

Implementation and Tech Support for Moodle-based MOOC for Language Learning

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ABSTRACT

This paper will present the implementation and establishment of technical support for two massive open online courses (MOOCs) for learning the Croatian language at Common European Framework of Reference for Languages levels A1 (<https://a1.ffzg.unizg.hr>) and A2 (<https://a2.ffzg.unizg.hr>) established in 2017 (A1) and 2018 (A2) in cooperation of the Faculty of Humanities and Social Sciences of the University of Zagreb and the Central State Office for Croats Abroad. The intention for the creation of these courses was to help members of the Croatian diaspora to learn the Croatian language. Level A1 refers to basic user of foreign language who can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type, while level A2 refers to the language speaker that can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment). Both online courses have more than 3850 participants from more than 110 countries, and technical support is provided in English, Spanish and Croatian.

CCS Concepts

•Applied computing → Education → E-learning

Keywords

Moodle, support, MOOC, language learning.

1. INTRODUCTION

In this paper we will present the implementation and establishment of technical support procedures for two massive open online courses (MOOCs) based on Moodle LMS. The institutions that have implemented the MOOCs are the Central

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State Office for Croats Abroad (CSOCA) and Faculty of Humanities and Social Sciences, University of Zagreb (FHSS) – especially its three organizational units: Centre for Croatian as a Second and Foreign Language (Croaticum), E-learning Support Center (ESC) and Center for Visual and Audio Production (CEVAP). Central State Office for Croats Abroad is tasked with the support for over 4 million Croats and their descendants living abroad [1]. Part of their efforts is planning and financing of Croatian language learning activities, most of which is done by FHSS. Until 2017 majority of those activities was provided offline. Faculty of Humanities and Social Sciences, University of Zagreb has over 7200 students in 110+ study programs (undergraduate, graduate and post-graduate) as well as large number of lifelong learning programs (including Croatian language courses and foreign language courses). As a part of the Ministry of Science and Education project called “Organization of information and knowledge in the electronic learning environment” (Croatian acronym OIZEOO) [2], in academic year 2004/05 FHSS has implemented an institutional Moodle-based LMS called Omega (<http://omega.ffzg.hr>). Omega LMS has over 10.000 users and 2500+ e-courses (May 2019). Therefore, FHSS has a long-term experience in providing educational technology solutions, and because of that it was decided to pursue that type of course delivery in this particular case. Croaticum – Centre for Croatian as a Second and Foreign Language is the oldest and largest organizational unit engaged in teaching, research and description of Croatian as a second and foreign language in the Republic of Croatia. It is part of the Department of Croatian Language and Literature at the Faculty of Humanities and Social Sciences of the University of Zagreb, the largest Croatian academic institution specializing in social sciences and humanities. Croaticum was founded in 1962. Croaticum is attended by students of international universities who study at the University of Zagreb through different mobility programs, descendants of Croatian emigrants, those who learn Croatian because they work in Croatia or because they have moved to Croatia, and other people who want to learn Croatian for a number of different reasons [3]. E-learning Support Center was established in 2013 with the purpose of educational technology support, educational service development and implementation, as well as teacher and student training [4]. Center for Visual and Audio Production, established in 2017, is tasked with recording, editing and production of all types of visual and audio formats at the institutional level.

In late 2017 CSOCA and FHSS started a project of developing a massive free open online course for learning Croatian at the

