that is forward-looking, using innovative strategies.

In this perspective and in order to make learners more motivated in the classroom and to further integrate ICT in the OFPPT, we have tried out a teaching process that aims two objectives: the first is to introduce the video as part of a traditional course. The second objective is to study the impact of the use of the Arabic language on the level of understanding and attractiveness of the video.

It is within this context that our project called "Sami in the digital world", was conceived and directed. The study was intended to allow teachers as well as students, in the Arab world, to design quality multimedia productions, which would facilitate, on one hand, the transmission of knowledge by applying the said method and, on the other hand, contribute to the enrichment of digital productions in Arabic. So we dress a very important issue, the reduction of the great gap separating this language from its pairs worldwide.

In addition, and in order prevent the video from being a passive experience for learners, the project required to implement several recommendations well known in this field, as we will explain in the following.

3.2 Specification of related works

This project involves several participants in the areas of education, pedagogy, and computing and has had for objective the development of a video animation project which must meet certain linguistic, technical and educational requirements.

Our reference was a set of studies and researches in this direction [GKR14, Woo15, AS12], that have defined the quality of an educational video through a set of recommendations that we tried to apply, among other things, taking also into account the context presented before as well as our experiment environment.

Indeed, it has been recommended, when designing a video as part of a productive learning, to apply the following:

- Create brief videos focusing on learning objectives;
- Use appropriate Visual and acoustic illustrations to convey the elements of explanation to make it homogeneous and not redundant;
- Use special effects to highlight the ideas and important concepts;
- Use a conversational enthusiastic style, to help enhance the attractiveness;
- Embed the video in a context of active learning using lead questions.

In the study conducted by [Kou14], the author lists the different possible ways of use of an educational video. He also identified 33 specific qualities so that a video can be integrated into teaching. These qualities are divided into four areas: cognitive, experiential, emotional and of skills.

Other projects have also been a great support for us, we can mention:

- The project 'Khan Academy' [KHA**] which publishes a free online package of more than 2 200 mini-lessons, via video tutorials on YouTube, covering mathematics, computer science, history, finance, physics, chemistry, biology, astronomy, music, art, and economy.
- In the Arab world, we can name, among

more substantial projects, the project "taalam" [TAA**] which aims the dissemination of educational videos for Arab schools. There are hundreds of videos whose content is very diverse.

As any computerized project, our animated video was started by a phase of exploration. This step of the project was crucial. It helped to formalize the major axes of the project and identify the target population. This allowed developing some guidelines:

- The video must be in Arabic language.
- Even if the video animations are intended especially for students belonging to OFPPT, the content needs to be simplified to make it accessible to any visitor.
- The presentation of the content must be both attractive and beneficial and in an original manner, which will have the effect of favoring its wide spread on social networks.
- A scientific committee must ensure the reliability of the content to ensure that all these elements are very clear and convincing.
- A linguistic Committee specialized in Arabic language must validate all the text provided in the production.

This phase also allowed to fix several choices about characters, the environment, the channels of distribution, the type of music and effects to use, etc. as well as the scenario. The latter was formulated as follows: A learner, in this case "Sami", finding trouble understanding some theoretical notions will attend his trainer to ask him for help. The trainer gave him a "magical" book that will "teleport" him towards a digital virtual world where he will have the opportunity to overcome all these problems.

All the animations will be made in 3D. Elements of the course will be presented, in large part, according to the conversational style to enhance attractiveness. The text will be fully synthesized by a woman's voice to introduce definitions and the conclusion and the voice of a man to give the related explanations. A part of the animation will be reserved to integrate ideas into playful nature proposed by the learners. It has a particular interest because it allows to get the animation off its educational context to give it some sense of adventure with a touch of humor without forgetting that it involves learners in the project.

The content of the productions will be communicated in the modern Arabic language, with a simplified style where all scientific terms will be validated, both by the linguistic and scientific committees.

3.3 The experimentation of the project

The experimentation was conducted as part of a course of computer network pro-vided to the students of the first year of "Techniques of computer networks" branch. Altogether 112 students participated in the experiment. They were divided into four groups with 28 students each.

Table 1. Subjects and times of videos made as part of the research project

Episode	Subjects covered	Duration
1	The role of the protocols in a computer network	20 min
2	The role of the protocols of the layer 4 of the OSI model.	15 min
3	DNS protocol.	10 min

We have designed and created three videos on targeted topics and duration ranged between 10 and 20 minutes (see table 1). The choice of topics is based on the difficulties experienced by students as well as our ability to make original videos.

