Scenario-based Learning Design for Workplace eLearning

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Abstract

It is obvious that with new education technologies, massive open and online courses (MOOCs), and the widespread availability of open educational resources, eLearning is occupying a significant share of the workplace learning for both pre-service training such as employee inductions and for the continuous professional development of staff. Proponents of workplace eLearning highlight a number of key advantages of eLearning such as connection to the actual work, responsibilities and engagement of the employee. Others have stressed on characteristics of eLearning such as self-paced instruction, flexibility and adaptability of course content leading to increased satisfaction. Workplace learning is often linked to the acquisition of practical knowledge in the form of skills and competencies that would in turn be applied in real world settings by the staff concerned. The classic eLearning model that relies extensively on content dissemination and assimilation by the employee may not bring the desired outcomes. On the other hand, scenario-based eLearning can cater for this gap through the use of activity-based learning designs. In this paper we describe the learning design process for scenario-based eLearning using the rapid development methodology in an authentic case-study within the workplace. The main phases of scenario-based eLearning lifecycle is based on the following five phases namely (i) select a specific skillset, (ii) identify and describe a contextual relevant scenario, (iii) develop a storyboard (iv) implement the storyboard into interactive scenes, and (v) publish the scenario and implement in eLearning environments.

Introduction

eLearning is making significant impact on workplace learning especially in settings where the employer cannot afford to release employees during working hours and where there is a need for rapid and specific personalized training on a particular product or service. In some cases, there are situations where the critical mass is not achieved to justify allocation of resources for presential training. On the other hand, workplace training and learning has to be contextually relevant and concise while achieving key learning outcomes within a specific time-frame. A typical development lifecycle of an eLearning course is a composed of a set of processes and phases depending on the chosen instructional design methods. Classic models such as ADDIE normally span over long periods of time following a waterfall development concept. These approaches or models are not appropriate for workplace eLearning in a professional development context. There is a need for rapid prototyping and development of interactive eLearning products.

There are two different approaches for rapid eLearning development namely content-based learning and scenario-based learning (Rajputh et al. 2016). While the rapid eLearning development method can still be applied in a similar manner for each approach, the learning design process is different as one model is mainly centred on knowledge acquisition with some extent of application, while the other model is mainly centred on a complete cycle of knowledge acquisition and application (Santally et al. 2012). The former is relevant where a salesperson needs to know, for example, the detailed technical specs of a new computer system which is on sale, while the latter can focus on the development of the right skillset needed to convince a customer to purchase a computer system with the specific technical specs.

In this paper we describe the learning design process for scenario-based eLearning using the rapid development methodology in an authentic case-study within the workplace. The main phases of scenario-based eLearning lifecycle are based on the following five phases namely (i) select a specific skillset, (ii) identify and describe a contextual relevant scenario, (iii) develop a storyboard (iv) implement the storyboard into interactive scenes, and (v) publish the scenario. Scenario-based eLearning design are fully SCORM compliant and can be fully integrated into broader course structures on platforms such as MOODLE. We finally demonstrate on the MOODLE Platform how scenario-based eLearning can be used in a hybrid outcomes-based learner centered virtual environment.

Workplace Learning in the Digital Age

A survey in the U.S labor market (Careerbuilder 2017) revealed that in 2017, around 67% of employers expressed concern over the growing skills gap and that there were adverse effects on productivity when the companies could not recruit staff with the right profile. Gawtam (2018) highlights that the importance of employers to engage in upskilling of their staff for increased productivity, employee engagement and retention. This statement is further supported by Pantouvakis & Bouranta (2013) who argue that the success of organizations depends also on the extent to which employees engage themselves in their own continuous professional development and improvement. According to Silverman (2003), workplace learning can be categorized into three types that involve to some extent a learning intervention which is either in-house training, experience-based learning through coaching and mentoring, and continuous learning. Caudill (2015) argues while the importance of workplace learning is independent of the modality in which it occurs, e-learning however "provides a set of advantages and is uniquely aligned with the identified preferences and motivations for worker engagement in the learning process". According to David et al (2012), e-learning allows a better connection to the actual work, responsibilities and engagement of the employee through well-designed learning activities than with other modalities such as off-site face-to-face training. Cheng et al. (2011) have stressed on the fact that e-Learning allows self-paced instruction, flexibility and adaptability of course content leading to increased satisfaction.

