Project

EMMA: Towards multicultural learning

Ruth Kerr* and Ilaria Merciai**
University of Naples Federico II

_____

*ruthlizkerr@gmail.com | ***ilaria.merciai@unina.it*

Abstract

Interest on the part of European Institutions to explore the potential of MOOCs for providing the kind of inclusive and multicultural education that was needed for 21st century learners was confirmed by funding of projects such as EMMA (http://www.europeanmoocs.eu). The definition of "European" for the EMMA consortium was based on diversity - of culture, language and approach - and integration of the same. This paper looks at how EMMA is responding to the challenge of embracing diversity and integration in the same technological artefact through the use of embedded translation services, and an experimental PLE. We will also introduce the ad hoc evaluation services that are designed to test the impact of the EMMA concept.

Keywords: MOOCs, multilingualism, multiculturalism.

1. Introduction

In a special issue of the International Review of Education (Alidou et. al 2011) the editors state that quality multilingual education is a political and technical response to the educational rights and requirements of learners in the developed and developing world. Multilingual and multicultural skills are viewed as a communicative proficiency that is necessary for people to fully function in the 21st century, and language is obviously the main vehicle for the expression of culture.

The Unesco position paper, "Education in a Multilingual World", (2003) states its support for mother tongue instruction to improve the knowledge and experience of the learners and teacher; bilingual and/or multilingual education at all levels of education as a means of promoting both social and gender equality; and supports language-learning as an essential component of inter-cultural education to encourage understanding between different population groups and ensure respect for fundamental rights.

European Institutions have also produced papers and events like the 2014 European conference: "Why languages matter: European and national perspectives on multilingualism" (1) to promote policies to encourage multilingualism in parallel with policies to modernise HE and create a pan-European approach with comparable, compatible and coherent systems across the continent.

MOOCs initiatives have mushroomed over the last few years and recent figures from Class Central indicate that 35 million students signed up to a MOOC in 2015, and that 500 universities offered 4,200 courses. One of the reasons for this explosion was the desire to democratise education and to make high-level learning content freely available as a tool for social growth and inclusion and respond to global needs for qualified digital and mobile citizens.

A recent survey shows that although MOOCs are sometimes delivered in national languages in Europe, the predominant language of delivery remains English and interestingly, this has not been an issue of major debate, and has not raised doubt about the effectiveness of global knowledge dissemination (Gaebel 2013). And where delivery is in the national language, the policy has been to deliver only in this language. This is true of F.U.N, the French government-led MOOC platform launched in 2013, and MiriadaX, the Spanish platform. In these cases the language can become the defining feature, with platform use expanding outside national boundaries but "geo-linguistically" rather than geo-politically, into francophone Africa and Spanish-speaking Latin America. Although Stephen Downes pointed out (Downes 2014) the desirability of including diverse linguistic cultures within any course delivery and learning community, few MOOC initiatives after his own actually seemed to provide this.

For EMMA (2) the major challenge was how to embrace diversity - of language, approach and culture - within a single technological artifact and how to propose an exploitation approach that would encourage comparative study and effective interaction between learners from diverse language groups in the one community. This paper aims to explore how the EMMA consortium responded to this challenge by experimenting with the creation of inbuilt translation systems and PLE tools. And describes the series of tracking and survey tools that were designed to evaluate MOOC provider and learner response to their proposal.

2. Multiculturalism through translation

If EMMA wanted to preserve linguistic diversity and offer a variety of learning content from different HE Institutions in Europe via mother tongue instruction, then the only way that access could be broadened to a wider audience was through the provision of translations. Human translation is too expensive, crowd-sourcing unpredictable and Google incompatible, so The Universitat Politècnica de València, experts in machine translation system development, became the partner responsible for tackling this linguistic challenge. Their method was to develop ad hoc systems for the automatic speech recognition (ASR) and transcription and machine translation (MT) of the 7 partner languages into English (Catalan, Dutch, Estonian, French, Italian, Portuguese, Spanish) and also Polish. This meant that both video and textual courseware could be produced in these language combinations. UPV methodology involved training the machines using large amounts of in-domain parallel text and audio materials. Partners edited initial transcripts and translations thus providing further input for the machines to improve subsequent performance. Human editing of machine translations on new courses or revised editions of other MOOCs are also part of the feedback loop and help to account for continued improvement as the project goes on. UPV also developed 2 systems from English into Italian and Spanish in the same way. English is then used as a bridging language to produce three and four-language MOOCs as a first step towards multilingual delivery of MOOCs. The EMMA interface and signposting language is also available in multilingual version. In terms of human editing, EMMA partners have identified syntax, inflexions, word order in questions and proper nouns as problematic.