Common European Framework of Reference for Languages (CEFR) level A1 [5]. Course design and delivery as a MOOC for this particular courses was chosen because of the initial idea that the course should be online, free (and that students should have an easy registration procedure with no formal entry requirement and pre-required knowledge level), self-paced (because of the dispersion of possible students around the globe, geographically and time-zone related), that there should be no participation limit (although expected audience was in thousands, no upper limits were defined) and that it should not result in formal accreditation or credits given (unless a student contacts the Croaticum after finishing one of the courses and successfully passes the certification test, which has to be paid for, but that path is always possible, even without finishing the A1 or A2 online courses), which fits broadly to the description of a MOOC given by Gaebel in 2013 [6]. The idea was to provide wider audience (in terms of Croatsians abroad) with the opportunity to learn Croatian language (without the need to finance a trip and living in Croatia for the six months duration), thus helping people living on other continents (majority of over 4 million-strong Croatian diaspora lives in South and North America and Australia). Based on the target audience, the intended user interface (and instructions) was to be available in English, Spanish and (partly) Croatian language. In CEFR, level A1 refers to basic user of foreign language who can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type, while level A2 in CEFR also refers to the basic language speaker that can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment), so both are basic levels, with A2 level being more advanced in comparison to A1 level. The course A1 (<https://a1.ffzg.unizg.hr>) is based on Moodle LMS, and it was opened to public in December 2017. It has 80 units (each approximately lasting 45 minutes). Language content was developed by the Croaticum staff, led by prof. Marica Čilaš Mikulić and prof. Milvia Gulešić Machata, based on Croaticum's 55+ years of experience in the field. Instructional design, e-learning material development, and LMS implementation was done by ESC staff, as well as end-user tech support during the course. Audio recording and multimedia (post)production was done by CEVAP staff. Following the initial successful implementation and large number of end-users, in late 2018, course A2 (<https://a2.ffzg.unizg.hr>) has also been implemented, and it went public in December 2018 (also based on Moodle LMS). Currently (May 2019) both courses have over 3850 active users from more than 110 countries, and technical support is provided in English, Spanish and Croatian.

2. IMPLEMENTATION

Both MOOCs are based on Moodle LMS [7], course A1 was based on Moodle version 3.3 (on release, in December 2017), and course A2 was based on Moodle version 3.5 (December 2018). In May 2019 both systems are running on Moodle version 3.5.x. Both courses will be upgraded to Moodle 3.7 by the end of 2019. Both systems are running on Debian Linux.

Moodle LMS was customized to the actual requirements of the project, and additional plugins were installed: Atto:Styles, Course enroll confirmation, Gapfill question type and Lambda interface theme.

Atto:Styles plugin [8] was used by ESC staff to ensure uniform formatting of text, images, audio and video elements, because it enables LMS administrator to add custom CSS classes and code snippets which can be then used by content-editing users in Moodle

Atto editor, thus speeding up the process of content development and delivery, as well as content update/upgrade, while maintaining the pre-defined visual style and looks.

Course enroll confirmation plugin (since May 2019 known as "Enrolment upon approval" [9]) helps administrators and teachers with the initial course enrolment for end-users, enabling approval procedure (and e-mail notification of users if their application / course enrollment has been approved or not). Whenever users apply for the particular course, they are put on a waiting list, and an e-mail is sent to course teachers/mentors enabling them to check the applicant's status and a possibility of SPAM/phish accounts which are not allowed on the course. Approval rating for the enrollment is around 85% (out of 4530 enrollment request around 680 were declined for various reasons).

Gapfill question type plugin [10] adds an easy to create, but robust type of question to Moodle question database. As the authors put it, to create that type of question, all you need to remember is a 7 word sentence: "Put square brackets around the missing words." It enables creation of drag and drop, dropdown or gapfill questions.

Lambda – Responsive Moodle Theme [11] for Moodle is a commercial, well-known theme. It is responsive, it has different block styles, collapsible sidebar, supports Font Awesome icons, has a number of features, including the most important – full multilanguage support (which is especially important for language courses like A1 and A2).

Since the system was planned for world-wide use, it was decided to use the OAuth2 authorization and authentication with Facebook and Google infrastructure as identity providers for end-users [12].

Although there is a large number of language packs for Moodle LMS [13], only Croatian, English and Spanish language packs were installed (as it was decided in the planning phase of the project).

