Using The Rapid Authoring Tools In E-Learning Content Design: A Case Study Of Online Course Design

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Abstract: The adoption of a rapid authoring tools approach has increased exponentially across the globe. E-Learning projects, that used to take several months, are now delivered in a few weeks, days, or hours. In addition, the costs are also reduced in comparison to a traditional classroom. Rapid authoring tools are used to empower efficient learning experiences. This software helps the faculty members to embed different multimedia elements with e-learning courses. This research finds an adequate process by a quick look at the benefits of different rapid authoring tools and selects one of them to be used in Royal University for Women, Bahrain.

Keywords: e-Learning, Educational technology, Multimedia design, Graphic design, Web design, Higher education.

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1. INTRODUCTION
One of the biggest problems for faculty members and instructional designers is the difficulty of creating e-Learning content design or online course design that they are unable the easy way to convert a traditional course to be electronic course for several purposes using. This study supports the scientific research in the fields of interactive multimedia design and e-Learning content design. The purpose of this study is to examine the effectiveness of the Rapid authoring tools to design an online e-learning course to provide the following: (1) Support the e-learning instructional design in higher education (2) Find proper technology tools used in e-learning instructional design (3) Encourage the faculty members to create online/web-based learning content (4) Apply e-learning instructional design techniques to convert traditional learning courses to become e-learning courses (5) Develop e-learning content fast and easy by using rapid authoring tools (6) Saving money and keeping time in the e-learning content design..

2. MATERIALS AND METHOD
Research methodology depends on a theoretical and analytical study and also it provides a framework to design e-learning content by using rapid authoring tools through a software application to design online e-learning courses content. Data collection in the process, will be gathered from different references and observations. In this study, methods will include taking measurements and testing the most appropriate solution to be used in the e-learning instructional design. It will also include collecting data regarding accuracy, reliability and repeatability. Research approach will be a mix of quantitative and qualitative. This study will be conducted through interviews and questionnaire with faculty members and students to conclude the strengths and weaknesses of the proposed software applications and to indicate that to what extent the program is aiding the process of online e-learning content design.

3. LITERATURE REVIEW
Interactive multimedia is a combination of text, graphic, sound, animation, and video that is delivered interactively to the user by electronic or digitally manipulated means [2].The e-learning theory describes the cognitive science principles of effective multimedia learning using electronic educational technology [3]. The blended learning is an approach to education that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. It requires the physical presence of both teacher and student, with some elements of student control over time, place, path, or pace [4]. An authoring system is a programs that has pre-programmed elements for the development of interactive multimedia software titles. Authoring systems can be defined as software that allows its user to create multimedia applications for manipulating multimedia objects. [5]. A multimedia authoring tool is an application which uses a multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video. Multimedia applications is the creation of exciting and innovative multimedia systems that communicate information customized to the user in a non-linear interactive format [6]. The learning management system LMS is a software application for the administration, documentation, tracking, reporting and delivery of online educational courses, training programs, or learning and development programs [7].
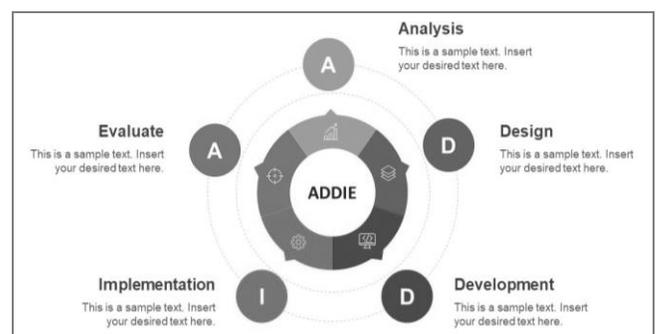
Fig. 1 *ADDIE instructional system design (Branch 2014)*

The Analyze, Design, Develop, Implement, and Evaluate (ADDIE) process is used to introduce an approach to instruction design that has a proven record of success. Instructional design: The ADDIE approach is intended to serve as an overview of the ADDIE concept [8]. The rapid authoring tools are a rapid authoring for an online training material development software that helps e-learning professionals create effective web-based training courses. These tools come with many built-in features that make the lives of online courseware developers easy. They eliminate the need for coding skills and multimedia tool expertise and enable learning experts such as Subject Matter Experts (SMEs) and instructional designers who have little knowledge of programming, make the best use of their features. From simple quizzes to interactive e-learning scenarios, rapid authoring tools allow us to develop a wide variety of e-learning courses easily and quickly. Authoring tools enable instructional designers to put together different types of media to create engaging and interactive course content [9].

