



Reviews on Authoring tools

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Abstract—*The purpose of this study was to identify authoring tools used in the modern learning. A detailed survey of the authoring tool was made for various domains. The authoring tools have not only facilitated the development of e-learning but have developed incorporating effective learning strategies and delivery technologies into the e-learning. Study shows that authoring tools have proved quite efficient in various domains and can be implemented for the rest of the domains. The paper introduces the goals and context of the case study, elaborates on how authoring tool were employed, describes the applied evaluation methodology, and discusses the most significant findings derived from the case study.*

Keywords: *component; E-learning, authoring tools*

I. INTRODUCTION

Authoring tools are software applications used to develop e-learning products. They generally include the capabilities to create, edit, review, test, and configure e-learning. These tools support learning, education, and training by enabling using distributed e-learning that is cost-efficient to produce, and that facilitates incorporating effective learning strategies and delivery technologies into the e-learning. Authoring tools range from advanced software to create a wide array of sophisticated applications (not limited to e-learning), to simple tools that convert instructional PowerPoint® slides to web pages. In this regard, it is important to understand that some software tools used as authoring tools are not necessarily designed for the creation of e-learning specifically; they can be open-ended, multi-purpose tools designed to create, for instance, any kind of web page/site. But when developers use them to create e-learning, they are referred to as authoring tools.

To create a proper course for E-learning, you need an authoring tool to facilitate this work. The definition of authoring tool is “a program that helps you write using hypertext or multimedia applications and enable you to create a final application merely by linking together objects, such as a paragraph of text, an illustration, or a song. By defining the objects' relationships to each other, and by sequencing them in an appropriate order, authors (those who use authoring tools) can produce attractive and useful graphics applications. [11]

Most authoring systems also support a scripting language for more sophisticated applications. Thus, these tools provide many facilities helping the author to create a good E-content for courses. In fact, E-content has very important features that make the work easier than paper-content which are storing, modification, reusability and sharing of information.

1.1 CATEGORIES OF TOOLS

Single Purpose Tools: They are designed for basic purposes rather than for creating a suite of varied tools. Most tools in this category are not specifically designed for production of instructional materials.

Activity Creation Tools: They are designed to produce small, stand-alone, interactive activities that may be incorporated into courses.

Course Development and Presentation Tools: They are specifically designed for developing and presenting online courses and training programs. These tools are typically organized around specific concepts, lessons, and modules.

General Presentation Tools: They are designed for the presenting content in multimedia form, and with specific uses in online education, though not intended for this purpose exclusively. **Testing and Assessment Tools:** They are designed to produce tests, quizzes, and other types of assessment for print, computer, and/ or Web-based delivery. Thus, depending on the requirements and where the content would be implemented the appropriate choice of the content authoring tool can be chosen.

The common categories of authoring tools which produce content complying with the E-learning Standards use some base software application. The most common ones are those that use PowerPoint presentations, Web based content and Flash based presentations,

II. LITERATURE REVIEW

The following are the literature survey made for the authoring tool in various domains.

Fabien Danieau and others in their paper “H-Studio: An Authoring Tool for Adding Haptic and Motion Effects to Audiovisual Content” describes a user-friendly authoring tool to create and synchronize Haptic and Motion effects with

audiovisual content. This new tool has simplified the creation of haptic-audiovisual content. More precisely they focus on the edition of motion effects. Three methods are proposed for the edition of motion effects: manual edition with waypoints, trajectory recording and import of real motion captures. Another key feature of this editor is the playback function which enables to preview the motion effect. Hence this new tool allows non expert users to create immersive haptic-audiovisual experiences. [1]

Oliver Scheuer and Bruce M. McLaren in their paper "CASE: A Configurable Argumentation Support Engine" designed a highly configurable software framework, "Configurable Argumentation Support Engine" (CASE), designed to reduce effort and development costs considerably when building tutorial agents for graphical argumentation learning systems. CASE detects pedagogically relevant patterns in argument diagrams and provides feedback and hints in response. A wide variety of patterns are supported, including ones sensitive to students' understanding of the domain, problem-solving processes, and collaboration processes. Teachers and researchers can configure the behavior of tutorial agents on three levels: patterns, tutorial actions, and tutorial strategies. As a proof of concept, the author presented four showcases are presented each showing different aspects of CASE and thus demonstrating the flexibility and breadth of applicability of the CASE approach in supporting single user and collaborative scenarios across different argumentation domains.[2]

