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OPEN EDUCATION FOR LIFELONG LEARNING AND PUBLIC SECTOR PROFESSIONAL DEVELOPMENT: THE CASE OF FEDERICA WEBLEARNING LANGUAGE MOOCS

In the context of a rapidly changing workplace, there is a need for significant investment in up and re-skilling on the part of the European workforce to guarantee future competitiveness. One of the sectors that has received closer attention is that of the public administration (Pa), also in view of the need to strengthen and enhance the skills portfolio within the Pa as an integral part of the broader intent to guarantee the country's future success. Language skills are an important component of this new skills portfolio, with two objectives: improve multilingualism for integration, and enhance individual competitiveness, earning power, and work opportunities. The Centre for digital learning at the University of Naples Federico II has responded with a Mooc-based initiative in a bid to provide structured, flexible, sustainable and scalable language training as a coordinated and long-term solution to skills development for the lifelong learner sector. The 13 courses currently forming the language portfolio have been designed for general audiences and the Pa sector, in a stackable format, to maximize the scalability and impact. More than 37,000 lifelong learners and 6,000 public sector professionals have benefited from the initiative, with encouraging results in terms of satisfaction and replicability of the production, management and delivery model. The paper aims to introduce the project, present the first results and discuss the challenges and opportunities of a coordinated action for a workforce enhancement strategy.

KEYWORDS *Language Moocs, Open Education, Skills Development, Lifelong Learning, Public Administration.*

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1. Introduction

The world of work is in a state of rapid transformation, making it necessary to rethink strategies for enhancing workforce development (McKinsey 2023; Wef 2023; Deloitte 2016). European institutions have made significant investments in recent years to boost the acquisition of relevant workplace skills to ensure Europe's competitiveness, and diverse funding initiatives have been launched as part of a wider intent to achieve higher levels of up- and re-skilling within the framework of the European skills agenda (Li 2022; Ec 2016). One of the sectors that has received closer attention is that of the Public administration (Pa), also in view of the need to strengthen and enhance the skills portfolio within the Pa as an integral part of the broader intent to guarantee the country's future success (Oecd 2021; Musella 2022; Di Mascio and Natalini 2022; Musella and Reda 2023). Language skills are considered a major component of this portfolio (Marconi and Vergolini 2022; Ec 2018), with two objectives: improve multilingualism for integration (Ec 2020; Ottaviani 2019), and enhance individual competitiveness, earning power, and work opportunities (Liwinsky 2019). English is still considered the key foreign language to learn, for its continuing role in international diplomacy, business, technology and science etc., while in terms of a second foreign language, French, German and Spanish are the most popular (Eurydice 2023)[1]. However, the European Union has recently promoted the learning of 20 other European languages, with specific actions like the inclusion of preliminary study initiatives on its Academy learning platform[2]. Although 99.5% of students in Italy now study English at school, it is only since 2004 that the language has been taught systematically from primary school onwards. This may mean that many of the lifelong learner demographic do not have the minimum B1 level of competency in English that is currently required for public-sector job selection procedures, or internal promotions. This may also help to explain why Italy still scores quite low in International and European rankings for English language proficiency (Ef 2022).

In the wider scenario of digital learning, Moocs (Massive open online courses) are one of the most established tools available today to try to systematize the response to this need for language upskilling on a large scale (Suarez and El-Henaway 2023; Zhang and Sun 2023; Kan and Bax 2017; Bárcena and Martín-Monje 2015). The number of language Moocs and the popularity

[1] Specifically, in the Report: French (33,7%), German (23,1%) Spanish (19,1%).
[2] Launched in 2020 in beta version, the EU Academy is the EU hub that collects educational resources for professionals to gain understanding of EU policies and programmes, and to learn relevant skills, produced directly by the EU Institutions, Bodies and Agencies and trusted partners. EU Academy: https://academy.europa.eu/.

