Can Learning Objects Help Student-Teachers Become Self-Regulated Learners?

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Abstract

This paper describes how an original resource set of learning objects was developed to foster learning to learn (Gargallo Lopez et al., 2020) among student-teachers and how these interactive online materials are planned to be effectively incorporated into an intervention. Such implementation follows an innovative pedagogical framework based on a sociocognitive view of self-regulated learning (SRL) and the integrative learning technologies (ILT) approach to technology. The full project, starting in August 2021, proposes the independent use of the resource set of learning objects as a starting point to assist student-teachers with the development of self-regulated learning in their English courses under this new framework.

Keywords: learning objects, learning to learn, self-regulated learning, sociocognitive perspective, integrative learning technologies.

Since the end of the 20th century, the approaches and paradigms of higher education have been significantly influenced by the advancement of information and communication technology (ICT). This influence evidently increased last year (2020), when, due to the COVID-19 pandemic, educational systems worldwide had to move indefinitely from face-to-face and blended learning to a fully online modality.

In line with this influence, for about two decades now, an impressive amount of electronic learning tools and their related outputs such as learning objects have been designed and usually made readily accessible in the form of online learning repositories for assisting higher education students to develop specific knowledge and/or skills. Surprisingly, the use of these online materials has been considered limited and unsystematic, often lacking a pedagogical plan to achieve a purpose (Falloon, 2015, Fierro & Bosquez, 2016).

With this situation in mind, as part of a sabbatical leave project (March 2020-March 2021), this paper's author created a resource set of learning objects to foster learning to learn among student-teachers at his higher education institution in northern Mexico and outlined a pedagogical intervention to effectively use this resource set. Accordingly, this paper is divided into two main sections: 1) a description of the development of an original resource set of learning objects to foster learning to learn and 2) a discussion of the pedagogical

intervention to use the resource set. These sections will be followed by a short reflection on issues arising from the implementation of the project.

The Development of an Original Resource Set of Learning Objects to Foster Learning to Learn

The Bachelor of Arts (BA) degree in ELT offered by a school of languages at a public university in northern Mexico, where this project is contextualised, was redesigned last year (2020). As part of this redesign, and in response to lessons learnt from the implementation of the old curriculum (such as the unsuccessful and isolated efforts to foster learner autonomy, the lack of connection among interrelated courses on technological tools, the students' teacher dependence, and the graduates' poor digital literacies), the content of the courses in the strands of technology and autonomous learning were strengthened with more content under a competency-based, more flexible curricular organisation for learners to actively foster the use of ICT for learning and raising awareness of this process beyond school context. These modifications, along with the author's interest in a technologically driven learner centric paradigm (deemed relevant and desirable by national and international education policies) inspired this project.

The initial step in developing the resource set under consideration was an exploration of the concept 'learning to learn' in higher education. As a result, the following up-to-date and comprehensive definition by Gargallo López et al. (2020) was adopted: "learning to learn implies the ability to organize and regulate learning itself in an increasingly effective and autonomous way depending on the objectives, the context and the needs" (p. 36). This view considers learning to learn as a lifelong learning competence attached to a theoretical model which includes five dimensions: cognitive, metacognitive, affective-motivational, social-relational, and ethical. Each of these dimensions is then divided into four or more subdimensions. In connection with this understanding, a sample of alumni, current students (in the 5th, 6th, 7th, and 8th semesters of a four-year programme), and teachers of the English strand on the BA under consideration answered a Likert survey to identify their priorities regarding the dimensions and subdimensions of the competence and include them as the content of the resource set of learning objects.

The priorities of the three types of participants (alumni, current students, and teachers) were compared. Additionally, in view of the role, expertise, and experiences of the teachers with many cohorts of student-teachers, more weight was given to the teachers' input. The findings showed that the two most important dimensions were the metacognitive and the

cognitive, which correspond with the fact that, in the literature, metacognitive and cognitive strategies have been considered as synonyms with learning to learn strategies and their mastery acknowledged as a pre-requisite for effective lifelong learning (Cornford, 2002). In addition, one subdimension of the affective dimension and one subdimension of the social-relational dimension were highlighted by the participants. These dimensions and subdimensions follow:

In the metacognitive dimension:

- knowledge about the self, the task, and the strategies to approach it,
- planning, organising, managing time and self-evaluation / control / self-regulation.

