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From the Editors …

Welcome to the July 2012 issue of the Learning Technology Newsletter.

This issue does not feature a Special Theme, but includes some very interesting articles relating to Learning Technology in general.

Derntl & Klamma present a Mediabase for TEL, which was built and deployed to facilitate mapping and roadmapping activities in the TEL scientific community. Murnion & Helfert propose an extension to an existing analytics process model for education. Mabrito describes the Immersive Research Project, a class created to provide students with a wider range of literacy experiences in the virtual world of Second Life through a semester-long immersive research experience. Bainbridge discusses work under progress towards the development and evaluation of a pedagogical model for an Open University in Nepal. Fragelli proposes an architecture of an authoring system based on computer graphics, interactive simulators, intelligent and adaptive systems that can be easily used by the authors to build interactive and adaptive e-learning courses. Vallance describes a university course which empowers students to actively engage in technology supported communication. Pellas & Kazanidis describe the implementation of an innovative hybrid course that derived in the existence of a combination between the Cognitive presence framework and Jigsaw transferability. Finally, Carter & Beveridge propose two innovations from the Neal Redundancy Instructional Design model that could be included in ISD models used to create educational instructions.

Special theme of the next issue: ***Technology-Augmented Physical Educational Spaces***

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Deadline for submission of articles: ***September 15, 2012***

Articles that are not in the area of the special theme are also welcome, to be published in the regular article section.

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A Mediabase for Technology Enhanced Learning in Europe

Abstract

There is growing interest in analytic techniques and tools for supporting scientific communities, e.g. through visual analytics tools. In the domain of Technology Enhanced Learning (TEL), one of the first endeavors in this regard started in 2006, when the PROLEARN project[1], a European TEL network of excellence, deployed a "Mediabase" for TEL in Europe. The objective was to overcome fragmentation and propel excellence in the field by providing stakeholder groups like scientists and policy makers with digital information obtained from TEL social media sources (e.g. mailing lists, blogs, RSS/Atom feeds) [3]. From the end-user perspective a key task was the development and provision of easy-to-use tools for extracting and presenting relevant information contained in the Mediabase, e.g. for cross-media social network analysis and self-observation [4]. In the scope of the currently running TEL-Map project[2], a support action funded by the European Commission, the Mediabase idea was adopted to empower TEL stakeholders in Europe and beyond to find relevant information and to obtain a rich overview of different types of actors and artifacts involved in the TEL domain. The main objective is to provide support for roadmapping activities in TEL, which required extending the available data sources and analytics tools.

Data Sources

The TEL Mediabase includes information from three main data sources:

- *Blogosphere*: TEL related blogs, including the blog entries, comments and analytical information like length, hyperlinks, words occurrences, and word bursts for entries.
- *Projects*: TEL projects funded by the European Commission, including metadata and information like description, start/end dates, cost, funding, and consortium members.
- *Papers*: Bibliographic information on TEL related conferences, journals, workshops, authors, and papers.

Figure 1 shows the component layers of the Mediabase. The web data sources are crawled periodically, and the data is processed and fed into a set of relational databases. The projects database is fed from publicly available information pages on the European Community's websites (e.g. CORDIS[3]); the papers database is fed by the DBLP[4] data set enriched with abstracts and keywords crawled from the publisher pages (currently we support IEEE, ACM and Springer). The blogs database is fed by a blog crawler and a feed importer. The blogs to be included are specified by community members using web-based tools like the Feed Aggregator on the Learning Frontiers portal (http://learningfrontiers.eu) or the Mediabase Commander available at the PROLEARN Academy homepage (http://prolearn-academy.org).