Language learning MOOCs have some specifics when compared to MOOCs on different subjects / topics, and they are also present in these two courses: instructors / language teachers are there to help learners, and not to lead the course (their constant presence does not always have an immediate effect on self-paced language learner, but they are needed for consultation type of activities), facilitators / supporting staff are much more engaged in comparison to teachers, video clips should not contain "Talking heads" type of teacher videos, but dialogs and communication situations (because there is no need for a video lecture, but there should be enough examples of language use), and finally, essays, open-ended responses and assignment submissions that should be assessed by teachers are not to be used in the educational environment that holds several thousand users and tens of thousands of their responses / submissions [14]

After the installation of the server operating system and Moodle LMS by the ESC staff, Croaticum staff had prepared a language learning content and learning outcomes based on the textbook *Hrvatski jezik za početnike 1* [15]. Since the CSOCA specifications called for 80 lessons approximately lasting 45 minutes, ESC staff and Croaticum staff have designed learning objects, activities and resources, as well as the lesson plan divided into 80 lessons, based on learning outcomes provided by Croaticum staff. User interface of A1 course is shown in Figure 1.

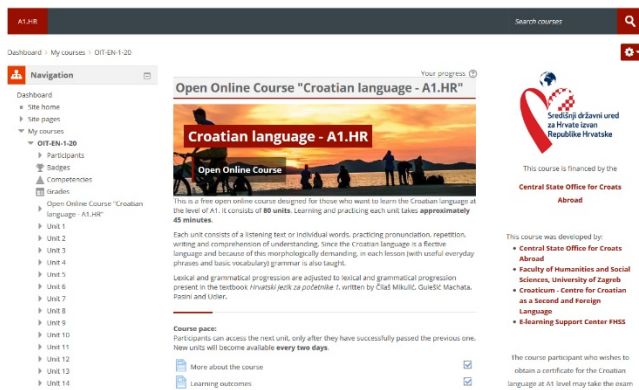


Figure 1. A1 course in English interface

All course learning materials and activities were tested for accessibility (both for individuals with disabilities and for most of the mobile devices / readers available to the testing team). There were three cycles of testing, all prior to course launch (A1 - November 2017 and A2 - November 2018). Additional testing involved Moodle mobile application compatibility. Moodle mobile application [16] is available for Android and iOS platforms (and the tests were performed on both platforms). At the time of testing (respectively for each course) for A1 (November 2017) it was found that Moodle mobile application compatibility was around 60% for used activities and almost 80% for learning materials, while for A2 (November 2018) there were around 70% compatibility for the activities and 90% for the learning materials.

Based on the then 13-year experience of LMS usage at the FHSS level, it was expected that most of the end-users (students) will use mobile devices (smart phones, tablets, phablets) on both major mobile platforms (Android and iOS) in comparison to desktop computers and laptops. Also it was expected that the supported desktop OS, browser type (both mobile and desktop) and desktop screen resolutions distribution would follow current trends: Windows 7, Windows 10, and MacOS 10.x for the OS, Chrome (including Chrome Mobile), Firefox and Safari (including Mobile Safari) for the browsers, and widescreen resolutions (1366x768, 1920x1080, 1600x900). During the duration of both courses, the visitor / end-user web data was gathered and analyzed using Matomo software (ex. Piwik).

Most of the found incompatibilities found in 2017 (course A1) were due to the interactive elements (usually in H5P interactive content) and version of the Moodle app available at that moment of testing. Since then, most of those incompatibilities have been resolved, mainly due to the new versions of Moodle LMS, Moodle mobile app and H5P interactive content released in the meantime.

For A1 course, material was divided into four 20-unit courses (lessons 1-20, 21-40, 41-60, 61-80), and parallel English and Spanish interface courses were produced. And for A2 course, material was divided into eight 10-unit courses (lessons 1-10, 11-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80), based on experience and feedback from the A1 participants and mentors (parallel English and Spanish interface courses were produced for both).

Participants in both courses were given an enrollment password when they have finished the 20th, 40th, and 60th (A1) or 10th, 20th, 30th, 40th, 50th, 60th, and 70th (A2) lesson respectively. All activities and learning materials as well as units containing them

were available to participants on set date / time and only after they have successfully completed the previous tasks. New units were available every two days, starting from the mid-December 2017 (A1) and mid-December 2018 (A2). Initial 5 lessons for both courses were available immediately at the launch date. Conditional completion of the activities and learning materials (standard Moodle feature) enabled self-paced progress of users through the course while following the lesson plan closely.