Mohammad Shaker, Noor Shaker and Julian Togelius in their paper "Ropossum: An Authoring Tool for Designing, Optimizing and Solving Cut the Rope Levels" demonstrated the Ropossum, an authoring tool for the generation and testing of levels of the physics-based game, Cut the Rope. Ropossum integrates many features: (1) automatic design of complete solvable content, (2) incorporation of designer's input through the creation of complete or partial designs, (3) automatic check for playability and (4) optimization of a given design based on playability. The system includes a physics engine to simulate the game and an evolutionary framework to evolve content as well as an AI reasoning agent to check for playability. The system is optimised to allow on-line feedback and real time interaction. [3]

David Hutchful and Edward Cutrell in their paper "Cloze: An Authoring Tool for Teachers with Low Computer Proficiency" present Cloze, an authoring tool that successfully meets the unique needs of teachers with low computer proficiency to simplify digital content creation for them. Through 34 weeks of field study and a pilot, we observe that such teachers prefer to work off existing content, rather than from scratch; and that these teachers perceived Cloze to be intuitive, but made limited use of its features. Additionally, we discuss the implications for designing authoring tools for teachers with low computer proficiency. [4]

Senator Jeong, Sejin Nam, and Hyun-Young Park in their paper "Ontology based Biomedical Research Paper Authoring Support Tool" developed a paper authoring support system that helps biomedical scientists to organize their ideas for a specific discourse purpose. As an initial step toward the goal, they developed an abstract authoring support tool that provides candidate lexical bundles organized according to IMRAD structure. Lexical bundles function as basic building blocks of this discourse structure. Lexical bundles were extracted from sentences in 152,083 structured abstracts of the PubMed Central Open Access Subset and analyzed their distribution by IMRAD sections. To organize lexical bundles according to IMRAD, the Lexical Bundle Ontology was built. Then, a JATS-compliant authoring support tool was implemented. The tool lists up candidate lexical bundles responding to authors' discourse purposes in a specific section and thereby helps to complete sentences. They have presented a use case scenario of this authoring support tool. They expect that this tool be a useful, at least in biomedical abstract writing, to organize author's ideas to achieve specific discourse purpose. The tool is target to primarily for biomedical scientists whose mother tongue is not English. However, native speakers may still find the utility. [5]

Said Talhi and Mahieddine Djoudi in their paper "Developing Adaptive E-learning: An Authoring Tool Design" present an authoring tool for adaptive hypermedia based courses. Designed to satisfy guidelines of accessibility of the W3C recommendation for authors and learners that present disabilities, the authoring tool allows several authors geographically dispersed to produce such courses together. It consists of a shared workspace gathering all tools necessary to the cooperative development task. [6]

Alex Koohang, Kevin Floyd, and Cody Stewart in their paper "Design of an Open Source Learning Objects Authoring Tool – The LO Creator" presents the design and development of an Open Source Learning Objects Authoring tool – the LO Creator. The LO Creator has two unique elements – simplicity of design and a free style pedagogical design environment. The simplicity element may encourage the LO designer to include appropriate user interface elements in the design process of learning objects. A free style pedagogical design environment gives the LO designers the flexibility to design creative LOs using learning theories and principles appropriate for a chosen audience. The stress more on systematic and methodical approach in designing and creating sound learning objects using the LO Creator. [7]

Taejin Ha & others in their paper "ARtalet: Tangible User Interface Based Immersive Augmented Reality Authoring Tool for Digilog Book" enhances the Digilog Book authoring tool, ARtalet. It is a tangible user interface based immersive AR authoring tool providing an intuitive non-programming based authoring methods using a 3D user interface in an AR environment. As novel authoring functions, they have proposed 3D object trajectory manipulation, real-time deformation, and audio/vibration feedback authoring functions to enhance a user's experience and interest. The ARtalet can be applicable to other Digilog application authoring, including posters, pictures, newspapers, and sign boards [8].

Lucrecia, M. & others in their paper "AuthorAR: Authoring tool for building educational activities based on Augmented Reality" presents an authoring tool for creating educational activities based on Augmented Reality (AR), called AuthorAR. Due to its possibilities to create exploratory and structuring phrases activities, it could be use in special education to favor language acquisition and the development of communication skills. AuthorAR is described accompanied by some examples of activities created for special education context.[9] Paul Mulholland, Member, IEEE, Stamatina Anastopoulou & others in their paper "nQuire: Technological Support for Personal Inquiry Learning"

describes the development of nQuire, a software application to guide personal inquiry learning. NQuire provides teacher support for authoring, orchestrating, and monitoring inquiries as well as student support for carrying out, configuring, and reviewing inquiries. NQuire allows inquiries to be scripted and configured in various ways, so that personally relevant, rather than off-the-shelf inquiries, can be created and used by teachers and students. NQuire incorporates an approach to specifying learning flow that provides flexible access to current inquiry activities without precluding access to other activities for review and orientation. Dependencies between activities are automatically handled, ensuring decisions made by the student or teachers are propagated through the inquiry. NQuire can be used to support inquiry activities across individual, group, and class levels at different parts of the inquiry and offers a flexible, web-based approach that can incorporate different devices (smart phone, net book, PC) and does not rely on constant connectivity. [10]

