

## Sustaining openness in language teacher education: Insights from a MOOC-based language OER training program and the emerging role of AI

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### Abstract

*This paper presents a longitudinal case study of the OPENLang MOOC, an online course designed to train language educators in the discovery, creation, and effective use of Open Educational Resources (OER) for language teaching. Launched in 2021 within the OPENLang Network Erasmus+ project, the MOOC served as both a training hub and a catalyst for OER contributions, supported by a multilingual repository containing language OERs in selected European languages, and a translated OER toolkit available in three languages. Drawing on Moodle platform logs and Google Analytics 4 (GA4) data collected from 2021 to 2025, we examine patterns in learner participation, module interaction, and long-term engagement. The findings reveal sustained platform activity well beyond the initial MOOC cohort, including continuous quiz engagement, increased OER toolkit use, and service-based interactions. While only a small number of learners completed all course modules, a broader audience, comprising enrolled and non-enrolled users, demonstrated ongoing interaction with course materials and language OER services. These usage patterns reflect both the need for more structured teacher training on OERs and the increasing role of informal, non-credit-seeking engagement in open education platforms. In parallel, the paper examines the growing influence of artificial intelligence (AI) in language OER ecosystems. As AI tools become central to the search, adaptation, and reuse of content, the need for ethical, AI-aware training frameworks becomes more urgent. By situating OPENLang Network's case within broader OER and AI trends, this study contributes to the evolving conversation on sustainable, scalable, and intelligent language teacher education.*

**Keywords:** *Open Educational Resources; language teacher education; learning analytics; AI in CALL.*

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### 1. Introduction

The past decade has witnessed rapid growth in the development and utilization of Open Educational Resources (OERs) and Massive Open Online Courses (MOOCs), providing cost-effective and scalable opportunities for professional development in education. Although important research work has begun to explore aspects of OER in foreign-language (FL) contexts (e.g., de los Arcos et al., 2016; Blyth & Thoms, 2021; Perifanou & Economides, 2022), a critical need remains for research and training that prepare language teachers to integrate OER confidently in practice. Yet, in language education, the potential of OERs remains largely underused, despite the growing number of digital materials and platforms. Large-scale L2 survey of 1,484 language teachers reported uneven awareness (~52%) and several recurring barriers: difficulty finding fit-for-purpose resources, concerns about quality/completeness, licensing uncertainty, and time constraints, pointing to the need for sustained professional

development and institutional support (Thoms & Poole, 2021). These challenges are amplified for language teachers, who must balance linguistic localisation (e.g., variety, *CEFR*- Common European Framework of Reference for Languages level), pedagogy, and technology when adopting OER for multilingual classrooms.

Launched in 2021 as part of the *OPENLang Network* Erasmus+ project, the *OPENLang* MOOC (<https://openlang-network.kmi.open.ac.uk/>) was designed to address this gap by equipping language educators with the skills to discover, create, evaluate, and reuse OERs. Supporting OER contributions in all 24 EU languages, the course blends multilingual openness with digital pedagogical training. While other recent EU initiatives, such as *LangOER* (Bradley & Vigmo, 2014) and *DC4LT* (Fominykh et al., 2019), advanced the conversation on language-focused OER training, they did not deliver a sustained, comprehensive training model with a structured four-week curriculum and publicly accessible multilingual content over an extended timeframe. In contrast, the *OPENLang* MOOC has remained open for five years, enabling analysis of long-term patterns of engagement and use such as sustained interaction, repeated visits, and informal participation by both enrolled and non-enrolled users. This offers rare insight into how educators actually engage with OER training materials such as the *OPENLang OER Toolkit* (Kosmas et al., 2021) over time. At the same time, as artificial intelligence (AI) tools increasingly support content creation, recommendation, and personalization, there is an urgent need to prepare educators for the ethical and effective integration of AI in OER-based teaching. Recent advances in AI have sparked new interest in how language teachers might use intelligent tools to augment their practice (Perifanou, 2025; Li, 2025). From generative content to adaptive feedback, AI offers promising but complex opportunities for open language learning.

This paper presents a five-year analysis (2021–2025) of learner behavior and engagement with the *OPENLang* MOOC, drawing on *Moodle* logs and *Google Analytics* data. It contributes to current research by combining long-term learning analytics with reflections on the future of intelligent, sustainable language OER training.

## 2. Background and related work

The expansion of MOOCs and OERs in language education over the past decade has introduced both opportunities and challenges for teachers and learners alike. Early frameworks, such as those proposed by Moore (1989) and later extended by Bates (2019) and the *Learning Analytics and Knowledge* (LAK) community, provide a theoretical basis for understanding engagement in digital learning environments. These models emphasize learner-content, learner-instructor, and learner-learner interactions, informing the multi-dimensional engagement framework used in this study.

Despite increased institutional support, OER adoption in language education remains limited. Various issues stand out. First, discovering level-appropriate language OER is difficult: a study of 11 major repositories found very few suitable resources and exposed inconsistent repository structures, non-uniform/obsolete metadata, and unclear licensing (Perifanou & Economides, 2022). Beyond discovery, other core practitioner barriers are contextual adaptation and teacher readiness (Cox & Trotter, 2017). These challenges are amplified in language-focused OER, where linguistic localisation and pedagogical redesign are often required to ensure relevance (e.g., language variety, CEFR level, task design) (Beaven et al., 2013). In practice, teachers can: i) use resources as they are when they are well-licensed, level-appropriate, match the target variety, and exhibit sound pedagogy; ii) translate/localise when materials are close but misaligned on level, locale, task design, or accessibility; and iii) redesign when different learning outcomes are required (e.g., shifting from grammar explanation to task-based interaction). AI tools can speed discovery and first-draft localisation, but licensing and pedagogical fit must still be verified before reuse.