3. SUPPORT CHALLENGES

3.1 Support for Authors / Staff

Since Croaticum and CEVAP staff have also had support questions in relation to LMS usage, ESC staff has provided (and still provides) a technical support for teachers and AV technicians from both centers. Most frequent issues are device compatibility, authentication issues, media format compatibility, new types of online activities implementation and editing and so on. That type of support is provided in Croatian, and mostly is done by e-mail or telephone. Printed Moodle manuals are also available (originally created for our Omega LMS), also in Croatian [17].

3.2 Support for End-users

End-users of both A1 and A2 courses come from 6 continents and over 110 countries. Most of them are fluent in either English or Spanish language (and majority of them come from bilingual Croatian emigrant families). Global end-user dispersion of A1 and A2 courses is shown in Figure 2 (NB: end-users from Croatia are both mentors, IT support staff and foreign nationals accessing the course while living in Croatia).

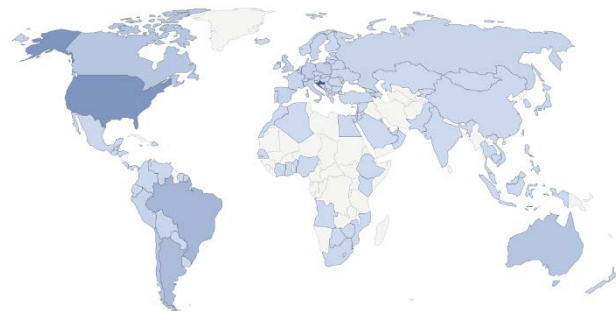


Figure 2. A1 and A2 course global end-user dispersion

Some of them even have some knowledge of Croatian language. ESC staff provides tech support over e-mail, mainly in the language in which the support request was made (English or Spanish). Exceptions are made in cases where the message is not clear (i.e. native Spanish speakers trying to communicate with tech support in mixture of English, Spanish and Croatian words), and in that situation, IT support responds in both English and Spanish, just to be clear. Similar problems were present when native English speakers have tried to communicate exclusively in Croatian language translated with machine translation (IT support had to revert to English language response, because it was obvious that their response to the user will also be (badly) machine translated later on). This type of support is provided in English and Spanish (and rarely in Croatian), and is mostly done by e-mail (we had under 20 telephone calls up to May 2019). Basic online instructions are available in English and Spanish.

Number of request issues for both courses was under 1900 (from December 2017 to May 2019). Most frequent issues are: authentication / password problems (since we are using OAuth2 – Google and Facebook infrastructure, that includes reminding the end-users to check what their respective Google or Facebook passwords is and to change it if necessary using their respective identity providers), technical issues with certain mobile devices (adding another keyboard layout (Croatian one), screen size/resolution of the older devices, incompatible/exotic mobile browsers, certain media formats, and so on), functioning of questions / activities not being easily understandable (Drag and drop markers, as shown in Figure 3., which generated over 200 tech support issues), merging of two different user accounts / one with Facebook and other with Google ID into one, and so on.

Match the words to the pictures.



Figure 3. Drag and drop markers issue

3.3 A1 Support Issues and A2 Improvements

After 1 year of A1 course support and maintenance, ESC staff has developed certain procedures to build on that experience. First, a response language triage has been set up: selection what language a response should be written (English, Spanish, or both) and who should be writing it (IT support staff or mentor / language expert). There is also a present tendency for the language learners to try communicate in the language they are currently learning, but since most of them are at the very basic levels of language proficiency, the support staff always tries to encourage them to use either English or Spanish language to communicate the technical issues. Second, a number of canned / pre-prepared responses was recorded and prepared based on the most frequently asked questions / issues. Best examples of that are issues with password change (i.e. Google or Facebook login issue – average response time to that type of question is under 2 minutes in May 2019) or a type of online activity with drag and drop markers (the issue shown in the Figure 3.) – which has detailed instructions on using the crosshair symbols in the upper left corner of the word-markers prepared and ready (under 5 minutes in May 2019 – mainly because of the lengthy issue description by end-users). Unit 44 issue has been dealt with in June 2019 A1 update – it was replaced by another type of question / activity.