of language Moocs has increased during and post-pandemic on all the major international platforms (Shah 2020), and recognition of their importance in promoting integration and intercultural communication has also increased (Rai *et al.* 2023). However, ongoing analysis at Federica WebLearning, the Centre for digital education at the University of Naples, Federico II, shows that the trend on international Mooc platforms is towards shorter Moocs that focus on a specific skill within a specific context[3], instead of integrated language and skills development in line with the lower Cefr (Common european framework of reference)[4] levels of the kind that is required by the Italian public sector workforce. It is in this context that Federica WebLearning has aimed to plug this gap in the training market by developing a portfolio of language courses specifically designed for lifelong learners and the Pa, covering all Cefr levels and delivered on the Federica.eu platform. The strategy underpinning the development of this language project was to create a first block of learning content in the form of open courses – available to all and free of charge – in certified, self-learning mode, which would form the basic foundations on which to build future training packages. Embracing the principle of reusability of quality resources, further stackable modules of learning content were created in order to respond to the diverse training needs of specific audiences, and in this case Continuous professional development (Cpd) for targeted groups within the Pa. This paper aims to introduce the overall project concept and design, the framework underpinning the development of the language modules and their learning objects, and some early project evaluation and results. It illustrates how the project design can be extended and applied in a broader context, so that open learning in the form of Moocs can become a flexible, stackable and scalable resource for skills development in the long term[5].

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[3] E.g. *Grammar and punctuation* (*Academic English*) from University of Irvine, available on Coursera; *English for Journalists* from Berkeley, University of California, and *English for doing business in Asia, speaking* from Hong Kong University of Technology, available on edX.

[4] Launched in 2001, the Cefr represents a standardization of the process of mastering an unknown language. It identifies type of competence and sub-competence and provides descriptors, based on a six-level scale (A1, A2, B1, B2, C1, C2), and thereby offers a common competency framework of reference for all European languages.

[5] On the topic see also the issue 2021/3 of the «Rivista Digital Politics» on «Online education», available in open access (https://www.rivisteweb.it/issn/2785-0072/issue/8441). On Moocs and on Federica, see also De Notaris, *et al.* (2020).

2. Language Mooc programs for multiple audiences

The project currently includes 13 language Moocs, each in line with a specific sub-level of the European framework for languages: 5 English courses have been developed and delivered so far, reflecting the importance of English in the international workplace; and 8 A2 courses were commissioned and designed in parallel to take employees at Job Centres in the Campania region of Italy to a working level of competence in 4 European languages - English, French, German and Spanish. The courses were all designed as intensive programs that could be scaled up to accommodate large numbers of users and be delivered within a reasonably short time but the language project evolved organically over time, incorporating course piloting, feedback loops and improvement cycles to ensure a quality response to learner needs and levels of satisfaction (Hilsdorf Rocha 2018). The courses have constituted two main blocks of learning content each with specific characteristics relating to their scope and development.

Production of the language Moocs began with English Lower intermediate, B1.1, the most sought-after qualification as it aligns with the independent language user and the Council of Europe threshold level[6]. The instructional design was informed by preliminary contrastive analysis of the design approach of existing language Moocs on the major platforms, especially European languages[7]. A preliminary web search was also carried out into educational technology solutions for developing spoken and written communication skills in the foreign language in a self-learning environment. The definition of the teaching and learning objects took into account the different pedagogical indications deriving coming from diverse theories of learning: behaviorist theory (e.g. repetition, gaming and reward-based activities); cognitive theory (e.g. materials offered within the zone of proximal development); constructivist theory (e.g. argument and reasoning and critical thinking) as well as communicative methodology (L2 instruction) and situational learning (role-play and dialogue-building).