Meanwhile, the rise of AI in education presents both transformative possibilities and implementation challenges; Recent research reveals teachers' mixed readiness and the need for ethics-aware integration (Aksoy & Kursun, 2024; An et al., 2023). While AI offers powerful tools for personalization, assessment automation, and real-time support, its integration into OER platforms and language MOOCs remains underdeveloped. Adiguzel et al. (2023) highlight the ethical and infrastructural concerns surrounding AI-enabled OER systems. Initiatives such as the *DC4LT* European project show growing awareness of the digital-competence gap among language teachers

(Fominykh et al., 2019). However, explicit, ongoing training in language-specific OER use that combines covering localisation, licensing, and classroom adaptation still remains scarce. Our analytics study (sustained revisits, rising toolkit downloads, continued quiz use) confirms strong demand for continuous, practice-oriented Continuing Professional Development (CPD) rather than one-off courses. As AI tools rapidly evolve, both the training materials and the platform should evolve. This can be done by embedding on the platform both training on AI literacy (ethical use, licensing, AI-assisted creation/adaptation) and an explainable, opt-out recommender that personalises OER pathways to teachers' target language and *CEFR* level using minimal, pseudonymised data. Reviewing the literature, it was found that there are no multi-year longitudinal studies that offer long-term evidence of engagement or sustained participation patterns, particularly within language OER training contexts. Existing research on OER/ Open Educational Practices (OEP) is predominantly short-term, with recommendations for more robust long-term designs (Cronin, 2017; Hilton, 2019). This work addresses this gap and identifies future actions: AI-enhanced, teacher-centred OER ecosystems that sustain professional learning, grounded in longitudinal engagement evidence on language-OER teacher training.

### 3. Research questions and methods

This study investigates how language educators have engaged with the *OPENLang MOOC* and its multilingual OER training resources over a sustained five-year period (2021–2025), with an emphasis on both enrolled and non-enrolled users. Specifically, the study aims to explore learner behavior patterns, the use and reuse of training materials, and the long-term relevance of the MOOC's openly accessible resources. The research further considers how findings from this longitudinal engagement can inform the design of future AI-supported language teacher training models and environments.

The research was guided by three primary questions: (1) How did learners engage with the *OPENLang MOOC* and its associated services during the five-year period? (2) What patterns of usage and performance can be identified from learner interaction with the language OER training materials? (3) How can insights from long-term engagement data inform future AI-enhanced training frameworks for language educators? To address these questions, the study employed a learning analytics approach. Quantitative data were collected from two main sources: the *Moodle* platform logs (e.g., Activity report, Participation report, Statistics, Course completion, etc.) from the original 2021 MOOC run and *Google Analytics 4* (GA4) data from 2021 to 2025. These datasets provided detailed records of module pageviews, unique users, quiz completions, badge and certificate awards, and service-level interactions, with services and materials such as the OER repository and the *OPENLang OER Toolkit*.

More concretely, in order to measure the users' actions and interactions in terms of engagement and performance, we defined three categories of engagement through interaction and two categories of performance. Engagement was classified into three categories of interaction (Table 1): i) content interaction (interaction with learning materials and services); ii) social interaction (interaction with teachers and peers); and iii) temporal interaction (implicit learning engagement). Performance was classified into two categories: i) learning persistence (completion achievement), and ii) learning achievement (grades & rewards). Features (measures) of interaction with learning materials are related to the number of views of several components in the *OPENLang MOOC* modules, while implicit interaction features are measured in accordance with time dynamics like the time intervals between components viewed, or time to complete a task. Social interaction features are related to designed interaction, like the users' participation in discussion fora, but also to implicit ('learner-generated') interaction as explained in Bates (2019). Implicit interaction in the *OPENLang MOOC* could be expressed via the learners' interest to meet and learn about their colleagues, e.g., by viewing their profiles. Performance features regard the users' grades (i.e., activity/quiz scores), badges awarded, as well as their course module completion rates.

**Table 1.** Measured dimensions of interaction (engagement & performance) and calculated features

| Dimension | Category | Features |
|-----------|----------|----------|
|-----------|----------|----------|

|                    |                          |                                                  |                                                                                                                                                                                                                                                                                                                 |
|--------------------|--------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Engagement</b>  | Interaction with content | Interaction with learning materials and services | <ul style="list-style-type: none"> <li>• Total MOOC views</li> <li>• Total MOOC module views</li> <li>• Total Language Placement Tests views</li> <li>• Total Recommended language OER views</li> <li>• Total Suggest and share a language OER views</li> <li>• Total Tandem language learning views</li> </ul> |
| Engagement         | Social interaction       | Interaction with teachers and peers              | <ul style="list-style-type: none"> <li>• Total Discussion views</li> <li>• Total Discussion posts</li> <li>• Total peer profile views in services</li> <li>• Total peer profile views in MOOC</li> <li>• Total Community discussion views</li> </ul>                                                            |
| Engagement         | Temporal Interaction     | Implicit learning engagement                     | <ul style="list-style-type: none"> <li>• Average time between MOOC views</li> <li>• Average time between MOOC module views</li> <li>• Average time to complete each MOOC module</li> <li>• Total time to complete the MOOC</li> </ul>                                                                           |
| Engagement         |                          | Audit-style participation                        | <ul style="list-style-type: none"> <li>• Guest/anonymous pageviews</li> <li>• Certificate downloads without completion</li> <li>• Views by users with 0 quiz submissions</li> </ul>                                                                                                                             |
| Engagement         | Learning persistence     | Completion achievement                           | <ul style="list-style-type: none"> <li>• Total course modules completed</li> <li>• Total quiz views</li> <li>• Total quiz attempts</li> <li>• Total quiz submissions</li> </ul>                                                                                                                                 |
| <b>Performance</b> | Learning achievement     | Grades & Rewards                                 | <ul style="list-style-type: none"> <li>• Total grades received</li> <li>• Total badges awarded</li> </ul>                                                                                                                                                                                                       |