If we take quality measures like Word Error Rate for transcription, and Bleu (3) for translation the EMMA automatic systems are currently performing well when compared with similar services e.g. Google, as shown in the tables below. Dutch is a difficult language to transcribe because of articles, word order and modal particles and produces error rates of 41% on Google transcriptions for Youtube, whereas this reduces to 24.5% on EMMA (Brouns et al. 2015). Similarly, Portuguese is also considered difficult because of word stress and certain phonemes and Brazilian and Portuguese varieties but achieves 55.5% match with human translation on EMMA system compared to 45.4% on Google.

The tables also show how EMMA systems are themselves improving over time. Translation of text and video, taking into consideration the human editing work involved, is currently reduced by 50% on EMMA.

Language	EMMA M10 → M22		YouTube
Spanish	15.9	**14.8**	22.5 (+ 52%)
Italian	21.2	**17.1**	31.6 (+ 85%)
French	–	**20.6**	32.0 (+ 55%)
Dutch	27.5	**24.5**	41.1 (+ 67%)
Estonian	–	**27.1**	–
English	41.4	**39.2**	65.9 (+ 41%)
Portuguese	45.9	**43.0**	62.3 (+ 31%)

Figure 1. Results on transcription quality.

Languages	EMMA M10 → M22		Google
Pt→En	52.8	**55.5**	45.4 (- 18%)
It→En	42.9	**47.8**	37.5 (- 22%)
Nl→En	38.0	**41.6**	34.0 (- 18%)
Es→En	40.9	**40.9**	34.6 (- 15%)
Fr→En	–	**33.1**	30.8 (- 7%)
Et→En	–	**27.8**	26.3 (- 5%)
En→It	–	**52.6**	44.1 (- 16%)
En→Es	42.5	**42.5**	38.3 (- 10%)

Figure 2. Results on translation quality.

It is not only the quality of the translation system that has improved over time. UPV produced an attractive and easy to use interface with parallel editing windows as shown in the image below for both transcription and translation. Advanced features allow for segmentation of the subtitles to ensure synchrony. EMMA has a seamless interface with UPV enabling MOOC authors to do all their transcription and translation editing work as they author their courses.
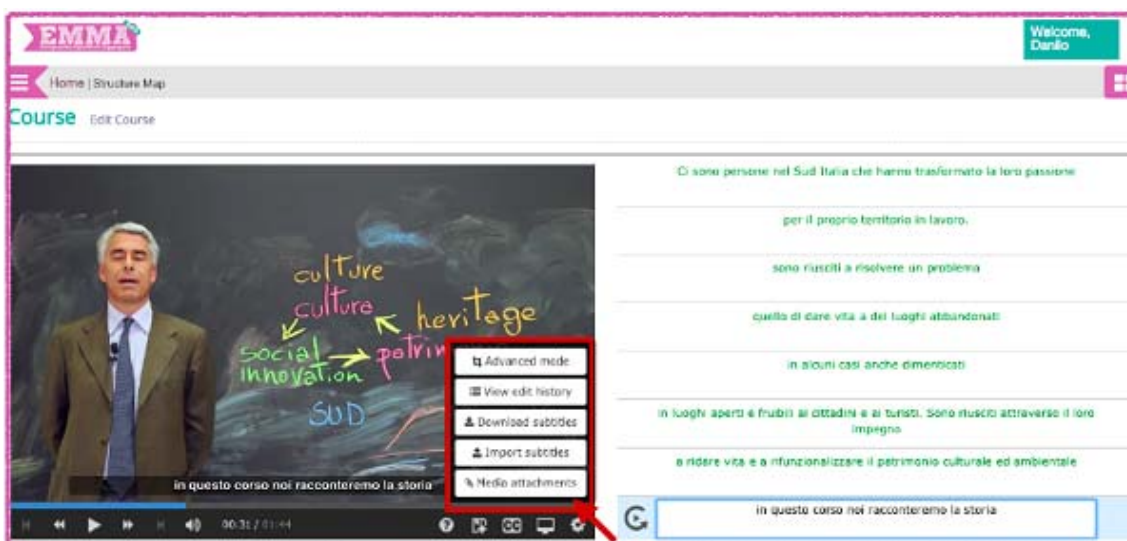

Figure 3. EMMA and UPV system.