Jonghee Park & others in their paper "Context-Aware Augmented Reality Authoring Tool in Digital Ecosystem" propose a context-aware authoring tool which users make virtual contents in-situ. In order to realize, three essential components are defined and some technical challenges are reviewed. They expect that the contents will be adaptive and responsible to dynamic environment. The authoring tool will be applicable for many industries such as book publication, in-situ simulation and so on. [11]

Leena Razzaq, Neil T. Heffernan in their paper "Open Content Authoring Tools" comments that Education researchers often disagree about the best ways to improve student achievement. The difficulty of designing, conducting, and analyzing experiments means that there is often a dearth of empirical data to support or refute ideas. To design and conduct a simple randomized controlled experiment to compare two different ways of teaching requires a great deal of effort by a teacher or a researcher. The difficulty of conducting such experiments, and then later analyzing the results, may be why so few randomized controlled experiments are conducted in education. One of the goals of the ASSISTment System is to reduce some of those difficulties. A web-based tool is built that allow researchers to easily design build and then compare different ways to teach children. These tools can administer randomized controlled experiments to large numbers of students. This paper describes these tools and describes a randomized controlled study that was conducted using them. [12]

Seiji Isotani, Riichiro Mizoguchi & others in their paper "An Authoring Tool to Support the Design and Use of Theory-Based Collaborative Learning Activities" presents an intelligent authoring tool that is equipped with the knowledge about different pedagogies and practices related to collaboration. Through the use of this information, the tool can provide intelligent guidance that support designers to create more effective CL scenarios. The results of an experiment suggest that our tool helps teachers to more easily introduce CL activities in classroom and creates favorable conditions for students to perform collaboration improving their overall learning performance throughout the year. [13]

Turadg Aleahmad, Vincent Alevan, and Robert Kraut in their paper "Creating a Corpus of Targeted Resources with a Web-Based Open Authoring Tool" present and evaluate a prototype Web-based tool for the open authoring of learning materials. The author conducted a study (an open Web experiment) to evaluate whether specific student profiles presented in the tool's interface increase the diversity of the contributions and whether authors tailor their contributions to the features in the profiles. They report on the quality of materials produced, the authors' facility in rating them, the effects of author traits, and the impact of the tailoring feature. Participants were professional teachers (math and nonmath) and amateurs. Participants were randomly assigned to the tailoring tool or a simplified version without the tailoring feature. They analyse that, while there were differences in teaching status, all three groups made worthy contributions. The tailoring feature leads contributors to tailor materials with greater potential to engage students. The experiment suggested that an open access Web-based tool is a feasible technology for developing a large corpus of materials for personalized learning. [14]

Jonghee Park, Woontack Woo in their paper "Multi-layer Based Authoring Tool for Digilog Book" propose multi-layer based authoring tool for Digilog Book. The main feature is that a user can author some properties of printed contents of a paper book. Those properties can be utilized for virtual contents authoring. The proposed authoring tool provides an interface to allocate some properties for printed contents. Those properties are utilized in manipulating virtual contents. As a result, users can author a realistic Digilog Book. [15]

Rodrigo Laiola Guimarães, Romualdo Monteiro de Resende Costa, Luiz Fernando Gomes Soares in their paper "Composer: Authoring Tool for iTV Programs" presents Composer, an authoring tool to help creating interactive TV programs for the Brazilian Terrestrial Digital TV System. In Composer, several abstractions are defined creating different document views (structural, temporal, layout and textual). One of these views, the temporal view, preserves as much as possible the timeline paradigm, so popular in TV program editing. Using this view, authoring can be done by placing media objects on a time axis, however, preserving the relative relationships among them. Moreover, non-deterministic time events, like viewer interactions and content adaptations, can also be represented in the temporal view. In addition, the occurrence of these unpredictable events can be simulated, and the resulting TV program played, from any starting point. Besides other facilities provided by its four views, Composer also supports third-party views created as add-ons, and live program editing. [16].

