



Design of scripting tools for a learning activity adapted for blended learning

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Abstract. Blended learning and adaptive learning have become increasingly popular in recent years as educational institutions seek new and innovative ways to enhance the learning experience for their learners. This new form of education, which is hybrid, combines online learning that allows learners to learn at their own pace and interact with other learners and instructors as needed, with the traditional classroom that allows for the consolidation and acquisition of knowledge and mastery of skills through interaction between teacher and learners and among learners. In addition, adaptive learning offers learners the opportunity to personalize their learning experience by providing learning activities tailored to their personal needs. This is particularly useful for those with special interests or who need extra assistance.

In this context, we propose an example of the design of scripting tools for an adapted learning activity for a blended learning course allowing trainers interested in e-learning to have aids to develop their online pedagogical scenarios, in order to maximize learning and encourage greater learner participation.

Keywords: Scripting tools, learning activity, online pedagogical scenario, adaptive learning, blended learning.

1 Introduction

On the path to adaptive learning and blended learning, technology empowers learners by engaging them. It provides them with an education that matches their digital lives and prepares them for the future. With access to technology and resources outside the classroom, learners can find inspiration and become problem solvers, critical thinkers, collaborators, and creators (Lombardi & Oblinger, 2007). Therefore, adaptive learning focuses on building learners' skills and knowledge by providing content tailored to their needs and giving them the tools, they need to learn (Zhu & He, 2012). It is based on the premise that each learner has a unique learning style and that lesson content should be customized to suit that style. However, designing learning activities tailored to this type of training can be challenging. Fortunately, there are scripting tools that can help

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trainers design practical hybrid learning activities as the activity diagram and the specification table are two key tools for designing practical learning activities. The activity diagram allows us to graphically represent the different steps of a learning activity by showing the interactions between the learners and the teacher. It allows us to visualize the learning process as a whole and to plan better the steps to be implemented. The specification table, on the other hand, makes it possible to precisely define the steps to be reached for each activity, according to the skills to be acquired by the learners. It also makes it possible to define the evaluation criteria to measure the success of the activity. These tools thus facilitate the planning and implementation of educational activities in hybrid virtual learning environments, by allowing to better adapt the contents and tasks according to the learners' needs. Indeed, these tools can be used to help adapt learning and implement blended teaching and learning strategies. Scripting involves the creation of learning scenarios that can be used to create lessons and activities that meet the needs of learners. It allows for the planning and setting of goals to be achieved over the next few weeks. This includes selecting content, organizing activities, defining roles and responsibilities, and identifying the resources and tools needed to achieve the objectives. In addition, it includes planning how to communicate and monitor progress.

2 Review of the literature:

2.1 Blended learning:

The concept of blended learning is not new; it has been around since the 1980s when computers became widely available. However, the term "blended learning" was not coined until the early 2000s. Since then, the concept has been widely adopted by schools, universities, and other educational institutions.

It refers to a combination of physical and virtual learning methods. It is an educational concept that aims to provide a balanced approach to education by integrating different modes of teaching. It is essentially a method that seamlessly combines the benefits of physical and digital learning. By doing so, educators can best prepare their learners for the 21st century workforce.

A blended learning approach also increases learner engagement (Tayebnik & Puteh, 2013) and helps them develop important digital skills. In addition, classroom and online instruction can be tailored to meet learners' individual needs and learning styles. Research has shown that blended learning can be an effective approach to helping learners master basic academic skills, such as reading, and writing (Geta & Olango, 2016).

Blended learning can take many forms and involve a range of technologies. For example, it can include traditional courses, online instruction, and classroom activities. In addition, it can involve the use of multimedia, such as video, audio, and interactive tools. As technology advances, the potential for more advanced types of blended learning also increases.

This instructional approach combines several learning models that include face-to-face learning, offline learning, online learning, and mobile learning (Chan, 2019). It is a combination of online and classroom techniques. It combines the efficiency and

socialization opportunities of the classroom, which can be done through face-to-face and online teaching systems (Osguthorpe & Graham, 2003).

It allows the teacher to combine different tools and resources in their teaching, allowing the learner to have a more varied and personalized experience.

In addition, blended learning offers greater flexibility and control over the learning process (Senffner & Kepler, 2015), allowing learners to focus on their specific preferences and needs. The benefits of blended learning are many and varied.