Experimentation with three and four-language MOOCs is under way, despite the time commitment required to provide native speaker translation revisions in each of the target languages. Ethnographic data from expectations questionnaires provides information about student language competencies and interest, which can be triangulated with analytics data about which delivery language is chosen, and whether and where translations are accessed.

Recent data regarding a course from the Open University of Netherlands has shown that 75% of students studied the MOOC in a single language, whereas 25% preferred to use a mix of both languages.
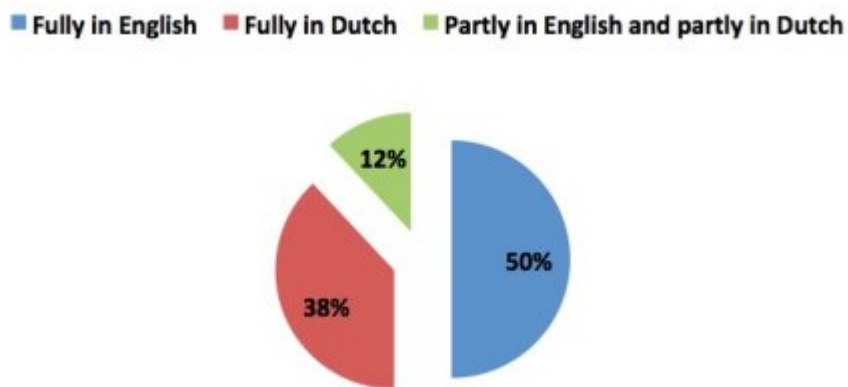
Figure 4. Dutch language.

However, MOOC learning is also a social activity and without learning communities it is impossible to exploit their massive dimension (Siemens 2005). EMMA and UPV are responding to this challenge by accelerating translation time to almost real time, so that the same web services could be used by learners in the conversations and blogs to access comments in other languages and create multicultural environments.

3. Multiculturalism through customization

In a recent contribution to the EMMA newsletter, Stephen Downes writes about the importance of personal rather than personalised learning, where the role of the educational system is not to provide learning, it is to *support* learning. Meanwhile, the decisions about what to learn, how to learn, and where to learn are made outside the educational system, and principally, by the individual learners themselves.

Personal learning often begins informally, on an *ad hoc* basis, driven by the need to complete some task or achieve some objective. The learning is a means to an end, rather than the end in itself. EMMA wanted to encourage learners to interact with a variety of MOOCs on the platform and widen cultural perspectives through studying a course produced in another language, or comparing similar topics but treated in different ways by the Universities offering them. In order to do this, EMMA devised a series of editing tools. Users can create a customised learning path by selecting and harvesting different learning objects from various MOOCs and using them as building blocks, which they can then integrate with other authoritative resources from the web. These are saved in a coursebook in the PLE, where learners can reorganise the materials and add their own study notes. Personal adaptation of the learning content in this way is one of the metrics for evaluation of the EMMA project, to see how often and what type of coursebooks are created. To render this building block approach more effective, MOOC courses were sourced in clusters according to discipline or target audience (De Rosa et al. 2014).

It is essential to have a significant variety of topics on board to encourage this personalised and/or multicultural approach. MOOC sourcing activity has been intensive of late and EMMA is still inviting HE Institutions to join the team and host their MOOC on the platform.