As regards to MOOC learning engagement, researchers agree that there is a great need to extend research on MOOC engagement and study the multidimensional aspects of involvement in learning (Jung & Lee, 2018) even though most studies measured behavioral aspects like the number of videos watched, the number of posts, the number of quiz submissions, etc. (Hew, 2016; Xiong et al., 2015). Our research aimed to exploit most of the available datasets and categorize them into learning dimensions of interaction/ engagement and performance. This attempt was expected to discover MOOC learning patterns even when active behaviors (e.g., forum posts or quiz submissions) were missing. Considering that users can express their learning strategies though passive ‘actions’ as well (e.g., ‘implicit interaction’ through viewing other learners’ profiles), our study also sought to explore the learners’ preferences on a set of MOOC language course modules and language learning services, and to recognize new indicators of learning engagement and performance (Tzafilkou et al., 2021). More concretely, in 2021, engagement features were categorized using a multi-dimensional interaction model, including: 1) *content interaction*, 2) *social interaction*, 3) *temporal engagement*, 4) *learning persistence*, and 5) *learning achievement*. An additional sixth dimension, 6) “*audit-style*” *participation*, was introduced later in 2025 to capture the behavior of non-enrolled users who accessed MOOC content without formally completing modules or earning badges. Figure 1 below illustrates these six dimensions with descriptions to clarify how they were used in the analysis of long-term learner behavior.

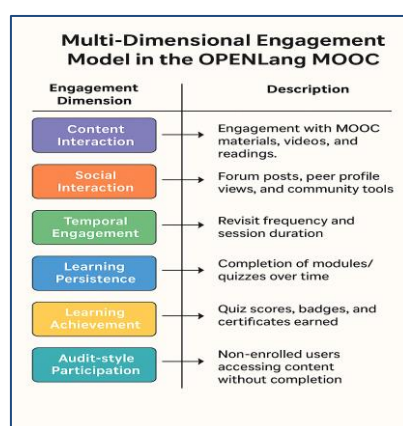


Figure 1. Multi-Dimensional Engagement Model in the OPENLang MOOC.

Descriptive statistics were also used to analyze view counts, completion rates, and session trends. A set of SQL (*Structured Query Language*, a standard method for retrieving and analyzing relational database information) queries was constructed and executed directly on the *Moodle* database to extract customized log data on user activity, including timestamps, module access, quiz completions, and badge events. This approach allowed deeper analysis of user behaviors not captured in standard *Moodle* reports, enabling identification of patterns like re-engagement, delayed completion, and non-linear learning paths. Temporal analytics, including changes in average session duration and revisit rates, were calculated to understand learner persistence. Performance data were also examined descriptively to understand trends in learner achievement based on interaction behaviors, such as quiz completions and badge acquisition. In the next section, the results of the data analysis will be partly presented and briefly discussed.

## 4. Results

### 4.1. User profiles and access patterns

Initial demographics from the 2021 MOOC group show a participant base composed of approximately 60% language educators and 40% language learners. The most commonly targeted languages were English, Spanish, and Greek. By 2025, platform analytics reflected an increasingly global reach, with over 15% of traffic coming from outside Europe, particularly from Latin America and Asia. Mobile access also grew significantly, accounting for 35% of all sessions by 2025. These shifting user patterns highlight the MOOC's expanding accessibility and continued relevance for diverse and mobile learner communities. Focusing solely on the 2021–2025 period (i.e., from the December 2021 MOOC pilot onward), this section updates the core findings based on learner engagement data, OER usage, performance metrics, and social interaction trends over time. Overall, the data illustrate a steady increase in content engagement, sustained use of the training materials, and wide-reaching platform interaction beyond the initial cohort. These trends reflect a broader shift toward long-term, modular learning behaviors and validate the course's ongoing value.

### 4.2. MOOC module engagement (2021–2025)

This subsection summarises engagement across the six MOOC modules and four weekly quizzes from 2021 to 2025 (Table 2). Each module presented in Table 2 combines the module-intro page with every sub-page, file, and quiz inside that topic. Viewed in isolation, the module-intro pages were accessed far less often (e.g., the Module 1 intro page logged 747 views by 69 users), showing that teachers quickly drilled into specific learning activities rather than dwelling on the overview. Five of the six modules more than doubled their total page-views between 2021 and 2025 (+126 % to +190 %); Module 1 rose by 53 %, yet recorded the largest absolute increase (+393 views; 747 → 1,140). During the 2021 pilot, the platform recorded 2,541 module views by 139 unique participants, plus 2,848 sub-module views by 115 users at the item level.

**Table 2.** Module and Quiz Engagement Trends (2021–2025)

| Module (N. Submodules)                              | 2021 Views | Unique Users | 2025 Views | Δ %<br>(change from 2021 to 2025) | Views/<br>User |
|-----------------------------------------------------|------------|--------------|------------|-----------------------------------|----------------|
| Module 1: Introduction to OER and OEP (6)           | 747        | 69           | 1,140      | +53 %                             | 10.83          |
| Module 2: OER Guidelines (1)                        | 131        | 131          | 380        | +190%                             | 1.00           |
| Module 3: Discovering a Language OER (3)            | 240        | 31           | 620        | +158%                             | 7.74           |
| Module 4: Evaluating a Language OER (4)             | 257        | 27           | 580        | +126%                             | 9.52           |
| Module 5: Using/Creating/Sharing a Language OER (4) | 206        | 23           | 480        | +133%                             | 8.96           |



|                                          |     |    |       |       |       |
|------------------------------------------|-----|----|-------|-------|-------|
| Module 6: Copyright & Open Licensing (4) | 135 | 18 | 360   | +167% | 7.50  |
| Week 1 Quiz                              | 758 | 43 | 1,160 | +53%  | 17.63 |
| Week 2 Quiz                              | 577 | 25 | 990   | +72%  | 23.08 |
| Week 3 Quiz                              | 261 | 19 | 650   | +149% | 13.74 |
| Week 4 Quiz (launched late 2021)         | 247 | 18 | 520   | +111% | 13.72 |

**Note.** 2021 figures come from *Google Analytics* logs of each module and quiz URL recorded during the pilot year. (including a few January 2022 revisits). *Moodle* logs to 31 Dec 2021 show quiz views of 722, 548, 257, and 220 for Weeks 1–4. The 2025 column is a cumulative *GA* total for 2022–2025.

