Develop OERs for Technology Enhanced Learning

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Abstract

The paper explores the opportunities offered by the integration of OERs design and development in blended learning models. The approach proposed is based on the concept that OERs co-creation process can be itself part of a leaning path that allow learners to drive and design their own learning. In the context of blended learning, combining online digital media as well as the traditional classroom methods, situational affordances are distributed across a network of learning objects (smart) storing a variety of digital contents. Learning takes place when learners collaboratively and creatively generate new contents connections developing new knowledge artefacts. This process activates serf regulated, personalized, collaborative, reflective and situational learning strategies as learners construct knowledge against peer' understandings; negotiating meanings anchored to real word scenarios. The reflection proposed moves from the experience conducted in the framework of the European funded project EULALIA "Enhancing University Language courses with an App powered by game-based Learning and tangible user Interfaces Digital Creativity Enhanced in Teacher education".

Keywords

Open Educational Resources, OERs, Blended Learning, Learning Objects, Personalised Learning, Self-regulated Learning.

1. Introduction

Blended learning models provides the opportunity to develop learning paths combining online digital media as well as the traditional classroom methods [1]. Technology integration enhances learners' engagement to control and design their learning to meet their goals [2]. The goal-setting of personalized learning emphasized self-regulated and self-determined learning [3, 4]. Personalization is "a fundamentally different mode of learning as the learner drives their own learning, actively participating and designing their learning" [5]. Educational technology promotes personalized learning by encouraging learners' differentiated learning experiences [6] increasing their opportunities to improve learning outcomes [7]. Personalized learning instruction allows students to use their time more effectively, and promotes hands-on activities experience [8]. The use of online learning methods in blended learning helps students in using learning materials as their preference. In this context, Open Educational Resources (OERs) are becoming popular as types of reusable and adaptable educational materials that are in the public domain or introduced with an open license [9], and offer opportunities to develop participatory approaches to learning paths development. The workshops conducted in the framework of the EULALIA project (Enhancing University Language courses with an App powered by game-based Learning and tangible user Interfaces Digital Creativity Enhanced in Teacher education)[1] are an example of OERs development methodology that reflects a collaborative and peer to peer approach, where teachers guide the tasks and learners act as sense makers [10] [28]. In this

[1] eulaliaproject.eu/

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perspective OERs design and development become part of a learning path where learners are able to probe their own construction of meaning against others' understandings; essentially negotiating meaning and knowledge[11] [29].

2. Open Educational Resources as situational affordances distributed across a network of learning objects: the EULALIA approach

In the context of the EULALIA project, Open Educational Resources (OERs) are considered as a composition of independent content components, namely Reusable and Interoperable Learning Objects that can function as the Learning Materials (LM) of course unit. Learning Objects include streaming videos or audio snippets, tests, texts, animations or any multimedia or traditional content that support an expanded access to knowledge. A course unit is a scenario of a number of content delivered on demand across a network defined by the combination of instructional quests. Within EULALIA, OERs are ultimately transformed in a physical map, embedding the networks of Learning Objects anchored to Tangible Smart Objects that mediate the interaction between the learner and the digital interface, involving sight, touch and smell, making possible a multisensory learning scenario and a embodied learning experience.

The learning experience deploys when the learner quests on a the physical map scenario by browsing with the phone the Tangible Smart Objects equipped with NFC sensor, which represents the sensitive points (well known by the designer of the scenario and programmed in the app using STELT). Tangible objects act as Tangible User Interfaces (TUIs) mediating the learning path in EULALIA app[2]. Each interaction with the map open the access to a learning content [12]. The more context a learning objects has, more the learning experience become meaningful [13]. Furthermore, the internalization of the learning experience, fundamental in the learning process, is successful when concepts and knowledge are anchored to real-life problems and scenarios [14]. The network path is thus selected by the leaner as well as the learning objects in order to be anchored to real life situations and aligned with learning goals. The learner can reuse (in many ways), revise (adapting, making adjustments, modifications and changes), remix them (mashing up the original or revised content with other open contents, thereby making something innovative), and finally, re-distribute (sharing the new content with others) [15]. From this prospective Tangible User Interfaces (TUIs) [16] represents a system embodying the interaction with physical objects of the scenarios that support knowledge acquisition through experience. From a cognitivist learning perspective, TUIs can support the storing of new knowledge related to the physical world. This is done either through expressive or explorative activity [17, 18], as the physical interaction allows the learner to construct knowledge of the world through experiencing it [19] - or to learn by doing (manipulating things in the physical world) [20]. In this view, the learner acts and intervenes on the scenario with a physical interaction on the system, promoting action in line with the interactive storytelling approach [21]. The user, can either interact through a virtual or physical map; the different symbols (smart objects) store different digital contents of the situational affordances network. Each interactive object on the map constitutes an interoperable Learning Object [22, 23, 24] that can be reused to combine a different instructional learning path.