As far as multimedia content, certain images and audio files were also frequently an issue (i.e. image representation of certain concept not being clear to most of the end-users, and because of that those images and/or multimedia files were replaced/recreated in June 2019 A1 update).

During the course support for A1 in 2018, it was noted that the 20-unit courses were too long for average users, resulting in their drop-out or slower pace, so 10-unit structure was introduced to A2 course from the beginning (December 2018). It is planned that A1 course will be overhauled by the end of 2019 and that it will also feature 10-unit courses in the next iteration.

4. MASS CONTENT CREATION PROCEDURES AND CHECK

Since there were 80 units with interface in two languages for 2 MOOCs, ESC and Croaticum staff have relied heavily on pre-defined procedures for mass content creation and checking, as well as checking the mutual progress in the development and implementation of learning units. Learning material distribution between teams and their respective team members was done by either Google Drive (between Croaticum and ESC), or by Mojblak cloud storage service provided by University Computing Center Zagreb (SRCE), based on ownCloud software [18].

Portion of the content created by Croaticum for A2 course was already partly formatted for the type of Moodle resource or activity that it was intended for (questions, lessons, books and so on). That was a result of the previous experience on A1 course creation, when it took a lot of time for re-formatting and re-arranging for both teams.

While A1 course materials were provided to ESC staff in various formats and files types, A2 course materials were provided in a template-like form through Google Docs documents, which sped up the process significantly and enabled much quicker content development and design. A number of format-cleaning scripts for the content have been developed by ESC team. Also a number of Moodle content import scripts and tools have either been developed or are being further developed and refined based on the experience of these procedures.

5. RESULTS

It was mentioned that during the implementation there were some expectation on the OS/platforms, devices used to access courses and screen resolution on the devices of end-users. The data gathered and analyzed through web analytics has shown that since mid- December 2017 until May 2019 there were 57% end-users using desktop computers while 43% used mobile devices (out of which 34% were using mobile phones, 8% tablets and 1% phablets). The original course and content design was oriented towards the idea that there would be much more mobile users. But since the content was designed to be responsive, it posed no problem. When it comes to the desktop OS distribution, Windows 10 is at 50%, Windows 7 at 18,1%, Mac 10.x at 19,7%, various Linux distributions at 2% and various other OS are at 10,2%. It should be noted that almost 40% of the desktop computer related support issues raised by the end-users were from those unnamed various OS (and out of that, Windows Vista, Windows 8.1, and Windows XP were in majority, while we had only a few reported issues from users using Chrome OS). And when it comes to the mobile OS/platform used, 61,5% used Android, 19,4% used iOS and 19,1% used some other platform (or the device ID was inconclusive). That distribution was as expected, so it also did not present any problem to the course delivery. Most frequent issue when it comes to mobile devices (not OS/platform dependent) was the issue of how to enable Croatian layout keyboard needed to enter the answers.

In May 2019, there are over 3850 end-users from more than 110 countries, using both MOOCs in two language interfaces (English and Spanish). ESC staff has the ability to provide 24-hour support in three languages (English, Spanish, Croatian), with average response time of 20 minutes. CEVAP has developed a template for online teaching multimedia formats that will be used in the future for other courses. Croaticum has developed new ways and methods of teaching Croatian as a foreign language, while providing the same quality of teaching. Besides Croatians living abroad, the courses have reached wider public, including students and teachers preparing for the mobility in Croatia, people seeking asylum trying to learn their new countries' language, foreign workforce learning the language prior to employment in Croatia and language enthusiasts learning a new language.