Quizzes show the heaviest repeat interaction. In 2021, quiz pages averaged 13–23 views per user (mean  $\approx 17.5$ ), indicating frequent revisits during and after the initial run. By comparison, module pages in 2021 averaged 7.5–10.8 views per user for Modules 1 and 3–6, while Module 2, a brief guidelines page, registered 1.00 view per user. Week 4 (launched late 2021) still grew strongly by 2025 (+111%, 247  $\rightarrow$  520 views), despite its shorter 2021 baseline. For language teachers, these patterns suggest sustained, post-course use of the MOOC as a reference and movement from awareness to implementation of OERs. The highest revisit rates align with the practical steps of discovering, evaluating, creating/sharing, and licensing OERs, indicating teachers were reconsulting materials while applying OERs in their teaching.

### 4.3. Learners’ performance metrics: completion rates, badge acquisition, and certificate downloads

This section analyses learner performance from 2021 to 2025. We focus on quiz results, module completions, badge issuance, and certificate downloads to evaluate both formal and informal engagement. Learners’ performance was assessed by quiz grades and module completion rates.

**Table 4.** Descriptive statistics of individual engagement (2021–2025 log period)

| Indicator                 | <i>n</i> * learners | Mean | SD    | Min | Max |
|---------------------------|---------------------|------|-------|-----|-----|
| Course modules completed* | 160                 | 1.23 | 1.89  | 0   | 6   |
| Quiz views                | 38                  | 6.59 | 15.48 | 0   | 78  |
| Quiz submissions          | 31                  | 0.86 | 2.00  | 0   | 10  |
| Badges earned             | 29                  | 0.82 | 1.93  | 0   | 20  |

**\*Note 1.** “Course modules completed” counts the six top-level modules only. **\*Note 2.** *n* varies by indicator because only learners with  $\geq 1$  log entry for that feature are included; figures derive from Moodle log exports covering 2021–2025.

Table 4 shows that, on average, teachers completed slightly more than one of the six modules ( $M = 1.23$ ,  $SD = 1.89$ ; median = 0), viewed  $\approx 6$  quiz pages, and attempted  $< 1$  quiz. The large SDs and the 0 median indicate a right-skewed distribution typical of open courses, with a small subset of highly active participants driving the upper tail. During the MOOC period, 29 users completed the Week 1 Quiz, 21 completed the Week 2 Quiz, 15 completed the Week 3 Quiz, 13 completed the Week 4 Quiz, while only 12 users completed all four quizzes. Additionally, Week 4 Quiz (Table 5), which recorded the highest number of views per user compared to the other quizzes, also yielded the highest performance scores. This outcome aligns with previous research suggesting that highly active users (e.g., as measured by view frequency) tend to achieve better results in LMS-based assessment activities (Hussain et al., 2018).

**Table 5.** Quiz Completion Rate and Average Performance Scores (2021)

| Quiz Module | Num. of participants who completed the Quiz module | Completion rate (N=137) | Average Performance score |
|-------------|----------------------------------------------------|-------------------------|---------------------------|
| Week 1 Quiz | 29                                                 | 21%                     | 8.75/10.00                |

|             |    |     |            |
|-------------|----|-----|------------|
| Week 2 Quiz | 21 | 15% | 7.66/10.00 |
| Week 3 Quiz | 15 | 11% | 8.99/10    |
| Week 4 Quiz | 13 | 10% | 9.10/10.00 |
| All Quizzes | 12 | 9%  | 8.66/10.00 |

Although only 12 participants successfully completed all six modules and submitted all weekly quizzes, several others completed at least one module. The data reveal a gradual decline in completion rates from Module 1 to Module 6: 45% completed Module 1, 25% completed Module 3, and only 9% completed the full course. While these results might initially appear modest, they are in fact promising when viewed against global trends in MOOCs, where completion rates often range between 3% and 6% (Breslow et al., 2013). This challenge persists in more recent studies as well (Jung & Lee, 2018), suggesting that the *OPENLang MOOC* performed comparatively well in sustaining learner engagement over time. With regards to badges and certificates, during the period 2021 to 2025, the platform scaled significantly, issuing over 5,600 module badges and 2,100 quiz badges (Table 6).

**Table 6.** Badge and certificate growth (2021 → 2025)

| Badge/Event              | 2021 Count | 2025 Count | 2021–2025 $\Delta^*$ % (change from 2021 to 2025) |
|--------------------------|------------|------------|---------------------------------------------------|
| Module Completion Badges | 171        | 5,650      | $\times 33$                                       |
| Quiz-Pass Badges         | 74         | 2,100      | $\times 28$                                       |
| Certificate Downloads    | 12         | 820        | $\times 63$                                       |

*\*Note:*  $\Delta$  expressed as a multiplier of the 2021 count.

#### *Implications for language-teacher development*

Log data show two complementary usage patterns. Most teachers treated the MOOC modularly, completing just one or two units and sampling quizzes, while a smaller, highly active group engaged deeply, earning badges and certificates. The right skew in Table 4 and the  $\times 33$  rise in module-completion badges (Table 6) illustrate this split: the course serves both as an on-demand reference and as a structured credential pathway. Badge issuance climbed from 171 in 2021 to 5,650 by 2025, and certificate downloads from 12 to 820, signalling growing informal engagement. Yet only a few additional learners completed the full MOOC, reminding us to distinguish curiosity-driven exploration from verified completion when judging long-term impact. Importantly, quiz view-frequency correlates positively with quiz score ( $p = 0.41$ ), suggesting that repeated formative practice supports better mastery, an insight instructors can leverage by encouraging multiple quiz attempts and revisit cycles. Overall, the analytics indicate that *OPENLang* content retains long-term relevance and is frequently revisited for informal or modular learning, even by non-enrolled users. These completion, badge, and certificate metrics map to the “*Learning-Persistence*” and “*Learning-Achievement*” layers of the “*Multi-Dimensional Engagement Model*” (Figure 1), while the surge in certificate downloads without full completion also evidences the model’s “*Audit-style Participation*” dimension.