In the cognitive dimension:

- effective information management,
- ICT management,
- critical and creative thinking.

In the affective dimension:

- motivation and a positive attitude towards learning.

In the social-relational dimension:

- teamwork.

In connection with this initial step (and leading to the second one), it is worth mentioning that an exploration of how learning to learn has been approached in other higher education institutions shows that one-to-one scaffolding, along with the use of technological tools, has been used to enhance this lifelong learning competence. For instance, advisors have promoted the use of student-owned iPads for managing self-directed language learning under a cyclical model of action research (Lammons et al., 2015). Equally, in an elective course aimed at supporting learners to take charge of their own language learning, students have been supported by learning advisors to use electronic tools for setting goals, choosing resources, making and implementing a plan, and evaluating their own progress (Ambinintsoa et al., 2021).

The second step in developing the resource set of learning objects was a review of the concept of a learning object. Within this analysis, it was clear that the term 'learning object', initially based on a general definition by The Learning Technology Standards Committee in 2002, was soon refined by Wiley (2002) in his ground-breaking book, *The Instructional Use*

of Learning Objects, as "any digital resource that can be reused to support learning" (p. 6). This definition served as a theoretical basis for a subsequent definition by Weller (2007), which was adopted for this project: "a digital piece of learning material that addresses a clearly identifiable topic or learning outcome and has the potential to be reused in different contexts" (p. 27).

The third step in developing the resource set under consideration was the selection of an authoring tool to create the learning objects. For this purpose, following the recommendations of Berking (2016), software applications that could be used to create e-learning were evaluated in conjunction with the intended learning goal of the project. In this way, learning objects were created in order to effectively foster these student-teachers' learning to learn competence in terms of the pre-defined dimensions and subdimensions.

The software evaluation was conducted in light of the previously discussed learning outcome and relevant features from Berking's (2016) list of possible requirements and general recommendations for authoring tools. As a result, the Learning Object Creator (LOC) Tool was chosen[1].

Six key features were regarded as contextually appropriate in choosing this authoring tool for educational purposes. First, the software tool is optimised for alternative learning, which, in this case, is driven by Laurillard's (2002) conversational framework, a pedagogical model based on a tutor-student dialogic interaction for effectively integrating learning technologies in higher education. As Watson (2009) explained, the design of learning objects with the LOC tool reflects this model since it contains 1) 'task interaction,' 2) 'reflection' on the learning concepts involved, 3) 'discussion' by individually engaging with the activities and their feedback, and 4) 'adaptation' by understanding a given learning point via an engagement with graded activities in a sequence.

Second, the provided template allows for several types of e-learning assessment such as multiple choice, fill in the blank, drag and drop, and ranking/ordering. Third, the tool supports a variety of media (i.e., audio, video, documents, and graphics and, 2D animation) and media file formats. Fourth, the software tool offers a flexible and interoperable technical architecture which guarantees a non-fixed, on-demand size of the potential learning objects to be created and the integration of the ones produced in or with other elements/authoring tools. Fifth, the software tool offers an average range of capabilities (not too simple, not too

[1] The LOC Tool was developed by the LLAS Centre for Languages, Linguistics and Area Studies, in partnership with the University of Southampton eLanguages group.

sophisticated), which were not hard to learn for one with a Master's degree in English Language Teaching (the author of this paper). Sixth, it was easy to get training and support from LOC tool developers.

In connection with the previously justified choice of an authoring tool and the pre-defined dimensions and subdimensions of the learning to learn competence, the author used the LOC Tool to create a resource set containing the following nine learning objects:

1) Goal setting: The key to your personal and professional growth.
2) Improving your study time management for achieving your goals.
3) Understanding assignments to reach your academic potential.
4) Using both deep and surface approaches to take control of your learning.
5) Critical Thinking: The key to enhancing your learning.
6) Peer- and self-assessment to improve the quality of your learning.
7) Building your ICT skills to become an effective 21st century learner.
8) Understanding and managing your motivation to reach academic success.
9) Optimising your learning with teamwork.

Each of these interactive items of online materials, which learners can use on their own, followed a common structure that comprised 1) title, 2) introduction, 3) illustration and related quote, 4) activities to complete and check (with collapsible feedback), 5) online tools for practicing the sub-dimension being considered, and 6) further online information about it. (See http://digital-me.org/nat/goalsetting/goalsetting.html for an example of a learning object in the resource set.)