For the course of the branch which is the subject of the project, about 80 hours of courses are normally devoted to the theoretical part. The three videos produced al-lowed us to experiment the impact of the use of video-teaching for about 6 to 10 hours traditionally devoted to lectures, which corresponds to 12% of the related theoretical courses.

Unlike traditional video-pedagogy whose videos are often very detailed to the level of content, we have opted to shorten the content in our videos. For a subject to which we usually devote a 60 minute class, our videos features most of the concepts in few minutes. The purpose is to arouse the interest and curiosity for the topic, in addition to present vocabulary and basic concepts. Students will have the opportunity to deepen the subject by participating in educational activities related to this effect during class periods.

The three used videos have an almost identical structure. However, the design of videos has known some changes in reference both to the above objectives and the remarks and suggestions of several stakeholders. Therefore, we believe that episode three represents a successful case of our educational project.

Indeed, the video begins with the voice of an omniscient Narrator, whose voice is different from the main host, who introduces the topic of the video and the objectives to be covered, while pictures or animations scroll on the screen. A definition is given then the objectives explained one after the other. At the end of the presentation, these targets are revisited from the perspective of the learner. In the conclusion the Narrator returns to the screen in order to remind the original objectives of the video.

In order to facilitate the viewing of videos by students, several options have been implemented.

All students had the opportunity to retrieve the videos in the institution or on a dedicated page on social networks. They can also download them from the server.

The choice we have made (duration of videos, scenarios, accessibility)aimed at making the acquisition of the basic knowledge 'easy' and 'pleasant' for learners; two aspects which we presented to be of interest in the previous section and that seemed important so that our teaching approach can be effective.

3.4 The evaluation of the impact of the educational videos

To assess the impact of the Arabic videos on motivation and cognitive engagement, we have developed a survey for learners as well as a grid of behavioral indicators. We also met students as part of a discussion workshop.

Overall, students recognize that the use of video has had a beneficial impact on their understandings of the theoretical concepts covered in class and that this pedagogical approach should also be generalized in other courses. The use of the Arabic language as means of communication, has given the possibility of addressing difficulties in the communication of objectives and better acquire all the treated aspects, compared to videos dealing with the same aspects in French (the official language of teaching in the OFPPT).

We found, also, through this method, that this use had a more important positive effect on the motivation of students who are less interested in the content of the course as it allowed them to approach the theoretical parts according to their rhythm of understanding and encourage them more to participate in class through discussions and information exchange.

As for the trainer, considerable time was released during the learning sessions, allowing him to focus more on coaching and on the transfer steps.

3.5 Some tools for creating instructional videos

Table 2 presents some tools that we used during the creation of the project and that can help in the design and creation of instructional videos. Note that this list is non-exhaustive and favors free solutions without forgetting that other products can be used in a trial version. For entertainment software, the choice is based on a few criteria that we considered important and which allow, not only to make for ease editing and video animations, but also to have the ability to integrate sound effects, music, speech and much more.

Table 2. Some tools for the creation of educational videos (The project is available on the link: https://www.youtube.com/channel/UCA6mZbqjK6SoAknGwB_DhRg**)**

Feature	Software name	Type	Platform
Screen recorders	Camstudio	Free	Windows
	RecordMyDesktop	Free	Linux
	SimpleScreenRecorder	Free	Linux
	Vokoscreen	Free	Linux
The animation software	PowToon	Free	On line
	LibreOffice Impress	Free	Windows
	Sozi permet	free	Windows/ Linux
	Iclone	proprietary	Windows
Editing software	OpenShot QT	free	Windows, Linux and Mac
	Windows Movie Maker	proprietary	Windows
The sound processing	Audacity	free	Windows, Linux and Mac
The integration of Arabic script	Waseet303	free	Windows
Speech synthesis in Arabic	Acapella	Free under some conditions	Windows/ On line
	Google Traduction	free software	On line

CONCLUSION

This study allowed us to experiment on the educational potential of the use of the video-pedagogy in Arabic to facilitate the assimilation of some theoretical concepts taught in class. It has confirmed its positive impact on the motivation of learners as well as on the acquisition of such concepts. The Arabic language played a key role in the success of this experiment.

This experimentation also gave us the opportunity to demonstrate that the field of the creation of the instructional videos in the Arabic language is relatively affordable for every teacher who wants to make his mission successful. However, we believe that in order to produce high quality educational videos in Arabic, we need to engage in a collective way by involving several participants (associations, organizations, universities, etc.) to develop real expertise in this area.

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