Instructional Development Models and Workplace eLearning

Simmons (2011) identifies the ADDIE model as a good match for workplace learning because, "...the model calls for continual evaluation, much like the strategic management, continuous improvement, and monitor and adjust backwards design models commonly used in business". Caudill (2015) argues that the ADDIE model approach to learning design provides the flexibility to address needs at any level and in any department of a firm. Molenda (2003) stated that this model is a common framework that serves as a guideline to help the instructional designers to design efficient support tools in five phases namely Analysis, Design, Development, Implementation and Evaluation.

On the other hand, ASSURE is an instructional design model which makes use of multimedia and technology to enhance the learning setting (Lefebvre 2006). Ibrahim (2015) described ASSURE as a set of step-by-step stages to design a lesson that efficiently integrate the use of technology and media to improve students' knowledge. The six stages are (i) Analyse Learners, (ii) State Objectives, (iii) Select methods, media & materials, (iv) Utilize media and material, (v) Require learners' participation and (vi) Evaluation. The model is more applicable to the design of technology-enhanced classroom instruction while ADDIE is more of a broader framework at institutional level based on a systems approach to address training needs (Caudill 2015).

While De Vries and Bersin (2004) highlighted that although organizations had moved into e-learning very rapidly, the huge costs and time-span of such projects following well-defined and rigorous instructional models like ADDIE constituted significant barriers. They argued that there was a need to embark on rapid methodologies for workplace eLearning development. West (2007) observed that rapid e-learning manages both "time and cost" problems by using fresh tools to move from elements of e-learning development. According to Parlakkilic (2015) designing learning materials through rapid e-learning would take weeks instead of months, especially where the content validity had short life-spans. As such, many organizations are developing e-learning materials using the "rapid e-learning" model (Parlakkilic 2015).

Activity-based Learning Scenarios for Workplace eLearning

Workplace eLearning has to be designed in such a way that skills are effectively transferred and applied by the employee in authentic situations. The classic eLearning model that relies extensively on content dissemination and assimilation by the employee may not bring the desired outcomes (Caudill 2015; Wang et al 2011). This can be achieved through activity-based learning where the focus is to get the learner to be engaged in real tasks that will result in development of skills and competencies (Santally et. al 2012). A workplace eLearning course can consist of one or many scenarios that make up units of study or that incrementally add up to achieve the overall intended learning outcomes. The instructional design model to develop activity-based learning scenarios consists of the following steps:

- Select a specific skillset
- Describe the process model for the contextual application of the skillset
- Develop a storyboard and the scenario script
- Implement the storyboard into interactive scenes
- Publish the scenario and implement in eLearning Environments

In the next paragraph we will consider a hypothetical skillset (e.g. check-in process by an airline officer at the check-in desk) within the workplace and provide a walkthrough of the scenario-based eLearning development using rapid eLearning tools. There are a number of contextual applications of scenario-based eLearning in training and professional development contexts.

Select a specific Skillset

Assume we need to train a ground staff who will be handling the check-in process of passengers at the airport for a specific airline. While a course related to this area of competence will consist of a number of outcomes and competencies to be developed, we select a specific competence/skill for the purpose of explaining the technique. The skill to be developed is described as follows:

- To welcome passengers at the check-in desk and handle the check-in process until the printing of a boarding pass.

For the sake of this illustration, we will not cover baggage check-in component. Such a skill can be broken down into sub-skills such as (i) welcome the passenger at the check-in desk, (ii) request (in a pleasant manner) the key documents, (iii) perform a check diligently on the system, and subtly (such as cross-verification of the picture identity with the real person), (iv) communicate promptly and effectively with the passenger, (v) printing the boarding the boarding pass, and (vi) handing over necessary documents to the traveler. We are not covering all the possible combinations or the situations where things can go wrong (such as no visa, or a difficult passenger for this example.

Describe the process model for the contextual application of the skillset

Once the specific skillset is identified, there is a need to describe a scenario in the form of a process model within an authentic context. At this stage it is a high-level modeling of the process and the set of rules and conditions to ensure the skillset is applied properly. Figure 1 below illustrates such a process and knowledge model using the instructional modelling language MISA through the MOT tool. Such a process model has to also include "business rules" as they are important parts of the skillset which the employee has to master to operate efficiently.