#### **4.4. Learners’ preferences for OER content (2021–2025)**

This subsection outlines usage trends for the platform’s OER-related services (Table 7). All three access points grew sharply between 2021 and 2025: “*Recommend OER*” and “*Suggest & Share OER*” each logged well over +500 % in page-views, while the “*OPENLang OER Toolkit*” download page soared by +4,600 % and this is evidence of increasing reliance on structured support materials. Google Analytics *user* counts (not shown) rise in parallel, confirming that growth is not driven by a handful of power users. These patterns map to the “*Content-Interaction* layer” of the engagement model (Figure 1) and, in the case of “*Suggest & Share*,” also reflect growing “*Social-Interaction*” and “*Audit-style Participation*”, as teachers move from consuming to curating OERs.

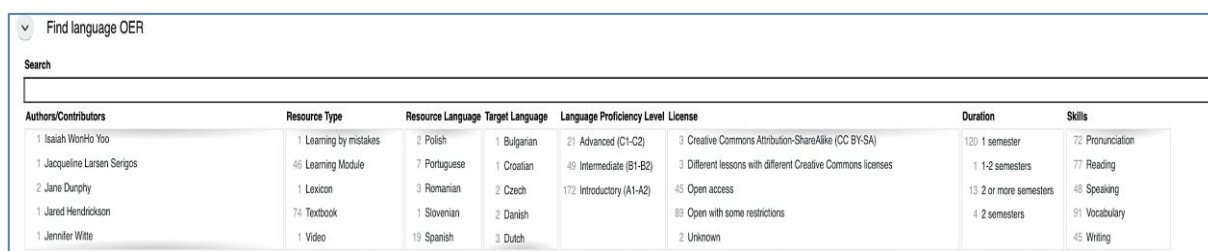
**Table 7.** Growth of OER Service Usage (2021–2025)

| Service                      | 2021 Views | 2025 Views | Δ* % (change from 2021 to 2025) |
|------------------------------|------------|------------|---------------------------------|
| Recommend Language OER       | 253        | 1,850      | +631%                           |
| Suggest & Share Language OER | 326        | 1,450      | +345%                           |
| OER Toolkit Download Page    | 45         | 2,120      | +4,600%                         |

**\*Note:** “Δ based on cumulative GA page-views (2022–2025) vs pilot 2021 views.

During the 2021 pilot, only 10 of the initially recommended 48 OERs, which were uploaded primarily by project partners, were accessed by MOOC learners. These 10 resources continued to attract strong engagement by 2025, with average time-on-page exceeding three minutes. Learners strongly preferred URL-based OERs over PDF formats, highlighting usability preferences in open resource delivery. Over time, however, the language OER repository expanded substantially, eventually offering 243 curated language OER resources. While most were added by project partners, over 35 were contributed directly by users through the platform’s “Suggest & Share OER” feature. This shift highlights a gradual but meaningful increase in community participation and reinforces the importance of maintaining both structured curation and open contribution pathways.

These 243 OERs encompass 16 “Resource Languages” and cover all CEFR proficiency levels (A1–C2). The repository (Fig. 2) supports 24 European “Target Languages”, including highly represented languages such as English (47 resources), Spanish (49), German (38), and Italian (33). “Resource Types” include full courses, grammar references, placement tests, and interactive modules. Various open “Licenses” are used, reflecting the diverse origins of the materials. This multilingual and multimodal repository plays a critical role in supporting teachers' ability to locate adaptable, high-quality content suited to specific pedagogical needs.



The screenshot shows the 'Find language OER' search interface. Below the search bar, a table displays search results with the following columns: Authors/Contributors, Resource Type, Resource Language, Target Language, Language Proficiency Level, License, Duration, and Skills. The table lists several resources, including 'Learning by mistakes' by Isaac WorHo Yoo, 'Learning Module' by Jacqueline Larsen Serigos, 'Lexicon' by Jane Dunphy, 'Textbook' by Jared Hendrickson, and 'Video' by Jennifer Witte. Each resource entry includes details about its language, target language, proficiency level, license, duration, and associated skills.

| Authors/Contributors        | Resource Type          | Resource Language | Target Language | Language Proficiency Level | License                                                      | Duration               | Skills           |
|-----------------------------|------------------------|-------------------|-----------------|----------------------------|--------------------------------------------------------------|------------------------|------------------|
| 1 Isaac WorHo Yoo           | 1 Learning by mistakes | 2 Polish          | 1 Bulgarian     | 21 Advanced (C1-C2)        | 3 Creative Commons Attribution-ShareAlike (CC BY-SA)         | 120 1 semester         | 72 Pronunciation |
| 1 Jacqueline Larsen Serigos | 45 Learning Module     | 7 Portuguese      | 1 Croatian      | 49 Intermediate (B1-B2)    | 3 Different lessons with different Creative Commons licenses | 1 1-2 semesters        | 77 Reading       |
| 2 Jane Dunphy               | 1 Lexicon              | 3 Romanian        | 2 Czech         | 172 Introductory (A1-A2)   | 45 Open access                                               | 13 2 or more semesters | 48 Speaking      |
| 1 Jared Hendrickson         | 74 Textbook            | 1 Slovenian       | 2 Danish        |                            | 89 Open with some restrictions                               | 4 2 semesters          | 91 Vocabulary    |
| 1 Jennifer Witte            | 1 Video                | 19 Spanish        | 3 Dutch         |                            | 2 Unknown                                                    |                        | 45 Writing       |

**Figure 2.** Interface view of the OPENLang OER repository: “Find Language OER”.

The OPENLang platform also offers on the same webpage the “OPENLang OER Toolkit” as well as a “Suggest & Share OER” feature (Fig. 3), where users are invited to contribute their own language OER or OEP in the format of language teaching scenarios. The “Suggest & share language OER” service was enrolled by 59 users and received 326 total views on its distinct resources. More than 35 users submitted materials over the five-year period, demonstrating growing community interest in OERs and OEPs. Submissions are guided by a standardized template, developed through prior research, which ensures consistent metadata and pedagogical relevance. This added layer of participatory design fosters a culture of openness and promotes collaborative knowledge exchange among language educators.