[1] http://www.prolearn-project.org
[2] http://telmap.org
[3] http://cordis.europa.eu/home_en.html
[4] http://dblp.uni-trier.de

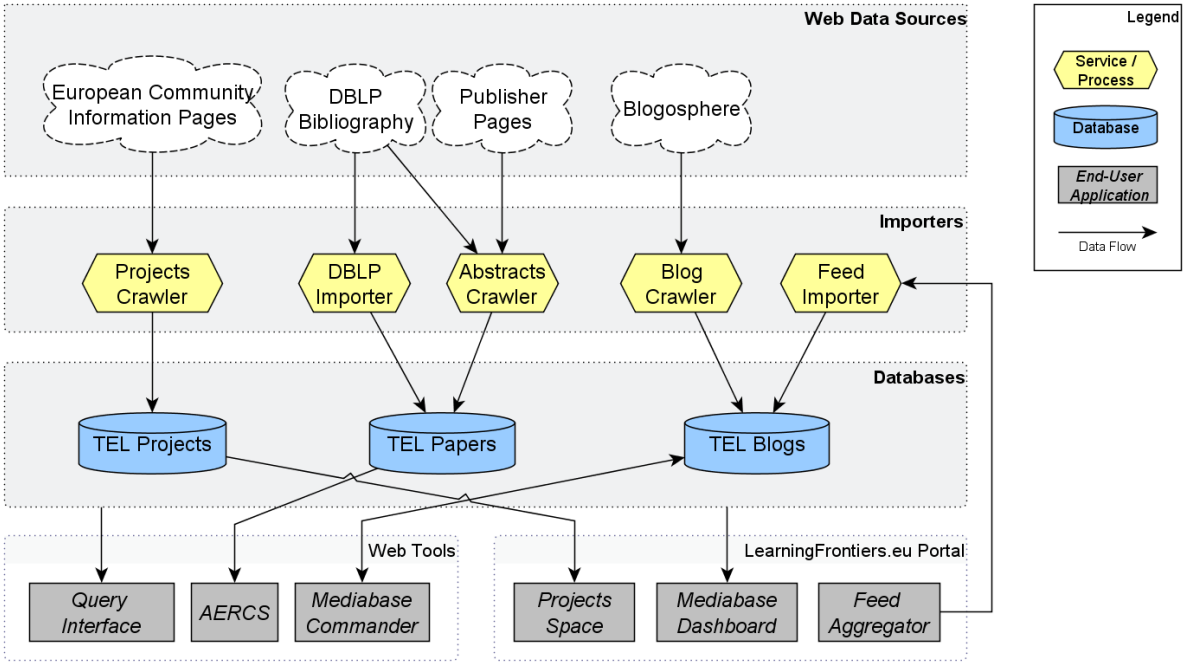

Figure 1 - TEL Mediabase component layers

Currently the Mediabase indexes almost one thousand TEL related blogs with close to 400,000 blog entries and more than one million distinct hyperlinks. It includes the complete DBLP data set, as of March 2011 consisting of more than 800,000 authors, about 1.5 million papers, and more than 3,700 conferences, journals and workshops. The project data set includes 116 collaborative projects funded by the European Commission during TEL focused calls in FP6, FP7, eContentplus, and eTEN, involving more than 800 different organizations.

End-User Applications

To enable TEL stakeholders to access the data for analytic and roadmapping tasks, we deployed several web-based tools as shown in the bottom layer in Figure 1. In the Learning Frontiers portal, a TEL roadmapping portal hosted by the TEL-Map project, we offer the following tools:

- *Projects Space*: This portal section (see Figure 2) allows users to browse the project data set. It also presents a map overlay that shows the geographical distribution of project partners and an automatically generated list of predecessor and successor projects. These pieces of information are hyperlinked to provide a seamless browsing experience. A study investigating collaboration networks and project impact based on these features is presented in [2].
- *Mediabase Dashboard* [1]: A portal section similar to the iGoogle homepage. Users can embed widgets in their personalized dashboard. These special widgets provide real time visualizations of the data in the three databases. Users may also create custom visualizations by using the provided widget creator application.
- *Feed Aggregator*: Allows users to specify feeds and blogs to index for crawling.