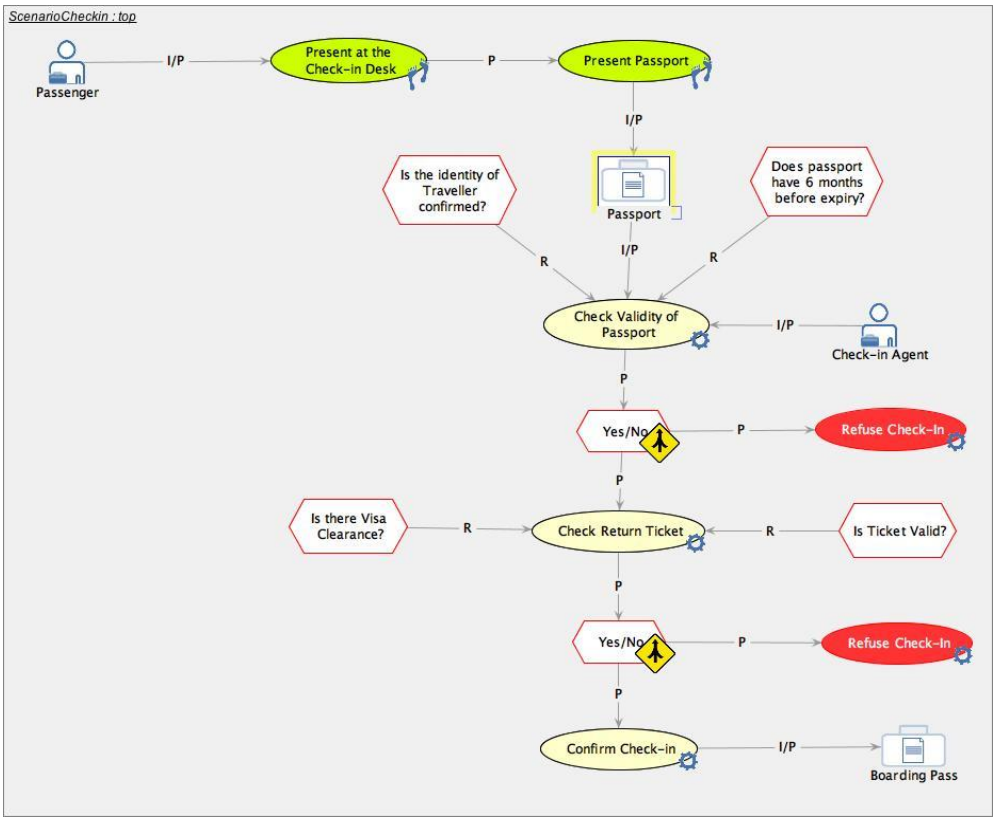

Figure 1: Process and Knowledge Model description for specific skillset using MISA Instructional Modelling

The above process model results from close work of an eLearning designer/education technologist with an actual expert in the field and has to be in line with existing regulations in place. If the regulatory framework changes, the process model changes accordingly and this has to be reflected in the other stages of the courseware design. This is a very important step of the whole scenario-based eLearning lifecycle as the accuracy and reliability of the information obtained from the expert is modeled at this stage. The other phases such as writing the scenario script and the design of the storyboard are intrinsically linked to the knowledge model developed for the process.

Develop a scenario script and the storyboard

An engaging story is an essential element in scenario-based eLearning. The idea is to immerse the learner in the role he or she would normally assume within the scenario in the real-world context. The story will depend on the skillset definition and there is often a need for some creative thinking from the learning design team at this stage. It is advisable to frame the context, with a prelude such as "The flight xyx is scheduled for today 10th of March 2019, at 13.45 with 250 passengers on board. You are assigned to the economy counter 12 and you will be expected to check-in a minimum of 50 passengers at your counter". The next step will then determine for example whether a problem-based, an inquiry-based, a role-play scenario or another scenario will be used. This is a learning design decision to be made in terms of the intended outcomes. In the current case-study, the approach is more geared towards a role-play scenario. Scenarios can also be conceived in such a way that they implement a mix of problem-based learning or role plays in different scenes. This is dependent on the learning design specification and needs to be reflected in the script. Part of a script which has been highly simplified is illustrated in figure 2.