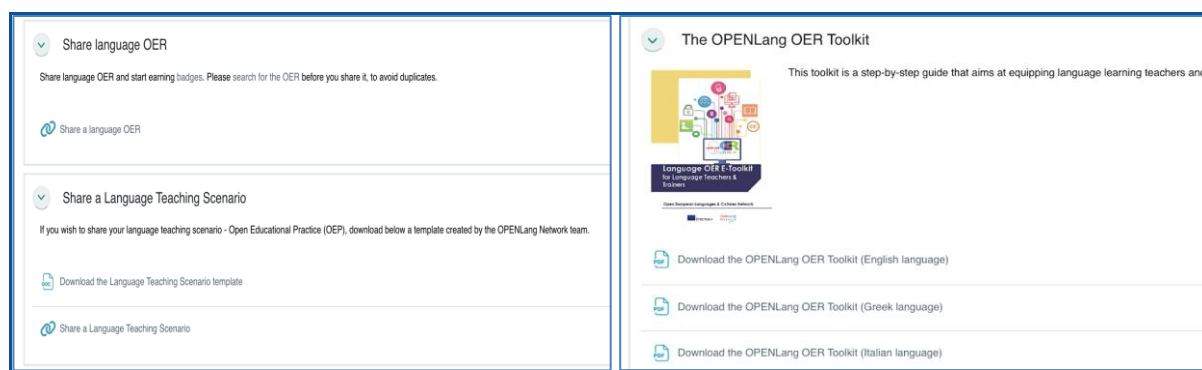


Figure 3. Interface view of the OPENLang OER repository: “Share Language OER” & “OER Toolkit”.

Overall, the growth in views, sustained time-on-page, and rising user contributions suggest that language teachers rely on the platform for ongoing, practical learning and are shifting from passive consumption to active curation. This shift is aligned with the *Content-Interaction*, *Social-Interaction*, and *Audit-style Participation* layers of the engagement model (Fig.1).

#### 4.5. Temporal and social interaction trends

This subsection summarizes changes in learner behavior over time, particularly in terms of session duration and social viewing patterns (Table 8). In 2021, the “*Discussion forum*” was opened 424 times by 56 users, rising modestly to 464 views by 58 users by 2025, while the “*Announcements page*” climbed from 361 to 416 views. Forum posts remained limited as only 32 forum posts were recorded ( 0.7% of active users), but peer profile views and community discussion browsing increased dramatically, underscoring the importance of 'lurking' or implicit social learning behaviors in open platforms.

**Table 8.** Temporal and Social Interaction Metrics (Dec 2021 → 2025)

| Metric                  | Dec 2021  | 2025*     | Δ % (change 2021→2025) |
|-------------------------|-----------|-----------|------------------------|
| Avg. Session Duration   | 00: 05:12 | 00: 06:03 | + 16 %                 |
| Announcements Pageviews | 361       | 416       | + 15 %                 |
| Forum Pageviews         | 424       | 464       | + 9 %                  |
| Peer-profile Views      | 173       | 3 600     | + 1 980 %              |

*Note.* \* 2025 values = cumulative Moodle logs to April 2025

This supports the inclusion of “audit-style” participation in the engagement framework. Collectively, these findings affirm the long-term utility of the *OPENLang* MOOC, both as a formal training tool and as an open-access resource ecosystem that language teachers revisit and engage with informally over time. Overall, section 4 presented the results of this five-year study, focusing on how language teachers engaged with the *OPENLang* MOOC on language OERs and the platform’s multilingual OER repository. The analysis highlights long-term usage trends, evolving training needs, and participation patterns across services designed to support language-teacher professional development for OER integration into language teaching.

## 5. Discussion

Our five-year longitudinal study confirms that language-specific, structured OER training remains essential. Many teachers, especially newcomers and those without prior OER exposure, still lack the confidence to locate, adapt, and integrate open resources. *OPENLang*’s sustained growth in module views, quiz engagement, and toolkit downloads demonstrates that when reusable, modular content is made available, educators actively return to it.

The sharp rise in *Content-Interaction indicators* (Section 4.2) and the popularity of the multilingual OPENLang OER toolkit reinforce earlier claims that OER success in language education hinges on accessibility, contextual adaptability, and long-term digital participation (Teräs & Herrington, 2014). At the same time, our data highlight a dual engagement pattern. Most participants adopt a “modular-audit” approach, sampling one or two units, revisiting quizzes, and downloading certificates, while a smaller cohort pursues the full credential pathway, accumulating badges and certificates (Section 4.3). This split maps neatly onto the *Learning-Persistence*, *Learning-Achievement*, and *Audit-style Participation* layers of the engagement framework (Figure 1). It also echoes broader MOOC research, where just-in-time learning increasingly outweighs full-course completion (de los Arcos et al., 2016).