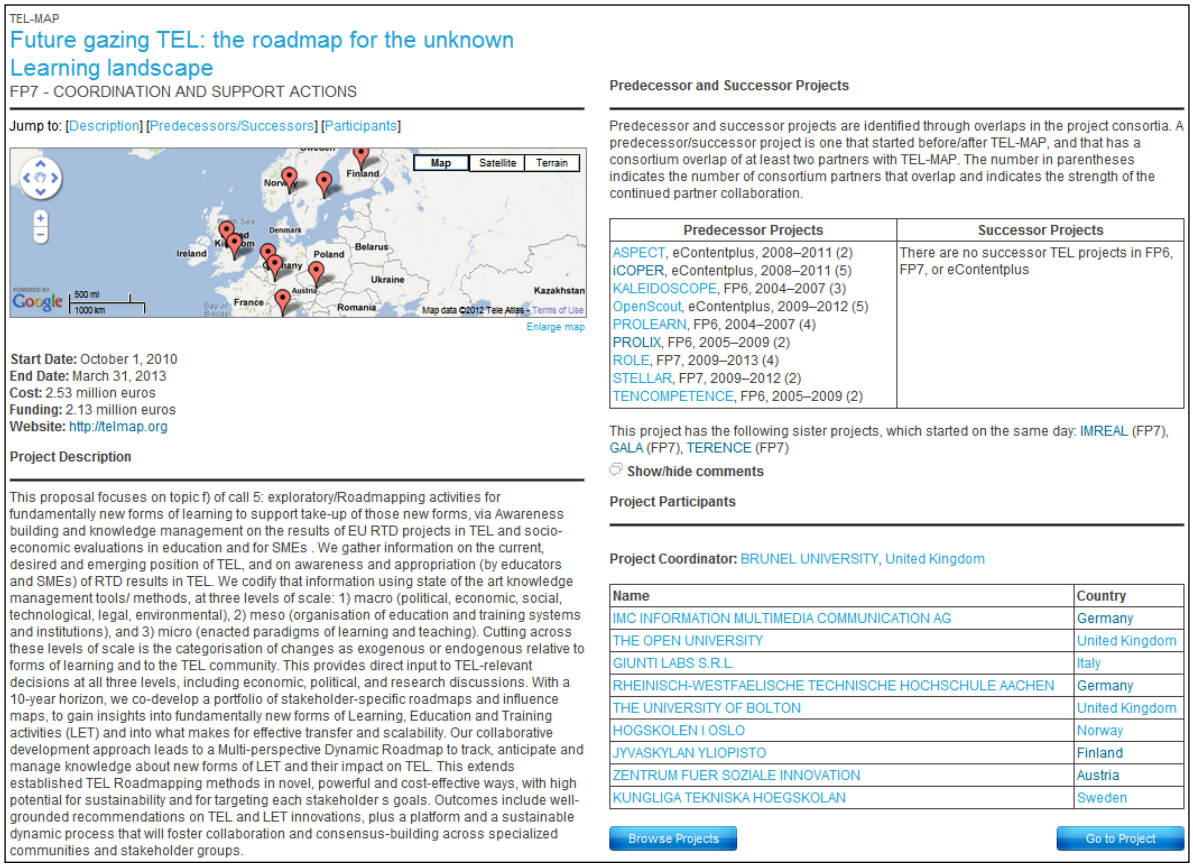

Figure 2: Projects space on the Learning Frontiers portal

In addition we have developed and deployed web tools outside of the Learning Frontiers portal:

- *Query Interface*: provides the possibility to query the three databases using SQL in a web-based interface. The query results are visualized using different chart types like pie chart, line chart, timeline, table, graph, etc.
- *AERCS*[5]: enables users to access analytic, visual and comparative functions on the papers database. For instance it allows comparing the co-authorship and citation networks of different conferences, visualize author networks, identify key authors, and similar functions. A study analyzing the development patterns of TEL conferences using these features is presented in [5].
- *Mediabase Commander*: a Firefox plugin that allows users to browse the TEL blogs database and to add new blogs.