The previously described resource set of learning objects is planned to be revised and enriched in connection with feedback from its first use as part of a pedagogical intervention scheduled to start in August 2021. The following section outlines the proposal for this intervention.

A Discussion of the Pedagogical Intervention to Use the Resource Set

To facilitate the student-teachers' effective use of the resource set of learning objects aimed at fostering their learning to learn competence and considering the factors explained in the introduction, the resource set is planned to be integrated in an intervention following an innovative pedagogical framework based on a sociocognitive view of self-regulated learning (Zimmerman, 2000) and the ILT approach (Kitsantas & Dabbagh, 2010). This framework, derived from the author's in-progress doctoral research (Delgado Alvarado, 2021), considers

the distributed use of tools that integrate technological and pedagogical features of the internet and the web to actively and collaboratively scaffold self-regulatory processes (i.e., learner strategies, such as goal setting, task strategies, self-monitoring, self-evaluation, time management, and help-seeking) embedded into three cyclical phases of learning: forethought, performance, and self-reflection.

The pedagogical intervention is addressed to these student-teachers and is planned to be carried out in a pilot stage from August 2021 to July 2022 (two semesters) and then in a second and third stage from August 2022 to January 2026. Here, insights from research conducted in the preliminary stage will help reshape the project and gradually incorporate all upcoming freshmen, until covering all the student-teachers during the nine semesters of the BA[2].

First, as part of the orientation sessions for new student-teachers, they will be requested to individually create a learning electronic portfolio (e-Portfolio) to show evidence of the independent completion of the resource set of learning objects. Here, these learners will publish an entry on how this resource set relates to what they already know and how these interactive resources can be useful in their learning journey throughout the BA in ELT that they are about to start.

Next, guided by their English teachers, the student-teachers will apply their learning gains on self-regulatory processes from the resource set of learning objects during their English language development courses in the first and second semesters. Following the framework outlined at the beginning of this section, the English contents will be developed under a blended-learning modality via face-to-face and online sessions in a learning management system. This latter ILT subset will allow the integration of a selection of pedagogical tools to scaffold the self-regulatory processes (learner strategies), including learning, administrative, assessment, collaboration and communication, and content creation and delivery tools in the three cyclical phases of learning (Kitsantas & Dabbagh, 2010)[3]. As part of these phases, the learning e-Portfolio created during the orientation sessions will serve to track the student-teachers' progress and achievements in English while showing evidence of the implementation of the self-regulatory processes. In addition, academic coordinators and volunteer teachers in charge of other courses in these semesters will be guided to plan

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[2] The BA in ELT was extended from eight to nine semesters as part of the recent redesign discussed in the first section.

[3] These pedagogical tools will be determined in line with the student-teachers' preferences and practices while attempting to deepen the use of these technologies for lifelong learning.

and develop activities for the student-teachers to transfer the same technology-scaffolded self-regulatory processes to courses other than English language development.

Picturing the Challenge Ahead

For the author, the fostering of self-regulatory skills is a complex, long-term enterprise that goes beyond the single participation of the target users. Thus, using the designed resource set of learning objects in connection with the pedagogical intervention and the active participation of school authorities, academic coordinators, and teachers around these student-teachers is needed to make possible a fruitful outcome. All in all, this represents a real challenge. However, an optimistic view of what can be achieved with this proposal comes from the local academic community's renewed interest in both learning to learn skills and technologies for learning and teaching emerging out of this pandemic time. In addition, this community has previously shown an openness for implementing innovations. For learners, and even for teachers, and for all those involved in this enterprise, it is a once-in-a-century opportunity to take 'learning to learn' to the next level and respond with a loud and clear 'yes' to the question posed in the title of this paper.

Notes on the Contributor

Natanael Delgado Alvarado is a teacher and researcher in the School of Languages at Juarez University of the State of Durango (UJED, after its name in Spanish), Mexico. He served as a language learning advisor and coordinator of advisory services at the university's language centre and has experience with the implementation of hybrid learning models for learning English. Currently, he is a doctoral candidate working towards a Ph.D. in Modern Languages, at the University of Southampton, UK. His research interests lie in the amalgamation of self-regulated learning and integrative learning technologies for enhancing language learning in digital environments.

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