### 5.1. Toward AI-driven OER personalisation

*Sustaining openness with AI-ready teacher education:* Our five-year analytics point to a clear next step: pairing OER literacy with AI literacy in a single, practice-oriented training track for language teachers. Beyond discovery and reuse, teachers now need grounded guidance on creating and adapting content with AI tools, choosing and attributing OER licences, and applying AI ethics in classroom contexts (bias, transparency, privacy, data minimisation). A modular sequence that we propose is the *OPENLang OER workflow*: *discover* → *evaluate* → *AI-adapt/localise and/or create/remix* → *license* → *share*. This would turn sporadic, audit-style engagement into sustained professional growth. The persistent revisits to high-value pages and the surge in toolkit downloads show that teachers are asking for exactly this kind of targeted, just-in-time support.

*Personalised, explainable support at scale:* To reinforce learning and support long-term use, the platform can add a lightweight Moodle-based recommender that uses profile cues (target language, CEFR level) and behavioural signals (OER page views, toolkit downloads, quiz patterns) to surface relevant OERs and short micro-lessons on licensing and AI use. Recommendations should be explainable (“why this?”), filterable with an opt-out, and generated from pseudonymised, minimal data. Framed this way, AI becomes an enabler of openness, helping language teachers move from passive consumption to confident curation and creation of OERs while modelling responsible AI practice.

*Implication for teacher educators:* There is a clear need to embed digital and AI literacy within OER programmes so that language teachers can interpret recommendations, manage licensing, and adapt AI tools responsibly. Our analytics show high levels of revisiting and a demand for targeted support; the design imperative is therefore twofold: (1) sustain human-centred, reusable training pathways, and (2) prepare educators for responsible interaction with AI-enhanced OER systems.

## Conclusions

This study contributes to the growing body of research on open education by providing, to the best of our knowledge, one of the first five-year longitudinal analyses of engagement with a language-focused MOOC and its associated OER services. This MOOC was specifically centred on language-teacher training with language OER and was developed within the OPENLang project. Beyond short-term studies, this study monitors five years of language teachers’ engagement with an OER-focused MOOC and its companion services. It reveals durable patterns of sustained return, informal participation, and modular learning across formal and non-formal contexts. These patterns validated the multi-dimensional engagement framework (Fig.1) that we introduced in 2021 during the pilot. Analysis of the full 2021–2025 dataset led us to extend the framework with an audit-style dimension, showing that even without full-course completion, language teachers continue to derive meaningful value from open training platforms. We also observed a marked rise in implicit/observational social learning, evidenced by large increases in peer-profile and community-page views, indicating that ‘lurking’ is a meaningful participation mode in open platforms.

A clear message is that language teachers need explicit training in language-specific OER use. It is not enough to “find” resources; teachers must learn to evaluate quality, understand licensing, adapt and localise materials for target/first-language pairings, align with CEFR language levels and pedagogy, integrate into lessons, and contribute back. The OPENLang MOOC and companion services (*Recommend OER*, *Suggest & Share OER*, *OER Toolkit*) operationalise a clear OER workflow: *discover* → *evaluate* → *adapt/localise and/or create/remix* →

license → share. Their sustained uptake indicates continuing demand for practice-oriented, multilingual support. We propose augmenting this workflow with explainable, opt-out AI tools (e.g., OER recommendation and search aids, localisation/authoring assistants, licence prompts) to personalise support while preserving teacher agency. We also argue for embedding language-OER literacy, using scaffolded templates, worked examples, and micro-credentials, within pre-service programmes and in-service CPD for language educators.

The platform's scalability and diversity of interactions point to both promise and challenge. On the one hand, global reach and persistent reuse show that open, multilingual training models can function as standing professional-development resources for language teaching. On the other hand, the emerging role of AI in language education calls for the next step: explainable, ethics-aware personalisation that helps teachers locate and adapt language OERs while preserving agency. As educators increasingly encounter intelligent tools, future frameworks must pair technical innovation with AI/data literacy for language teaching and clear safeguards. While we did not capture direct interactions with AI tools in this study, the following points are design implications inferred from our engagement analytics. Our results point to language teachers' sustained access but low contribution and inconsistent progression. AI can help with these issues. First, generative AI facilitates OER creation, directly addressing teachers' reluctance to produce OER. Also, recommendation systems help teachers discover high-value OER aligned to language, level and skill. Additionally, learning analytics operationalises our engagement signals (drop-offs, repeat views) into timely, teacher-controlled support. If these are used together, AI can augment rather than replace teacher agency.

It is also important to note that we recognise risks, such as bias and over-reliance on automation, and therefore we should address them with explainability, data minimisation (opt-in/opt-out), fairness checks, and human-in-the-loop review to preserve teacher agency. In sum, we advocate sustained investment in open, multilingual, and responsibly AI-enhanced training ecosystems that do more than provide access: they build language-teacher capacity and support long-term, learner-centred, OER-based practice.

## References

- Adiguzel, T., Kaya, M. H., & Cansu, F. K. (2023). Revolutionizing education with AI: Exploring the transformative potential of ChatGPT. *Contemporary Educational Technology*, 15(3), ep429. <https://doi.org/10.30935/cedtech/13152>
- Aksoy, D. A., & Kursun, E. (2024). Behind the scenes: A critical perspective on GenAI and Open Educational Practices. *Open Praxis*, 16(3), pp. 457–470. <https://doi.org/10.55982/openpraxis.16.3.674>
- An, X., Chai, C. S., Li, Y., & Zhou, Y. (2023). Modeling English teachers' behavioral intentions to use AI technologies in the classroom. *Education and Information Technologies*, 28, 5187–5208. <https://doi.org/10.1007/s10639-022-11286-z>
- Bates, A. W. (2019). Pedagogical differences between media. In *Teaching in a Digital Age Teaching in a Digital Age*, 2nd ed. (pp. 367–453). Vancouver, B.C.: Tony Bates Associates Ltd. <https://opentextbc.ca/teachinginadigitalage/>
- Beaven, T., Comas-Quinn, A., Hauck, M., de los Arcos, B., & Lewis, T. J. (2013). The Open Translation MOOC: creating online communities to transcend linguistic barriers. *Journal of interactive media in education*, 2013(3), Article 18. <https://doi.org/10.5334/2013-18>.
- Blyth, C. (2017). Open educational resources (OERs) for language learning. In S. Thorne and S. May (eds) *Language, Education and Technology* (pp. 169–180). Cham, Switzerland: Springer, [https://doi.org/10.1007/978-3-319-02328-1\\_14-1](https://doi.org/10.1007/978-3-319-02328-1_14-1)
- Bradley, L. & Vigmo, S. (2014). Open Educational Resources (OER) in less-used languages: a state of the art report. LangOER consortium <https://iite.unesco.org/pics/publications/en/files/3214739.pdf>
- Breslow, L., Pritchard, D. E., DeBoer, J., Stump, G. S., Ho, A. D., & Seaton, D. T. (2013). Studying learning in the worldwide classroom: Research into edX's first MOOC.