6. CONCLUSIONS

With the new capabilities and experience, Croaticum, ESC and CEVAP will be able to provide even better online language learning courses for a wider audience. Further improvements will be done to A1 and A2 MOOCs, as well as possible B1 MOOC which is still in the planning phase. Further support materials in multiple languages will be developed for those courses and other trainings.

7. REFERENCES

- [1] Jasmin Klindžić and Mihaela Banek Zorica. 2013. E-learning system Omega: first decade. In *Informacijska tehnologija u obrazovanju*. Zagreb: Zavod za informacijske studije Odsjeka za informacijske i komunikacijske znanosti Filozofskog fakulteta Sveučilišta u Zagrebu, 59–76.
- [2] Anon. Central State Office for Croats Abroad. Retrieved May 1, 2019 from <https://hrvatiizvanrh.gov.hr/>
- [3] Anon. What is Croaticum. Retrieved May 1, 2019 from http://croaticum.ffzg.unizg.hr/?page_id=4674
- [4] Jasmin Klindžić, Nikolaj Lazić, and Maja Perković. 2013. The Other Way Around: How We Learned to Stop Worrying and Love the Dedicated LMS Support. In Symeon Retalis & Michael De Raadt, eds. *Proceedings of the 2nd Moodle Research Conference (MRC2013)*. Sousse, 121–123.
- [5] Anon. Common European Framework of Reference for Languages: Learning, teaching, assessment (CEFR). Retrieved May 1, 2019 from <https://www.coe.int/en/web/portfolio/the-common-european-framework-of-reference-for-languages-learning-teaching-assessment-cefr->
- [6] Gaebel, Michael. "MOOCs - Massive Open Online Courses." *EUA Occasional Papers*, European University Association, 2013, Retrieved May 1, 2019 from <https://eua.eu/downloads/publications/moocs - massive open online courses.pdf>
- [7] Anon. Moodle - Open-source learning platform. Retrieved May 1, 2019 from <https://moodle.org/>
- [8] Anon. Moodle plugins directory: Styles. Retrieved May 1, 2019 from https://moodle.org/plugins/atto_styles
- [9] Anon. Moodle plugins directory: Enrolment upon approval. Retrieved May 1, 2019 from https://moodle.org/plugins/enrol_apply
- [10] Anon. Gapfill question type. Retrieved May 1, 2019 from https://docs.moodle.org/37/en/Gapfill_question_type
- [11] Anon. 2019. Lambda - Responsive Moodle Theme. (May 2019). Retrieved May 1, 2019 from <https://themeforest.net/item/lambda-responsive-moodle-theme/9442816>
- [12] Anon. OAuth 2 authentication. Retrieved May 1st 2019 from https://docs.moodle.org/37/en/OAuth_2_authentication
- [13] Anon. Language packs. Retrieved May 1st 2019 from https://docs.moodle.org/37/en/Language_packs
- [14] Maggie Sokolik. 2014. What constitutes an effective language MOOC? In Elena Bárcena & Elena Martín-Monje, eds. *Language MOOCs: Providing Learning, Transcending Boundaries*. Berlin: De Gruyter Open Ltd.
- [15] Marica Čilaš-Mikulčić, Milvia Gulešić Machata, Dinka Pasini, and Sanda Lucija Udier. 2018. *Hrvatski za početnike 1: užbenik hrvatskoga kao drugoga i stranog jezika* 2nd ed., Zagreb: Hrvatska sveučilišna naklada.
- [16] Anon. Moodle Mobile. Retrieved May 1, 2019 from <https://download.moodle.org/mobile>
- [17] Jasmin Klindžić and Tona Radbolja. 2014. *Priručnik za korištenje sustava učenja na daljinu Omega za nastavnike*, Zagreb: Filozofski fakultet Sveučilišta u Zagrebu.
- [18] Florian Lenz, Emil Lefherz, Cornelius Kölbel, and David Gonzalez. 2019. ownCloud - The leading OpenSource Cloud Collaboration Platform. (May 2019). Retrieved May 1, 2019 from <https://owncloud.org/>