4. CHOOSING E-LEARNING AUTHORING TOOLS

Choosing e-learning authoring tools is one of the most crucial decisions any training organization, project, or developer can make. Authoring tools are designed for particular styles of learning, delivery platforms, file formats, e-learning standards, and production workflows. If your organization chooses a tool or set of tools that is not optimized for your needs, you could waste a lot of time and money creating e-learning that does not function correctly within your training infrastructure or is instructionally ineffective. Another critical factor in choosing tools—one that can make or break an organization's training budget with costly conversions—is durability. This relates to whether the tools will have longevity in the marketplace such as they continue to be available and supported, allowing source files to be opened and edited in future versions of the application. It also relates to whether the tools will, in the future, produce output formats supported by browser versions and browser plug-in updates [10] The global adoption of rapid authoring approach has increased exponentially over the past few years. Gone are the days when e-learning projects would take several weeks or months to be delivered. Unlike the traditional classroom approach, the effective use of authoring tools helps to reduce cost and the time associated with training, thereby leading to engaging content delivery. Various authoring tools are used to create, edit, review and test e-learning courses to deliver a comprehensive learning experience [11].

5. TOP 5 E-LEARNING RAPID AUTHORING TOOLS

The five popular authoring tools from leading developers: iSpring, Articulate, Adobe Captivate, TechSmith Camtasia and Trivantis. For this purpose, we've defined the main criteria in Table 1 that instructional designers and developers can expect from a convenient e-learning tool (iSpring, 2017) (See Appendix 1).

A. iSpring Suite (https://www.ispringsolutions.com)
B. Adobe Captivate (https://www.adobe.com)
C. Articulate Storyline (https://articulate.com/360/storyline)
D. Techsmith Camtasia (https://www.techsmith.com)
E. Lectora Publisher (https://www.trivantis.com)

6. TYPES OF E-LEARNING CONTENT DESIGN

- PowerPoint presentations: Convert presentations to online / e-learning course.
- Video Capture: create video materials to be e-learning content.
- Interactive assessments: create interactive tests, exams and quizzes for scoring.
- Screen recordings: Record simulation screen.
- Dialogue simulations: create dialogue simulations for more skills.
- Interactive Multimedia: create an interactivity for e-learning Instructional materials.
- E- library: Create courses from external ready-made e-library content and assets.
- Integration with LMS: Publish e-learning course content to any learning management system LMS.

## 7. THE TRADITIONAL AND RAPID E-AUTHORING TOOLS

Table 1 the comparison between traditional e-learning tools and the rapid e-learning authoring tools

Development Factor	Traditional E-learning	Rapid E-learning
Timeline for development	Three to four months	One to four weeks
Development process	Commissioned	In-house
SME involvement	Primarily contributor/reviewer	Often the author with support
Use of authoring tools	Low	High
Use of external developers	High	Very low
Shelf-life	Long (expected at least 2 yrs)	Generally short to medium, often 'disposable'
Opportunities for re-use	Low	High
Team size	Project manager, instructional designer, writers, SME, graphics, developer, tester…	Team of one or two
Budget	Needs to be at least 10k/hr	£6k or less*/hr

## 8. A CASE STUDY OF ONLINE COURSE DESIGN

This case introduces and explains the process of design and develops the e-learning content design for course used in Royal University for Women by using the instructional design module ADDIE (Analysis, Design, Development, Implementation and Evaluation) and using the rapid authoring tools to create this online course. This online course sample created by using PowerPoint and iSpring software for developing e-learning courses with easily embedded with quizzes, assessments, surveys, interactions, and other interactive instructional elements. With iSpring converter, we can create interactive multimedia presentations in a web-friendly format in three easy steps: presentation design with rich media content, adding interactions, assessments and quizzes, convert it to HTML5 and upload it to the Internet. As we can see in Fig. 2, iSpring is easy rapid authoring software for faculty members and instructional designers without any programming skills roduces the principles of graphic design and the elements of graphic design for seeing (and understanding) how the qualities of visual material—shapes, images, color theory, typography, and layout—work, and work together and then being able to decide which qualities of each are relevant, engaging and useful for visualizing a particular