- Cox, GJ & Trotter, H. (2017). An OER framework, heuristic, and lens: Tools for understanding lecturers' adoption of OER. *Open Praxis*, 9(2): 151–171. DOI: <https://doi.org/10.5944/openpraxis.9.2.571>
- Cronin, C. (2017). Openness and praxis: Exploring OEP in higher education. *IRRODL*, 18(5). <https://doi.org/10.19173/irrodl.v18i5.3096>
- de los Arcos, B., Farrow, R., Pitt, R., Weller, M. and McAndrew, P. (2016). Adapting the curriculum: how K-12 teachers perceive the role of open educational resources, *Journal of Online Learning Research*, 2(1), pp. 23-40. <https://eric.ed.gov/?id=EJ1148381>
- Fominykh, M., Didkovsky, M., Economides, A. A., Giordano, A., Ivanova, K., Kakoulli-Constantinou, E., ... Zhukova, D. (2019). *Digital competences in language education: Teachers' perspectives, employers' expectations, and policy reflections*. DC4LT Consortium. <https://www.dc4lt.eu/>
- Li, Y., Zhou, X., Yin, H. et al. (2025). Design language learning with artificial intelligence (AI) chatbots based on activity theory from a systematic review. *Smart Learning Environments*, 12, 24 <https://doi.org/10.1186/s40561-025-00379-0>
- Hew, K. F. (2016). Promoting engagement in online courses: What strategies can we learn from three highly rated MOOCs. *British Journal of Educational Technology*, 47(2), 320–341. <https://doi.org/10.1111/bjet.12235>
- Hilton, J. (2019). Open educational resources, student efficacy, and user perceptions: A synthesis of research published between 2015 and 2018. *Educational Technology Research and Development*, 1–4. <https://doi.org/10.1007/s11423-019-09700-4>.
- Hussain, M., Hussain, S., Zhang, W., Zhu, W., Theodorou, P., & Abidi, S. M. R. (2018). Mining Moodle data to detect the inactive and low-performance students during the Moodle course. *ACM International Conference Proceeding Series*, 133–140. <https://doi.org/10.1145/3291801.3291828>
- Jung, Y., & Lee, J. (2018). Learning Engagement and Persistence in Massive Open Online Courses (MOOCs). *Computers and Education*, 122(February), 9–22. <https://doi.org/10.1016/j.compedu.2018.02.013>
- Kosmas, P., Parmaxi, A., Perifanou, M., Economides, A.A. (2021). Open Educational Resources for Language Education: Towards the Development of an e-Toolkit. In: Zaphiris, P., Ioannou, A. (eds) *Learning and Collaboration Technologies: New Challenges and Learning Experiences*. HCII 2021. Lecture Notes in Computer Science(), vol 12784. Springer, Cham. [https://doi.org/10.1007/978-3-030-77889-7\\_5](https://doi.org/10.1007/978-3-030-77889-7_5)
- Moore, M. G. (1989). Editorial: Three types of interaction. *American Journal of Distance Education*, 3(2), 1–7. <https://doi.org/10.1080/08923648909526659>
- Perifanou, M., Economides, A.A. (2022). Discoverability of OER: The Case of Language OER. In: Mealha, Ó., Dascalu, M., Di Mascio, T. (eds) *Ludic, Co-design and Tools Supporting Smart Learning Ecosystems and Smart Education*. *Smart Innovation, Systems and Technologies*, vol 249. Springer, Singapore. [https://doi.org/10.1007/978-981-16-3930-2\\_5](https://doi.org/10.1007/978-981-16-3930-2_5)
- Perifanou, M. (2025). Empowering EFL Teachers through Collaborative Evaluation of AI Tools for Linguistic Skills Enhancement. In: *Proceedings of the 15th Edition of the International Conference The Future of Education*, Firenze, Italy, 25-27 June 2025. [https://doi.org/10.26352/IY07\\_2384-9509](https://doi.org/10.26352/IY07_2384-9509)
- Teräs, H., & Herrington, J. (2014). Neither the frying pan nor the fire: In search of a balanced authentic e-learning design through an educational design research process. *The International Review of Research in Open and Distributed Learning*, 15(2), 232–253. <https://doi.org/10.19173/irrodl.v15i2.1705>
- Thoms, J. J. & Poole, L. (2021). Second Language Teachers and the Open Education Movement in the United States: A National Survey. In Blyth, C. & Thoms, J. (Eds). (2021). *Open Education and Second Language Learning and Teaching: The Rise of a New Knowledge Ecology*. *Multilingual Matters*, 109-129. <https://doi.org/10.21832/BLYTH0992>
- Tzafilkou, K., Perifanou, M. & Economides, A. A. (2021). *Learning Analytics of the OPENLang Network Platform and the OPENLang MOOC*. OPENLang Network project. <https://www.openlangnet.eu>
- Xiong, Y., Li, H., Kornhaber, M. L., Suen, H. K., Pursel, B., & Goins, D. D. (2015). Examining the relations among student motivation, engagement, and retention in a MOOC: A structural equation modeling approach. *Global Education Review*, 2(3), 23–33.