The basic course structure that was decided was 6 topic-based lessons of 3 units each, for a total of 24 hours study. The 3 units were clearly subdivided into: language focus (grammar, lexis and pronunciation); practical situations and simulations; and the productive skills development that experts maintain

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[6] Council of Europe, The Cefr Levels: https://www.coe.int/en/web/common-european-framework-reference-languages/level-descriptions.
[7] The analysis covered a total of over 160 courses, on Coursera, edX, Futurelearn and France Université Numerique (Fun), and focused on type of Mooc, syllabus, structure, how language is presented, type of video, type and number of formative and summative assessments.

is a key component of language study (Martin-Monje and Barcéna 2014). Since the courses were created for a lifelong learner audience in an open access environment, the topics were selected to reflect the sociological and cultural interests of this group. The design focus was on inclusion and engagement in a learning context where a sense of alienation is often reported (Chyr *et al.* 2017) and drop-out rates are normally high (Perifanou and Economides 2014). In line with research findings, an active learning methodology was equated with higher expected levels of engagement (Munna and Kalam 2021) so the course was designed to promote strong interaction with the content, through numerous practice activities and formative assessments, and with the learning community and Federica staff through class discussion forums.

Active learning, with an emphasis on interaction with the content, was also achieved through an increased use of education technology, including artificial intelligence (Ai), to improve the course design and development process. In particular, as regards the videos, only a third of these on selected courses actually featured an instructor. Another third were created using animation, with the two-fold intent of diversifying the learner experience and reinforcing the flexibility of the production workflow, allowing for the presentation of language content within a context, and with diverse characters, beyond local geographical confines, while keeping production costs relatively low. The remaining videos were all produced using instructor avatars[8], enabling the instructors and course designers to choose from a wider range of characters and language variety and accent, and guaranteed a consistency of volume and speed which native speaker voice overs were unable to do. These avatars were subsequently used to create grammar and pronunciation tutorial videos, with automatic subtitle generation, to give the impression of a teacher's presence. Furthermore, to create the various assessments, major use of the H5P plugin[9] was made. The courses thus offer a high number and variety of formative learning activities throughout, ranging from basic drag-n-drop and gap-fill, to dictation, branching scenarios and conversational role-playing. With reference to the fast-increasing number of experiments in the use of Ai tools such as Llms (Large language models) (Holmes and Tuomi 2023; Lo 2023; Gibson 2023), for teaching preparation (i.e., generating course materials, providing suggestions, and performing language translation) and assessment (i.e., generating assessment tasks and evaluating student performance), ChatGpt (Gpt 3.5) was used as a ba-

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[8] The avatars were created using Synthesia Ai, a commercial Ai video creation platform used to create professional quality videos at scale: https://www.synthesia.io/.

[9] H5P is a software for easy creation, sharing and reuse of Html5 content and applications. Within Moocs it is widely used to create a broad variety of interactive exercises with real-time feedback: https://h5p.org/content-types-and-applications.

sis for numerous course planning tasks, including the production of informational texts and dialogues, assessment tasks and questions, and feedback generation, as preliminary experimentation of this kind of tool to support scaleable content creation. The amount of course developer time required for revision and refinement of Ai generated products is still high, but it reduces slightly in proportion to the human's ability to instruct and manage the machine. At the end of the process, analysis and visualization of student and course data was available to designers and instructors as part of the feedback loops and continuous cycles of improvement of the Mooc project design.

3. Language literacy for all, the Mooc experience

The first edition of this B1.1 course – open, via the Federica.eu platform – ran from May to September 2021 and was closed when audiences reached the then platform capacity of 8000 active users. A second edition was launched in October, along with the second part of the course English Intermediate, B1.2. Between October 2021 and February 2022, these courses attracted 5506 and 3991 active users respectively. This made for a total of over 19,000 active users on the Intermediate English courses overall.