Edward Meyen and Ronald Aust in their paper "THE DEVELOPMENT AND VALIDATION OF A MODULAR E-BOOK AUTHORING SYSTEM" discusses on a Modular e-Book Authoring (MeBA) System developed for creating interactive instructional e-books. The system is designed to support the rapid development of content structures, instructional features, and user interfaces. MeBA is a comprehensive system for developing instructional e-books including content management protocols and tools, authoring software, production processes and formative evaluation tools. MeBA is designed to provide a system for individual authors, publishers, educational or training organizations who

wish to produce textbooks, reports, or training resources in an interactive e-book format. The instructional e-books produced with MeBA provide multiple renderings of information including: (1) a multimedia format for the basic content, activities, assessments, glossaries, case studies, graphics and audio; (2) a text-based format where users may access all instructional features from icons embedded in the text. Unique cross-referencing capabilities allow learners to easily connect assessment features with the relevant content. MeBA was subjected to extensive formative testing throughout development. MeBA is designed to create e-books that can be used independently in an entirely electronic format or with a compatible print version. [17]

Romain Deltour, Agnès Guerraz, and Cecile Roisin in their paper "Multimedia Authoring for CoPs" analyze requirements and propose a multimedia authoring model and a generic platform on which specific CoPs-oriented authoring tools can be realized. The main idea is to provide template-based authoring tools while keeping rich composition capabilities and smooth adaptability. It is based on a component-oriented approach integrating homogeneously logical, time and spatial structures. Templates are defined as constraints on these structures. A practice-based approach to multimedia authoring dedicated to communities where collaborative and participative design is of high importance. It improves reusability with template definitions and with the homogeneous structuring of documents. This document model is being implemented as cross-platform java software. [18]

Wei qin Chen, Yusuke Hayashi, Lai Jin, Mitsuru Ikeda, Riichiro Mizoguchi in their paper "An Ontology-based Intelligent Authoring Tool" describes an ontology-based intelligent authoring tool. The author focuses on how task ontology helps the construction of learner modeling and teaching strategy modeling. The author goal is to provide the intelligent training system authors with a friendly and helpful guideline using task ontology, which enables them to build more powerful and flexible intelligent training systems. In the learner model ontology, they describe the taxonomy of concepts and axioms used in building learner modeling system. In teaching strategy ontology, they present the two-level modeling for the construction of teaching strategies. [19]

III. CONCLUSIONS

In this paper the overall literature survey related to different authoring tool for different applications are mentioned. It is observed authoring tools are very helpful for the efficient working. Different applications used various methods and algorithms for implementing authoring tool and they have been proved as efficient in their domain of work. The authoring tool can be implemented for the manual system in the organization.

REFERENCES

- [1] Fabien Danieau and others in paper "H-Studio: An Authoring Tool for Adding Haptic and Motion Effects to Audiovisual Content" published in 26th ACM Symposium on User Interface Software and Technology - UIST 2013 (2013).
- [2] Oliver Scheuer and Bruce M. McLaren in their paper "CASE: A Configurable Argumentation Support Engine" published in IEEE TRANSACTIONS ON LEARNING TECHNOLOGIES, VOL. 6, NO. 2, APRIL-JUNE 2013.
- [3] Mohammad Shaker, Noor Shaker and Julian Togelius in their paper "Ropossum: An Authoring Tool for Designing, Optimizing and Solving Cut the Rope Levels" published in Association for the Advancement of Artificial Intelligence (www.aaai.org) 2013
- [4] David Hutchful and Edward Cutrell in their paper "Cloze: An Authoring Tool for Teachers with Low Computer Proficiency" published In Manuscript received April 2, 2010. D. Hutchful is with Microsoft Research, Sadashivanagar, Bangalore 560080, India (e-mail: davihu@microsoft.com).
- [5] Senator Jeong, Sejin Nam, and Hyun-Young Park paper "Ontology based Biomedical Research Paper Authoring Support Tool" published in Journal Article Tag Suite Conference (JATS-Con) Proceedings 2013
- [6] Lucrecia, M. ; Inst. de Investig. en Inf. LIDI, Nat. Univ. of La Plata, La Plata, Argentina ; Cecilia, S. ; Patricia, P. ; Sandra, B. paper "AuthorAR: Authoring tool for building educational activities based on Augmented Reality" Published in: Collaboration Technologies and Systems (CTS), 2013 International Conference Date of Conference:20-24 May 2013 Page(s):503 - 507 Print ISBN: 978-1-4673-6403-4
- [7] Paul Mulholland, Member, IEEE, Stamatina Anastopoulou, Trevor Collins, Markus Feisst, Mark Gaved, Lucinda Kerawalla, Mark Paxton, Eileen Scanlon, Mike Sharples, and Michael Wright paper "nQuire: Technological Support for Personal Inquiry Learning" published in IEEE TRANSACTIONS ON LEARNING TECHNOLOGIES, VOL. 5, NO. 2, APRIL-JUNE 2012 reference IEEECS Log Number TLT-2011-05-0060. Digital Object Identifier no. 10.1109/TLT.2011.32.
- [8] Said Talhi and Mahieddine Djoudi in their paper "Developing Adaptive E-learning: An Authoring Tool Design" published in JCSI International Journal of Computer Science Issues, Vol. 8, Issue 5, No 3, September 2011 ISSN (Online): 1694-0814.
- [9] Alex Koohang, Kevin Floyd, and Cody Stewart in their paper "Design of an Open Source Learning Objects Authoring Tool – The LO Creator" published in Interdisciplinary Journal of E-Learning and Learning Objects Volume 7, 2011
- [10] Taejin Ha ; GIST U-VR Lab., South Korea paper "ARtalet: Tangible User Interface Based Immersive Augmented Reality Authoring Tool for Digilog Book" Published in: Ubiquitous Virtual Reality (ISUVR), 2010 International Symposium on Date of Conference: 7-10 July 2010 Page(s): 40 - 43 E-ISBN: 978-0-7695-4124-2 Print ISBN: 978-1-4244-7702-9
- [11] Jonghee Park ; U-VR Lab., GIST, Gwangju, South Korea ; Changgu Kang ; Sejin Oh ; Hyeongmook Lee paper "Context-Aware Augmented Reality Authoring Tool in Digital Ecosystem" Published in: Ubiquitous Virtual Reality