Conclusion

In this article we have presented a Mediabase for TEL, which was built and deployed to facilitate mapping and roadmapping activities in the TEL scientific community. This includes observing key indicators in relevant data sources as well as to contribute to and browse data sources from web-based applications within and beyond their community web portals.

[5] http://bosch.informatik.rwth-aachen.de:5080/AERCS/

Acknowledgments

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A Process model for Educational Data Mining and Learning Analytics

Abstract

At the Business Informatics Group, we investigate the process of transforming raw data into useful information for decision makers. In the field of education, data mining and analytics approaches are being increasingly deployed to achieve these goals. As compared to other areas of informatics, methodologies for analytics are under-developed. In this article we outline our proposed extension to an existing analytics process model.

Process models in Educational data Mining and Learning Analytics

Previous research in data mining has indicated that it is most successful when applied using a model that guides the analytics process (González-Aranda, Menasalvas et al. 2008), (Hofmann and Tierney 2009). Similarly a review of educational data mining (EDM) research describes effective EDM as "an iterative cycle of hypothesis formation, testing, and refinement" (Romero and Ventura 2007). However, EDM research has been focussed on technical aspects rather than methodologies and the standard process model for data mining, CRISP-DM (Shearer 2000), has not been widely utilised (Murnion and Helfert 2011).

However, a newer field of research, Learning Analytics, has a different focus. Learning analytics is the analysis and reporting of learning data to improve learning and learning environments (SoLAR 2012). It is clearly related to EDM in purpose and methods, as recognised by the U.S. Department of Education (Bienkowski, Feng et al. 2012) and among Learning Analytics researchers, where EDM has been explicitly related to learning analytics (Siemens 2011). Therefore, we treat EDM and Learning Analytics as a single inter-disciplinary research area.

In learning analytics, methodology has received more attention. Specifically, a process model has been proposed (Oblinger and Campbell 2007), (Elias 2011). The model describes a sequence of five steps or methods in learning analytics: Capture; Report, Predict; Act; and Refine; with narrative descriptions of each step. However, as a process model, or methodology, it contains only one dimension; the set of sequential steps. Other information systems methodologies such as Systems Development (Whitten, Bentley et al. 1998), and organisational IT architectures (Zachman 1987), have been described from multiple perspectives. Since EDM and learning analytics is fundamentally about data we propose a further data dimension: that for each step in the analytics there should be a data model.

Proposed Data Dimension

The data dimension of the learning analytics process contains the following models and (indicative) descriptors.

Existing Methods dimension	Proposed Data Dimension	Data Model Description
Capture	Data model	A data model provides a representation of the required data stored in the source data system(s). These can be described using standard database models (such as entity-relationship diagram models)
Report	Information model	Describes the information for reports, including simple aggregation functions and more complex models such as cross-tabulations. An information model could also include meta-data about the information required, e.g. information quality metrics.
Predict	Predictive Model	There are libraries of standard predictive models (regression, classification, association, etc.). However the analytics prediction model might incorporate further factors such as model reliability and timing of model runs.
Act	Decision Model	A decision model can be as simple as directing relevant information to appropriate decision makers at the right time. A more complex decision model could trigger actions based on a rule-base.
Refine	Analytics model	For analytics to improve, the analytics methods themselves must be modelled within the system. This meta-model could be as simple as the set of the other four models plus model management meta-data.

Table 1 - Analytics Process model including Data dimension

To summarise, the data models for each step in the process provide another perspective to assist the analyst and the educator in the work of educational data mining and learning analytics. We also note that the models described are hierarchical, each model requiring the previous data model plus some extra information generated by the associated method. For example, basic learning analytics might involve only data and information models.

Conclusion

Existing process models for educational data mining and learning analytics are focussed on methods. By adding a data dimension we provide a new perspective on the process. We hope that dissemination of this proposal in the newsletter will generate feedback from the EDM, Learning Analytics, and wider Educational Technology communities. Further work is required to specify the data models in more detail. We also aim to extend this work by constructing an instrument to measure the state of learning analytics in live educational environments. The results will provide a measure of the use of analytics in education and will also test the validity of the model.