As can be seen the script illustrates how a specific scene in the scenario takes place, and the dialogues between the two actors of the process. In the figure the transaction is not complex, and is straightforward, but in reality, it will have to capture the whole process including situations where things are not straightforward and in instances where the agent needs to make decisions, such as refusing check-in, doing further checks or contacting his or her superior to intervene or for guidance. All of these situations might not however be represented within one scene in the scenario, or within one scenario, depending on the granularity of a scenario.

The Script

Check-in Agent: Evening Sir, may I have your passport and ticket please?

Roman: Good evening Mam, here you are

The check-in agent checks the passport and ticket

The check-in agent smiles

Check-in Agent: That's great! I see that you will stay abroad for 3 months, may I have your VISA please?

Roman: The Visa is in the passport already. I believe it is stamped on page 17 in my passport.

Check-in Agent: Alright let me check

Check-in Agent: Its fine, can you drop your luggage on the conveyor belt machine please?

Roman: Sure..

Roman drops his luggage and waits

Check-in Agent: You are clear to go Sir, here is your boarding pass.

Check-in Agent: Have a nice trip ahead

Roman: Thank you so much mam, best of luck with your work.

Figure 2: A simple script illustrate the transactional process between the check-in agent and the passenger

For example, a traveler with all his required documents and with no issues might go through a quick check-in process without any hassle while in a different 'scenario' the check-in agent might be dealing with a passenger needing special assistance, or a passenger with missing documents. So, he or she will need to be exposed to these situations in a well-defined instructional sequence and which is relevant within the current story. The learning designer might want in this case to start with the preamble that there are 5 passengers in the line, with each one of them having a particularity that the agent will have to deal with.

Figure 3 below illustrates the storyboarding process for the defined scenario in the script. The aim of the storyboard is to a have a visualization of the scenes and a description of all elements (text, sound, graphics) in the

way the learning designer conceives it. Another important component of the storyboard is the navigational model of the resource as per the branching structure specified in the process and knowledge model (figure 1).

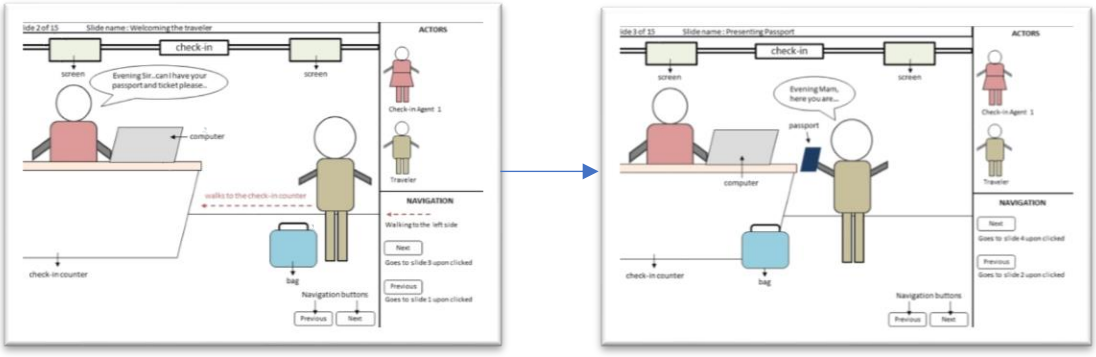

Figure 3: Storyboard depicting the initial scenes in the scenario

Implement the storyboard into interactive scenes

Once the script and the storyboard are validated, the eLearning developer can now implement the design of the scenario into interactive scenes in a professional authoring tool like Articulate which allows to produce industry-compliant (e.g SCORM) learning resources. In this example, the employee is exposed to a real situation simulating the actual process, with a detailed walkthrough of every aspect of the process and steps to be followed during the check-in process.

Figure 4 : Implementing the storyboard into interactive scenes

The above scenes illustrate a simplified sequence of the check-in process. In terms of actual implementation of scenes with more complex logic there is a need to carefully design the branching of different scenes and plan the navigational structure at the storyboard level (Rajputh et al. 2016).

Publish the scenario and implement in eLearning Environments

Once the interactive scenes are completed and tested for pedagogical, content and technical correctness, it is ready to be published as a SCORM compliant learning resource, which will allow the resource to be uploaded on the eLearning platform and communicate with the platform about learner interaction with its contents, and activities. The resource will pass on important learning-related data, to the platform to track a number of features such as complete viewing of the resource, and the assessment activities attempted amongst others. Figure 5 illustrates the published learning resource as a SCORM resource in the Moodle eLearning platform and the learner tracking data that shows the learner has not completed the resource.