idea or solving a certain problem. This course created by the following steps:
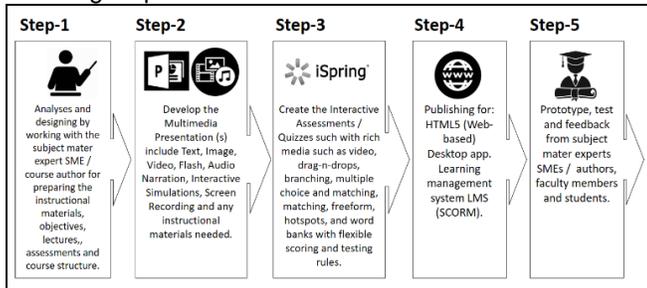
Fig. 2 *The process of development and publishing the RUW course by iSpring to HTML5*

- Step 1: Analyses and designing by working with the subject matter expert SME / course author for preparing the instructional materials, objectives, lectures, assessments and course structure.
- Step 2: Develop the Multimedia Presentation (s) include Text, Image, Video, Flash, Audio Narration, Interactive Simulations, Screen Recording and any instructional materials needed.
- Step 3: Create the Interactive Assessments / Quizzes such with rich media such as video, drag-n-drops, branching, multiple choice and matching, matching, freeform, hotspots, and word banks with flexible scoring and testing rules.
- Step 4: Publishing for online course HTML5 (Web-based) or Desktop app. or for Learning management system LMS (SCORM).
- Step 5: Prototype, test and feedback from subject-matter experts SMEs / authors, faculty members and students.
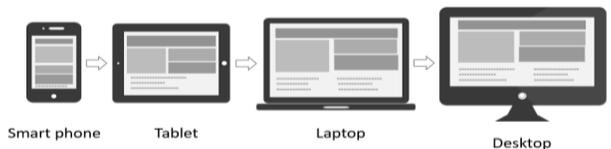
Fig. 3 *The rapid multimedia authoring tools can create an e-learning content design formats for using on any display like a responsive design technique.*

By using Microsoft PowerPoint and iSpring software we created an online course content about the fundamentals of graphic design. For test and further details – please visit https://abuelainin.com/ruw.

Fig. 4 *Start Screen of the sample RUW online course*

Fig. 5 *Internal Screen of the sample RUW online course*

This online course shown in Fig. 3 and 4 contain full multimedia content (text, images, computerized narration, audio, video, and animation) created by: PowerPoint, Adobe Photoshop, Adobe Flash, Adobe After Effects and audio narration by using text to speech voice (https://text-to-speech-demo.ng.bluemix.net). After preparing the multimedia presentation (PowerPoint), we created by using iSpring, the interactive assessments/quizzes with rich media such as video, drag-n-drops, branching, multiple choice and matching, freeform, hotspots, and word banks with flexible scoring and testing rules. After that, we added the interactive assessments we published, by using iSpring to HTML5 to be web-based online course to be able to available to students after prototype testing and feedback by faculty members and students.

9. TESTING AND ANALYSE RESULT

Table 2 The feedback survey from faculty members about RUW course

Question 1
The online e-learning will support the Virtual Learning Environment (VLE) in Royal University for Women?

		Answer		
Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
80%	20%	0	0	0

Question 2
The rapid authoring tools used in e-learning instructional design will encourage the faculty members to create online / web-based learning content? especially, the instructor just will need to create a PowerPoint presentation and by one click will convert it to be an online e-Learning course!

Question 3
What about the Graphic User Interface (GUI) and the navigation layout?

Question 4
What about the Multimedia content (Text, Images, Video, Computerised Audio Narration, Animation .... etc.?

Question 5

This course designed in 28 working hours and converted to be e-learning within 30 minutes .... is this will saving money and keeping time in the e-learning content design delivered to students?

Answer	
True	False
90%	10%

Question 6
The Quiz sample is easy with user-friendly navigation and the final result is clear.

Answer				
Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
76%	24%	0	0	0

Question 7
How consistent was the course content with the course outcomes?

Answer				
Extremely useful	Very useful	Somewhat useful	Not so useful	Not at all useful
20%	70%	10%	0	0

Question 8
Rate the quality of this online e-learning?