- [12] Leena Razzaq, Neil T. Heffernan in their paper” Open Content Authoring Tools “
- [13] 13) Seiji Isotani, Riichiro Mizoguchi, Sadao Isotani, Olimpio M. Capeli, Naoko Isotani, Antonio R. P. L. de Albuquerque paper” An Authoring Tool to Support the Design and Use of Theory-Based Collaborative Learning Activities” published in 10th International Conference, ITS 2010, Pittsburgh, PA, USA, June 14-18, 2010, Proceedings, Part II Pagespp 92-102 DOI 10.1007/978-3-642-13437-1_10 Print ISBN 978-3-642-13436-4
- [14] Turadg Aleahmad, Vincent Aleven, and Robert Kraut in their paper “Creating a Corpus of Targeted Resources with a Web-Based Open Authoring Tool” published in IEEE TRANSACTIONS ON LEARNING TECHNOLOGIES, VOL. 2, and NO. 1, JANUARY-MARCH 2009 Log Number TLTSI-2008-09-0089. Digital Object Identifier no. 10.1109/TLT.2009.8
- [15] Jonghee Park, Woontack Woo in their paper” Multi-layer Based Authoring Tool for Digilog Book” propose multi-layer based authoring tool for Digilog Book.” Published in 8th International Conference, Paris, France, September 3-5, 2009. Proceedings Pages pp 234-239 DOI 10.1007/978-3-642-04052-8_26 Print ISBN 978-3-642-04051-1
- [16] Rodrigo Laiola Guimarães, Romualdo Monteiro de Resende Costa, Luiz Fernando Gomes Soares in their paper” Composer: Authoring Tool for iTV Programs” published in 6th European Conference, EUROITV 2008, Salzburg, Austria, July 3-4, 2008 Proceedings Pages pp 61-71 DOI 10.1007/978-3-540-69478-6_7 Print ISBN978-3-540-69477-9
- [17] Edward Meyen and Ronald Aust in their paper”THE DEVELOPMENT AND VALIDATION OF A MODULAR E-BOOK AUTHORING SYSTEM” published in proceedings of the ninth lasted international conference and advanced technology in education October 4-6,2006 ISBN:0-88986-626-0.
- [18] Romain Deltour, Agn`es Guerraz, and Cecile Roisin in their paper” Multimedia Authoring for CoPs” published in Innovative Approaches for Learning and Knowledge Sharing, EC-TEL 2006 Workshops Proceedings, ISSN 1613-0073, p. 278-287, 2006
- [19] Weiqin Chen, Yusuke Hayashi, Lai Jin, Mitsuru Ikeda, Riichiro Mizoguchi in their paper” An Ontology-based Intelligent Authoring Tool” ISIR, Osaka University, 8-1 Mihogaoka, Ibaraki, Osaka 567-0047, Japan

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