The pedagogical approach underpinning the development of OERs is based on the concept that situational affordances are distributed across a network of learning objects (smart) storing a variety of digital contents and take place when learners collaboratively and creatively generate new contents connections developing new knowledge artefacts [25], self-directing and serf regulating their learning path.

[2] https://play.google.com/store/apps/details?id=it.smarted.eulalia&hl=en

3. A perspective of Open Educational Resources (OERs) Design and Development

In the framework of EULALIA project the approach to the OERs design and development was conceived starting from on agile practices, focusing on the content and instructional[26] design, partly taking inspiration from the approach for software development having sprints and incremental development [27] phase, and the AIMED method [28].
The OERs development workshops started from the learning needs and/or problems identified by the educators, through a previous survey as part of the initial phase of the project devoted to highlighting the needs of leaners in the context of HEIs courses for Erasmus students. Conceived as a tool supporting cultural and language education, EULALIA scenarios had to focus on three main fields, namely: 1) cultural heritage and traditions, 2) daily life situations, 3) second language acquisition
The first round of workshops involved approximately 100 among teachers and researchers. The second round of workshops involved 200 Erasmus students.
During the co-design workshops an active participation of learners and lecturers was encouraged, either in person or via on line platforms. OERs development activities were carried out in groups applying brainstorming and sprint retrospective, either face-to-face or by synchronous communications. Collaboration and an enquiry based approach were promoted, supporting the interaction and exchange of information and knowledge among all participants involved.
Each workshop was facilitated by a "mentor" providing instructional strategies for different learner groups, at the same time promoting the opportunity for students to proceed on their own and learn independently, in order to conciliate personalization and differentiation [29] of the learning experience in the context of the OERs development. In this process, students became responsible to construct their learning experience, moving from consumers to co-producers [30]. Creativity and problem solving were encouraged, participants previous knowledge stimulated as functional to develop solutions to the challenges proposed by facilitators. Around a particular domain and highlighted learning need, the facilitator supported the participants to propose a learning object. Following an explorative process, participants were asked to reflect about further related learning objects deepening the knowledge and contents proposed.
OER Authoring tool [31], in form of a scheme supporting the advancement of the scenario storytelling process, was provided, in line with digital game-design tasks logic [32]. The tool supported the collection of information related to each interaction/task the user will play while exploring the scenario on the physical map.

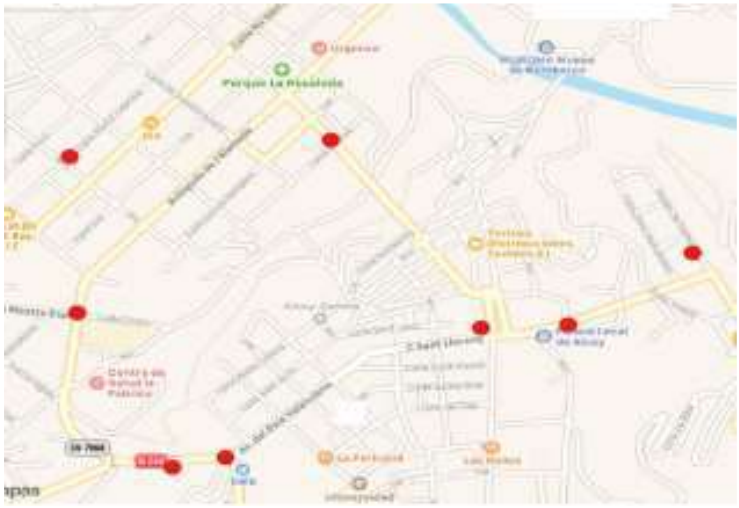

Figure 1: Example of interactive map "Conoce Valencia" developed during Eulalia workshop in Alicante, Spain.