After closure of the B1.1 first edition, an analysis was carried out of the pre-course and exit surveys, which had been created *ad hoc* to identify the audience, and to evaluate their response to the instructional design. Data confirmed that the majority demographic was female (62%), in the 40-60 age group, and 67% of professional learners were employees, 35% of them in administration. The other significant user group was students (35% overall). The course had a completion rate of about 5% and all the specific course components and activities that were surveyed received an average score of 4 out of 5 or above, which was considered an encouraging response. However, when asked whether they had any suggestions for improvements 80% of respondents to the exit survey provided an answer, and this qualitative data was used to inform some significant improvements to the instructional design including: general streamlining/reduction and uniformization of the intra-unit content; provision of downloadable pdfs for video and audio scripts; enhanced grammar and vocabulary focus with additional and more varied practice exercises using the H5P software; embedded translation support in Italian for the grammar explanations. These improvements were incorporated into the instructional design framework for future language courses, along with a greater emphasis on branding through attention to color, font and images in the templates used for the creation of the pages. The qualitative data also made it clear that the

audience wanted more English courses like this one, at lower as well as higher levels. Federica WebLearning decided to move ahead with the development of Mooc courses at beginner and elementary level (A1.2 and A2.1) as well as at upper-intermediate level (B2.1) for the generalist lifelong learner audience in the open and free environment on the Federica.eu platform. The two Intermediate level courses (B1.1 and B1.2) were also completely overhauled in line with the updated design framework.

The new B1.1 and B1.2 courses launched in April 2022 and October 2022 respectively and the Beginner, Elementary and Upper intermediate English courses launched in January 2023. The B1.1 Mooc has registered a further 17,996 active users since its launch, and registered over 2,300 enrolments within the first month. The other courses have totaled approx. 10,000 active users within 6 months of opening, with over 1000 enrolments on English Elementary in its first month. Exit survey data shows very similar figures for satisfaction rates across the 5 courses, with over 40% of users describing themselves as very satisfied with their course, and between 35% and 50% being completely satisfied. In the open environment where there is no compulsory attendance or external monitoring of progress, completion rates are conventionally used to indicate learner satisfaction (Deng *et al.* 2019). Completion rates currently stand at over 12% on Beginner and Elementary, 7% on Intermediate and 7.7% on Upper Intermediate, compared to an average retention rate in the Mooc universe of 3 to 5%. The audience on these generalist open courses is made up of 10% teachers, 10% unemployed and 25% students from 76 different Italian universities. The largest segment of the audience, 40%, however, belongs to the Pa workers, motivated by professional development goals.

During the first period of delivery of these new or revised language courses, Federica was approached by training managers from various local institutions who had explored the courses and wanted to integrate them as part of structured and recognized Cpd schemes. The first initiative of this kind was with the Campania region. They used the existing courses without requesting modification or personalization, but special classes were created for their learners to facilitate tracking and monitoring. More importantly, Federica WebLearning provided an *ad hoc* placement test for the Campania region to ensure that their learners were inserted in a course at the appropriate level for their competency building. To date, over 3400 employees of the Campania region have already used the English courses for language enhancement at different levels, with a peak at the Independent User B1 level. An indication of the success of the training initiative is that, although the courses are not compulsory, completion levels are encouragingly high: currently at 23% on English Elementary and 32% on English Lower intermediate. While the fact that over

30% of employees on the Elementary and Lower intermediate courses have a Masters degree or higher can be considered an indication of the relevance of the initiative in responding to a local need for language upskilling.

Another Cpd initiative of this type has started with the Federico II University, where more than 1500 non-teaching employees have completed the placement test, and the majority have started the language program. In this case the language courses are part of the compulsory Cpd requirement, and some preliminary informal focus group results indicate satisfaction with the course content and quality, but identify a need to increase the modularity of the offer and thereby reduce the amount of time that needs to be devoted to individual study sessions. This is important because the courses are compulsory and have to be completed during working hours. The stackable, modular approach to the language course design that is used by Federica makes it easy to decide, in collaboration with the training managers, which modules and competences are most important for their employees depending on the scope and nature of English use in their workplace.

4. Empower professional competencies through Mooc reuse and enhancement

During the same time period, October 2021 – July 2023 Ifel (Institute for local finance and economics) commissioned 8 language courses from Federica. The aim was to enhance general and workplace language competence at elementary level in 4 European languages for their mainly front-desk employees — many of them new recruits — at the Job Centers in Campania, for a total of about 7000 enrolments. The language courses formed part of a broader Cpd initiative and therefore were destined for consecutive delivery, one language at a time, one course at a time. Each course was to be completed by employees during working hours over 8 weeks from September 2022.