Answer				
1	2	3	4	5

10. CONCLUSION AND RECOMMENDATION

This study introduced a useful solution to reduce the cost and time for e-learning content design and presented information about the rapid authoring tools and interactive multimedia content along with providing some samples of formats used in e-learning courses. These formats would be more useful than normal traditional e-learning tools for using this technology in the future. This research recommends to use the rapid authoring tools to easily create e-learning course content and migrate it with the learning management system LMS or online course to get the benefits of e-learning technology into the educational organizations or corporate training systems. This study recommends for use the rapid e-Learning authoring tools to easily create eLearning course content and migrate it with the Learning Management system LMS to get the benefits of e-learning technology into the educational organisations or corporate training systems.

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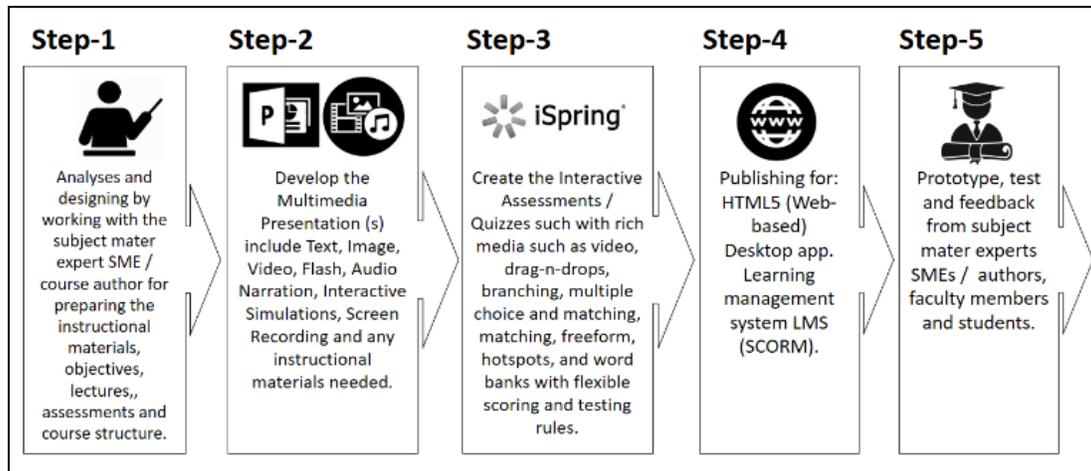
Appendix 1

Fig. 1 The process of development and publishing the RUW course by iSpring to HTML5

Tool	Type of solution	Main advantages	Best suited for…
iSpring ispringsolutions.com	• Fully-stocked toolkit for a quick start making e-Learning content. • It includes special modules for different types of training: knowledge check, video lectures, and dialogue simulations. These allow you to focus on the learning content of the course (not manual tweaking and testing).	• Anyone who's created PowerPoint presentations can easily start using iSpring Suite. • The output works smoothly on any device. • The whole kit is offered at a relatively low price.	• Those who are under a deadline; • Those who develop courses on their own; • Those who need to turn pre-existing PowerPoint presentations into e-courses.
Articulate 360 articulate.com	• Bundle of nine tools for deploying a large-scale authoring environment. • It includes tools for creating any type of learning materials, from simple long reads to collaborative development of complex interactive courses.	• Includes solutions for most e-Learning tasks. • Some components of the toolkit are of use for beginners at e-Learning, while experts can create more complex things.	• Those who develop courses as outsourcers; • Those who have large training departments; • Those who have a basic understanding of programming (preferably).
Adobe Captivate adobe.com	• Standalone e-Learning authoring solution that allows extensive control over the mobile experience.	• Thanks to the special fluid boxes feature, you need to make only a minimal amount of manual edits to versions for each device. • Another main feature of Captivate is the software simulation editor. • It is the only tool among the compared which can be used via a monthly subscription – $29.99 a month.	• Advanced developers; • Those who need to teach how to use software; • Those who develop courses as outsourcers; • Those who have a basic understanding of programming (preferably).
Camtasia	• Easy-to-use editor for creating interactive video lessons, video lectures, and screencasts.	• You can make video interactive by asking test questions during playback, using pop-up tips, graphical highlighting, etc.	• Those who have a lot of video content within courses; • As an additional tool to complement any full authoring tool.
Lectora Inspire	• Standalone solution that allows for extensive augmentation via programming code, external libraries, and scripts.	• Easily extended with external code, libraries, or scripts.	• For advanced developers; • Those who have programming skills.

Fig. 2 *Top 5 e-learning rapid authoring tools: Use cases comparison (2017 Update)*
Source https://www.ispringsolutions.com/blog/5-e-learning-authoring-tools