4. Multiculturalism through pedagogy

Recent learning analytics data shows that the platform accommodates a range of instructional design:

- iMOOCs from Open University of Portugal whereby learning content is not predetermined and evolves through interaction between participants, teachers and materials;

- cMOOCs from University of Bourgogne, where learning is enhanced through the creation of a learning community and communication on a variety of social networks;
- MOOCs used as part of on-campus blended learning courses at University of Naples, Federico II in a flipped classroom approach;
- Hybrid MOOCs from University of Urbino, delivered in streaming with live chat;
- xMOOCs from University Polytechnic of Valencia with lecture-capture and authoritative learning content.

5. Conclusions

We have set out to show how we took the concept of multiculturalism that was central to our educational offer and split it up into its three constituent components. We defined the three drivers of diversity as approach, language and personalisation (i.e. the possibility to bring one's own culture into the learning experience), and we looked at how we could bring the three dimensions together in the one learning environment. Unique of its kind, EMMA is now in deployment phase and gaining recognition in Europe.

References

Alidou, H., Glanz, C. & Nikièma, N. (2011). Quality multilingual and multicultural education for lifelong learning. *International Review of Education, 57*(5-6): 529-539. Doi: 10.1007/s11159-011-9259-z.

Brouns, F., Serrano, N., Civera, J., Kalz, M. & Juan, A. (2015). Supporting language diversity of European MOOCs with the EMMA platform. In *Proceedings of the European MOOC Stakeholder Summit 2015.*

De Rosa, R., Kerr, R. & Merciai, I. (2014). Backpacking online – From individual to massive and back again: PLEs in the time of MOOC. PLE Conference 2014, Tallinn, 16-18 July. Unpublished paper.

De Rosa, R. & Reda, V., (2013). The MOOC' (R)evolution. A policy framework analysis at a European level. LEA - Lingue e letterature d'Oriente e d'Occidente, n. 2, pp. 272-311. Retrieved from http://www.fupress.net/index.php/bsfm-lea/article/view/13850.

Downes, S. (2014). La rinascita delle comunità di apprendimento in rete. Tecnologie Didattiche, 22(3), 165-172. Retrieved from http://www.tdjournal.itd.cnr.it/files/pdfarticles/PDF63/165-Rinascita.

Gaebel, M., Kupriyanova, V., Morais, R. & Colucci, E. (2014). E-learning in European Higher Education Institutions: Results of a mapping survey conducted in October-December 2013. Retrieved from http://www.eua.be/Libraries/Publication/e-learning_survey.sflb.ashx

Hassana, A, Glanz & C., Nikièma, N. (2012). Quality multilingual and multicultural education for lifelong learning. *International Review of Education, 57*(5): 529-539. Retrieved from: http://link.springer.com/article/10.1007%2Fs11159-011-9259-z.

Siemens, G. (2005). Connectivism: A Learning Theory for the Digital Age. *International Journal of Instructional Technology and Distance Learning, 2*(1): n.p. Retrieved from http://itdl.org/journal/jan_05/article01.htm.

UNESCO (2003). Education in a multilingual world. UNESCO position paper. Paris: UNESCO.

Visiongain Report (2015). Massive Open Online Course (MOOC) Market 2015-2020.

Yuan L., Powell S. & Olivier B., (2014). Beyond MOOCs: Sustainable Online Learning in Institutions. Cetis, Bolton. Retrieved from http://publications.cetis.ac.uk/2014/898.

Notes

[1] http://ec.europa.eu/languages/inspire/1009-florence_en.htm.

[2] The project is headed by University of Naples Federico II, leaders in the field of OER with a awarded project Federica (http://www.federica.unina.it/), now also with a MOOC offer (http://www.federica.eu). 11 different organisations from 7 European countries are involved in the EMMA Project: Università degli Studi di Napoli Federico II, Italy (Contractor); ATOS, Spain; IPSOS srl, Italy; Universitat Oberta de Catalunya, Spain; Open Universiteit, Netherlands; Universidade Aberta, Portugal; Université de Bourgogne, France; Tallinn University, Estonia; Universitat Politècnica de València, Spain; CSP – Innovazione nelle ICT S.C.A R.L, Italy; ATiT, Belgium. EMMA has received funding from the European Union's Competitiveness and Innovation framework Programme CIP 2007-2013, under grant agreement n. 621030.

[3] Bleu: Bilingual evaluation understudy. An evaluation system comparing machine translation word order and choice with human translation.