The same design framework was used to create these specially-commissioned courses as the generalist courses and for all the languages. This was done to create the kind of pattern-building, recognition and familiarity recognized by Laurillard (2012) as a key aspect of course design. However, given the intensive and challenging nature of the Ifel training package, key aspects of the micro-design for this specific audience were: smaller and more manageable chunks of content; steady progression with inbuilt revision; multiple opportunities for practice and self-assessment, and more translation support in Italian.

There were two very significant additions that were made to the basic Moocs in line with the employer/commissioner's specific training objectives.

The first was the addition of a fourth unit called «On the job». This prepared the employees at the Job Centres to help clients understand and navigate the Job Centre's website; how to upload a useful *curriculum vitae* and how to register for information about job vacancies and opportunities abroad, and even possible unemployment benefits. The units comprised downloadable vocabulary input and situational dialogues and practice. The other significant addition for this cohort of learners was weekly 60-minute live online sessions delivered by Federica WebLearning teachers with technical assistance from Ifel tutors. Participant numbers ranged from 200 to 900: smaller groups were organized for English given the increased likelihood of the learners having to use English with their clients in the workplace. The live sessions numbered 66 for a total of 8000 enrolments and thus required careful planning and management on both a pedagogic and technical level. The sessions were conceived as an opportunity to activate the language input from the course and offer the live interaction practice that language learners need to build their confidence, especially in the work-based communications. They were also planned as a way to reduce a sense of alienation and to provide an opportunity to discuss any difficulties with the course with coursemates and teachers. Federica instructors were trained in techniques for encouraging participation in the sessions, including the preparation of short speaking activities in plenary, groups and pairs. Participation and interaction levels were good in the live chat, but only a minority component of the students were willing to switch their microphones on and speak to the class. This reluctance was mainly attributed to the lack of privacy in a busy office environment, and the performance anxiety related to language learning that is commonly reported by experts (Russell 2020). The compulsory attendance for learners on these Moocs prevents completion data being used as an indicator of success, but learner satisfaction rates were significantly high in terms of appreciation of the initiative and quality of the courses.

5. Scalable open learning to enhance public sector professional development

In conclusion, the project made it possible to explore the use of open education and Moocs as the basis of a scalable strategy for the development of individual competence blocks, taking language courses that aimed to integrate open access and training for the Pa as a test case. The experience confirmed the widespread, and perceived, need on the part of lifelong learners and public sector professionals for access to language training at all levels, even those covered by school and university syllabuses. And satisfaction with the availability of

structured (in line with competence frameworks), flexible (online), interactive (with contents, peers and tutors) skills enhancement programmes. Which is why the modular but structured nature of Moocs represents a valid format and investment for a long-term, coordinated approach to skills development, and the value of increased educational technology use, including Ai, is confirmed in terms of fulfilling strategic objectives of time and cost-efficiency for content creation, assessment and evaluation.

The uptake and success of the current Mooc language project points the way forward in two key areas: the first is the consolidation of the organizational process and the management of ever-growing numbers of organizations, learners and production staff involved in order to extend the operation to other in-demand soft skills for a future-proof public administration. The second is continued experimentation to make the development and delivery of learning content as effective as possible. The current modular and stackable approach used by Federica provides targeted content on a macro-level for the individual organization commissioning the training package, but in a not-too distant future it may be possible to envisage content which is personalisable at the level of the individual employee, to track their areas of proficiency and improficiency, and providing relevant responses in real-time according to learners' progress.

Regarding the macro dimension of training provision, the project confirms the value of Mooc-based project design for the achievement of several strategic objectives: sustainability, in view of the re- and up-skilling that the future workplace needs, reducing the costs for provision and delivery of training programs, and any subsequent updating of the same; scalability, in view of the massive and incremental need for professional development, with huge numbers of learners in different locations; stackability, whereby a generalist lifelong learner oriented design can be integrated with personalized delivery modes.

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