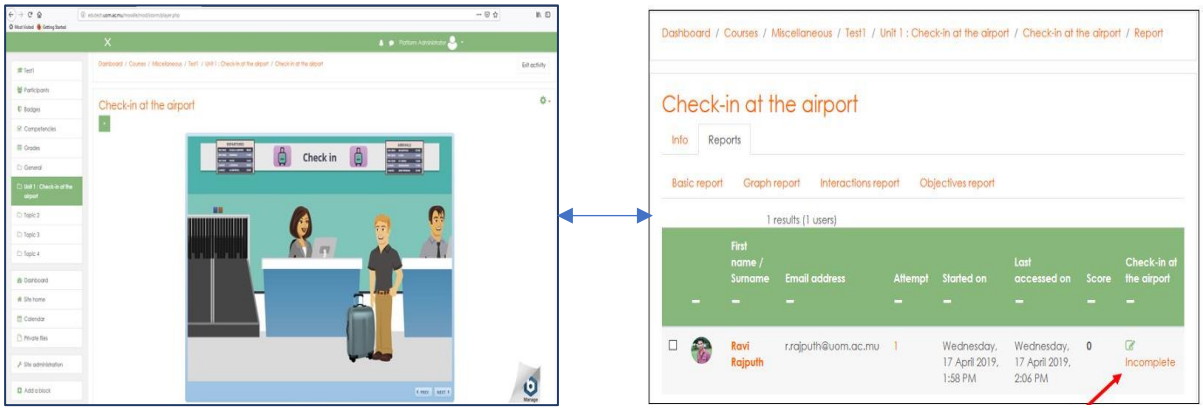

Figure 5 : Published Scenario as a SCORM-compliant Learning Resource

Discussion

Practitioners stress on the need to shorten development cycle of eLearning products that are targeted to the workplace given the dynamic nature of the skillset requirements especially where new products have short lifespans from a marketing perspective. For instance, a sales officer needs a just-in-time training on a new model of mobile phone to be able to better explain to clients about the key features of the device, while in 3-6 months' time, the same salesman might be needing a crash-course on a new laptop that is being released. These types of knowledge required in this case can be considered as 'perishable' in the sense that its application is limited over time. This is the main drive behind embracing a rapid e-Learning method for such training rather than going through a waterfall-like model characterized for instance by ADDIE, as rightly stipulated by De Vries and Bersin (2004).

On the other hand, in more formal learning environments, the development of highly interactive learning courses using rapid eLearning authoring tools like Articulate adds value to the quality of the learning experience. As proposed by Santally et al., (2012) in their hybrid model, the integration of components from both content-oriented and activity-oriented learning designs within the three main phases of knowledge acquisition, knowledge application and knowledge construction through sharing and reflective practices, can result in improved learning experiences and outcomes when the scenarios are embedded in an eLearning platform supplemented for instance, with reading materials, videos and with post-scenario learning activities.

However, there is a cost implication as in many institutions, quality assurance processes require the periodic and frequent reviews of the course content. Despite the claims of West (2007) and Parlakkilic (2015), the use of rapid eLearning tools like Articulate to design tightly coupled resources with complex branching can be a costly process when it comes to updates and improvements. Furthermore, in scenario-based eLearning where skills transfer is the main component, such learning resources can be used in different and longer training cycles which makes them a pedagogically efficient and a cost-effective option. However, the development lifecycle although following a rapid and agile methodology demands rigor and can be time-consuming mainly at the conceptual levels depending on the complexity of the skillsets required and the scenarios. Therefore, scenario-based eLearning

might not necessarily be considered as rapid eLearning for the whole of the instruction conception and design process, but rather the application of rapid eLearning techniques in a scenario-based design is mainly relevant at the implementation phases of the scenes.

Conclusion

Scenario-based eLearning allows enterprises and organizations to focus on the continuous professional development of the employees, or as part of the induction/training programs of new recruits in a highly flexible and cost-effective manner. Such learning designs have to follow agile and rapid development methods, as skillset requirements in the workplace often change in short time spans. While eLearning is not ideal in every training situation, it can certainly add value to the organization if designed in such a way to ensure an authentic learning experience, and to facilitate the acquisition of knowledge and development of specific work-related competencies.

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