First, blended learning allows learners to access a variety of learning resources and learn at their own pace (Smith & Suzuki, 2015; Naidoo et al., 2016). In addition, blended learning encourages and promotes learner engagement and participation (Poon, 2012).

In terms of future directions, blended learning is likely to become even more prevalent in higher education and the workplace. As technology advances, blended learning will likely be further integrated into classrooms by identifying best practices for its implementation.

2.2 Adaptive learning:

Adaptive learning is considered an emerging pedagogical and technological innovation in higher education (New Media Consortium, 2018). It is a method used to automatically provide personalized learning resources and activities based on the needs of individual learners (Brusilovsky et al., 1995). Adaptive learning is therefore a person-centered approach to learning. Instead of offering the same course to all members of a given group, the instructional content is tailored to best suit each learner. This means that learners receive only the training that will be of real use to them.

Therefore, this technology is described as an educational technology that generates interactive, dynamic, and automated content (Kerr, 2016), as well as a process that "dynamically adjusts how instructional content is presented to learners based on their understanding of the material, as revealed by embedded assessments or [...] learner preferences, such as visual presentation of the material (Lowendahl et al., 2016)."

Adaptive learning serves as an enabling platform that allows them to plan an effective and personalized educational experience for each learner, creating customized resources and activities that meet the unique learning needs of each learner (Munoz, 2022).

Teachers feel empowered by three levels of adaptability: adaptive feedback on learners' current state of knowledge, adaptive pathways to define content delivery, and the adaptive ability for teachers to adjust instruction based on data analysis (Weber, 2019). To provide personalized services, adaptive systems must understand learner behavior to create a learner model. From this model, learned information is derived and applied to each learner. Whenever the system needs to generate a learner model, it asks the learner to initialize it. Alternatively, the model can be set to default values (Al-Hmouz et al., 2011).

These systems attempt to be more adaptive by collecting information about each learner's goals, interests, and knowledge level through observations. This data is used to build a model that continuously adapts to the learner's needs (Verdu et al., 2008).

2.3 Pedagogical Scenario:

A teaching scenario plays a crucial role in modern education by ensuring a coherent progression in the learning process. Basically, it is a detailed plan that specifies the

proposed teaching activities, their order, format and duration. It can also describe the teaching tools and resources used for the learning activities and can be used to train learners, teachers and researchers.

The instructional scenario is composed of two other scenarios [learning scenario and support scenario] and consists of "describing the activity or activities specific to learning and support, the resources required to carry out the activities and the productions that should result (Villiot, 2007). A learning scenario is the set of activities intended for learners and organized into a coherent whole; to these activities, we add the instruments offered as supports for the activities (instruments-inputs) and the instruments to be carried out by the learners (products) (Paquette et al., 1997).

The role of a pedagogical scenario is to facilitate the learning process and make it more effective. Indeed, a well-designed scenario can help communicate the learning plan and objectives to teachers and learners, and facilitate the detailed planning of activities to be carried out by learners. A good script can also enable teachers to better assess learners' progress and provide appropriate guidance and correction. At the same time, it can help learners get the most out of their learning activities and achieve their learning objectives.

Finally, the instructional scenario can also help teachers create more motivating and outcome-oriented learning activities. Indeed, by having a detailed plan and a coherent structure, teachers can create interesting learning activities, adapted to their pedagogical objectives, that can help learners reach their goals and develop their skills.

3 Design of scripting tools for a learning activity adapted for blended learning:

Designing scripting tools for adaptive learning activities for blended learning is a complex process. It requires a coherent and well-thought-out plan to ensure training success. This requires consideration of the instructional goals of the activity, the variety of tools and strategies available, and the needs and interests of the learners.

By using these two methods, online scriptwriting trainers can approach their scripts in a methodical and rational manner. These tools allow for an organized approach to the screenwriting process that many find useful when learning (Khaldi et al., 2021).

Scripting tools define and build instructional activities online and adaptively. Scripting tools include activity diagrams and specification tables that help teachers define instructional objectives and organize didactic activities. Teachers can use activity diagrams to define instructional objectives and organize learning activities. Activity diagrams take the form of a flowchart and are an effective way for teachers to plan instructional activities and define tasks. Specification table can also be used to describe objectives and tasks, providing detailed information. In addition, scripting tools can be used to create adaptive scenarios, which adapt to the needs and interests of learners. Scripting tools allow teachers to plan instructional activities and use adaptive scenarios to tailor them to learners' needs and interests.