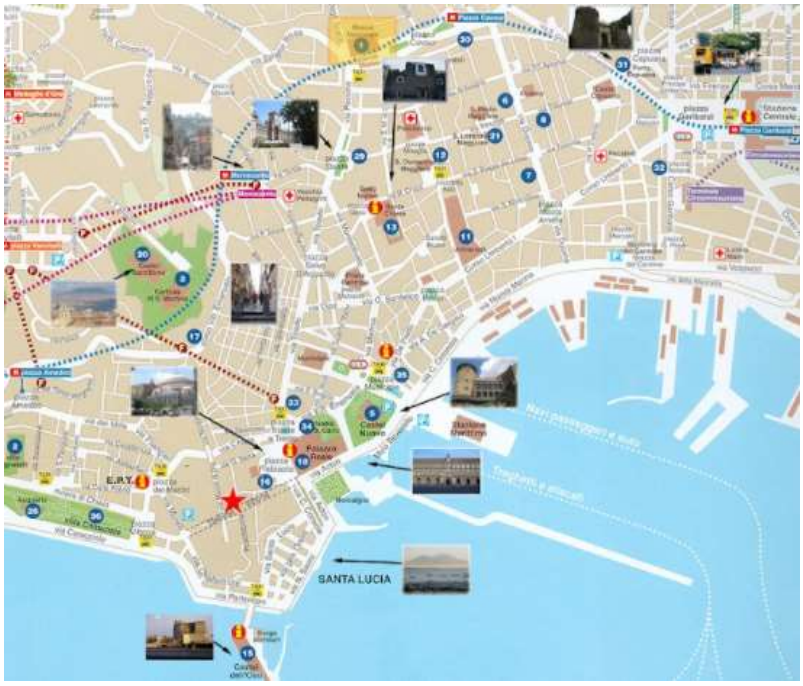

Figure 2: Example of interactive map “Explore University of Naples Federico II and the city of Naples” developed during Eulalia workshop in Naples, Spain.

Figure 3: Example of interactive map “Explore graffiti” developed during Eulalia workshop for teachers in Poznań, Polond.

During the workshops students were called to decide an “exploratory subjects” representing the culture of the country and guiding the exploration of the map that could be either virtual or physical. In the case of figure 3 the “exploratory subject” was graffiti. Students were asked to identify on the map of the city the location of the graffiti. A physical object, a smart object, representing each graffiti is placed on the map to allow interaction during the activities that could take place within the mainstream curriculum to support the learning path. The interaction with the smart object on the map, allow the fruition of additional contents related to the graffiti placed across the scenario

4. Benefits and advantages of introducing OERs development as part of blended learning path

Open Educational Resources (OERs) design and development is gaining attention as a mean to innovate pedagogy, helping to break demographic, economic, and geographic educational boundaries [33]. The transformative potential of OERs to facilitate the access to knowledge offers opportunities for innovation of learning strategies. OER-integrated learning incorporates the following key principles:

- Promotes lifelong learning opportunities and encompasses education and training.
- Encourage independent and critical thinking through learner-centered learning process.
- Encourage flexible learning – allow learners to make their own decision on where, when, what and how they learn [34].
- Encourage reflective practice through and from experience towards gaining new insights of self and practice'[35].
- Encourage internalization of the learning experience anchoring concepts and knowledge to real-life problems and scenarios.
- Encourage contextualization of prior learning, prior experience, and demonstrated competencies to develop what is needed to adjust to the situation [36].
- Promote collaboration, increasing the interaction and communication amongst all involved in the development.
- Support personalized, self-regulated learning [37].

Integrating OERs development in the learning path empowers students to take the lead, direct their own learning, solve problems, collaborate effectively, and share work [38.] Moreover, immersing students in OER development encourages them to create a learner-generated OER content as a result of a creative work that stimulated refection and collaboration with peers [39].

The participants' feedback was collected at the end of the workshops based on a questionnaire consisted of unstructured questions which were open-ended. The feedback collected highlight numerous advantages regarding the use of OERs: enhanced quality and flexibility of resources, freedom of access. Regarding the involvement of leaners and educators in the process of OERs development, the investigation highlighted the following positive aspects: enhanced opportunities for learner-centered approach, promotion of self-directed leaning strategies, development of peer-to-peer and collaborative learning, promotion of socialization and communication among participants, development of a more flexible learning path that can combine formal and informal context. Furthermore learners enhanced confidence in their thinking and problem solving skills, positive attitude towards learning, increased engagement, sense of responsibility and motivation over the learning path.

5. Conclusions and future directions

Including the OERs design and development as part as part of blended learning path enhances the quality of learning experience by enabling learner-centered, self-directed, peer-to-peer and collaborative approach. Such approaches are promoted when the learners are guided by instructions but work creatively and autonomously sharing their knowledge and skills, applying their competences to find solution. This activates a process of knowledge self-construction where learners are able to probe their own construction of meaning against others' understandings; negotiating meanings in the context of real word scenarios.

The next step brings to the piloting of EULALIA methodology in the formal teaching and learning context, following teachers and lecturers training on how to use and embed the tool within the activities part of the curriculum. During the piloting phase, data will be collected, both qualitatively and quantitatively, to assess the following dimensions: development of language competencies, learning of cultural aspects of a city/country different from that of origin, personal development, and impact on the teaching and learning practice.

6. Acknowledgment

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