The components of instructional design are key elements in creating effective and efficient learning activities that meet the needs and goals of learners. By considering each of these six components, teachers and instructional designers can design well-structured and appropriate learning activities (Anoir et al., 2021).

- Nature of the resources and tools presented: This refers to the different resources and tools used to support learning, such as textbooks, videos, simulations, educational games, online quizzes, etc. It is important to choose resources and tools that are adapted to the learners' needs and preferences.
- Nature of expected outcomes: This refers to the skills, knowledge, and behavior that learners are expected to acquire or improve as a result of the training or learning activity. The expected outcomes should be clearly defined and communicated to learners at the beginning of the activity.
- Sequence of tasks: This refers to the order and structure of the different tasks or learning activities that learners must complete. The sequence of tasks should be logical and consistent, starting with simple tasks and progressing to more complex ones.
- Monitoring methods: This refers to the different ways in which learners' progress is assessed throughout the learning activity. Monitoring methods can include tests, exercises, peer evaluations, teacher feedback, etc.
- Structuring and regulating tools: This refers to tools and techniques used to help learners organize and regulate their own learning, such as mind maps, agendas, reminders, checklists, etc.
- Modalities of interaction: this refers to the different forms of interaction between learners, teachers, and learning resources, such as classroom discussions, online forums, group activities, individual sessions, etc. It is important to choose the interaction modalities that are best suited to the purpose and needs of the learning activity.

3.1 Example of an activity diagram

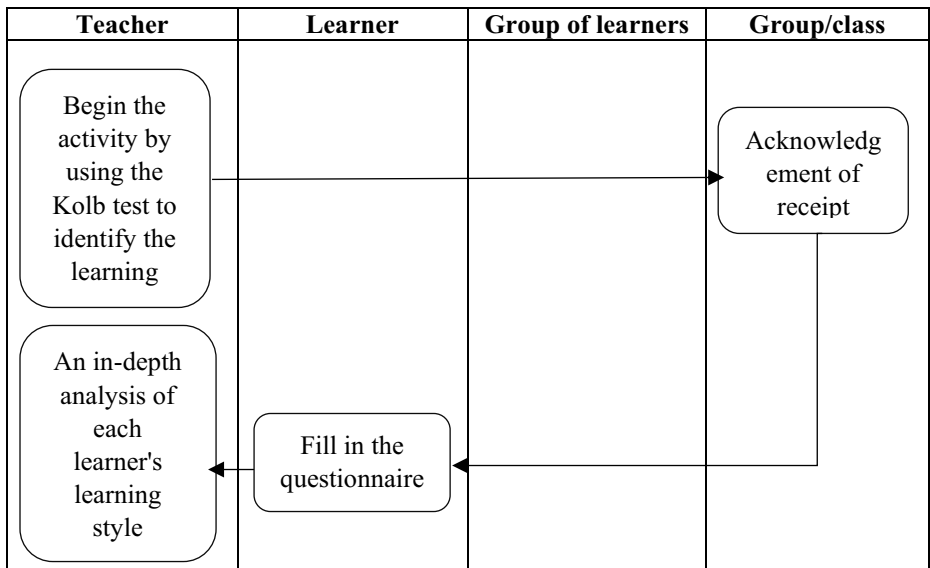


Table 1. Example of an activity diagram

3.2 example of a specification table

Nature of the resources and tools presented	Nature of expected outcomes	Sequence of tasks	Monitoring methods	Structuring and regulating tools	Modalities of interaction
Quiz	Identify the learning style of each learner	1. Access to the Kolb test. 2. Completion of the Kolb test online or in hard copy. 3. Analyze the results of the Kolb test to identify the learning style of each learner.	Personalized feedback	Individual training plan, log book	Discussion Forum

Table 2. Example of a specification table

Conclusion

In conclusion, designing tools to script a learning activity suitable for blended learning is a complex process that requires careful planning and preparation. The key to success lies in the ability to understand the needs of learners and to build tools that meet those needs. By using best practices and integrating innovative technologies, trainers can create effective scripting tools that will help learners achieve their learning goals.

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