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Second Life and New Literacies: The Immersive Research Project

Abstract

The article presents the Immersive Research Project, a class created to provide students with a wider range of literacy experiences in the virtual world of Second Life through a semester-long immersive research experience.

Introduction

The use of 3D virtual worlds in education has increased in recent years (De Lucia et al., 2009). In addition to educational institutions, many businesses, nonprofits, and government agencies use virtual worlds for a variety of purposes, from meeting, collaborating, to conducting commerce. Of the various virtual worlds available today, *Second Life* is the one most widely-used by universities and colleges (Inman, Wright, & Hartman, 2010).

Second Life is different from other online applications because it provides an *immersive* virtual learning environment to students. Learners inhabit the environment as avatars. Users represent their identities through the creation of their avatars (Yee, Bailenson, & Ducheneaut, 2009). They, in essence, "live" in the world that they are exploring. This sense of presence makes the learning experience unique.

While previous research has studied *Second Life* as a platform for such activities as simulations, and role playing, only a few research studies have looked at the types of literacy events that take place there. For example, Remley (2010) describes using *Second Life* for students to create a group machinima in a business writing class. Similarly, Vie (2008) suggests that a virtual world like *Second Life* raises new questions about the types of literacies we privilege in academic settings. deWinter and Vie (2008) argue that it can be used as an effective platform for teaching media literacy.

Second Life does provide the opportunity for writing instructors to expose students to multimodal composing and new media literacies (see, for example, Shipka, 2011; Wysocki, 2003). As educators, however, we have not fully considered what types of literacy skills students need to function in this environment, nor do we have an effective pedagogy for teaching such skills.

The Immersive Research Project

The Immersive Research Project was a class created to provide students with a wider range of literacy experiences in the virtual world of *Second Life* through a semester-long immersive research experience. The purpose of the course was to invite students to explore their avatars' firsthand experiences in *Second Life* and connect those experiences with what research has claimed about virtual worlds. Ultimately, this inworld journey developed into a research project that manifested itself in print, machinima (inworld video), and the creation of a 3D presentational space in *Second Life*. Students drew information from their avatars' personal experience, secondary research, and primary research performed inworld, all centered around a topic of the student's choice. Sample topics included gender, role-playing, establishing virtual families, among others. The classroom for the course was created and housed in *Second Life* (Figure 1).

Figure 1 - Snapshot of inworld classroom.

Avatar Presence: As a starting point for the project, students had to create more than one avatar to engage in the immersive research aspect of the course. The point of creating the additional avatars was so students could experience firsthand their research topics in ways they could not with their original avatar. For example, a student researching the topic of virtual families created a 12-year old boy for adoption, who eventually became part of an inworld family. A female student studying the perception of women in virtual worlds was both a male avatar and gender-neutral avatar, who were able to interact inworld in social and professional venues in ways that the student's own female avatar could not. In all cases, avatars maintained a blog about their experiences as a type of research journal. Blogging from the perspective of different avatars provided students with rich field experiences and data for their projects that could not be obtained through any other means.

3D Representation of Research: Multimodal approaches to writing instruction (that is, students using audio, video, images in their text) are increasing in popularity; however, only in a virtual world will students need to consider ways of actually "showing" their research to readers—that is, representing information through three-dimensional objects. For this part of the project, one student constructed a house in SL, with each room inhabited by an avatar, while providing the reader the ability to interact with the objects to learn more about each avatar's contribution to the research project (Figure 2). Another student created a virtual temple that housed interactive objects his avatars collected from various inworld religions to explain more about their practices, beliefs.

Figure 2. Snapshot of student-created "avatar house."

Reporting of Research Findings: Students used two different formats to report on their research findings: a traditional, print-based research paper, written from the perspective of the student as researcher and a machinima (a video recorded inworld) narrated/presented by one of the student's avatars. The purpose of the machinima was to provide students with instruction in a type of text (video) that is typically used to represent inworld experiences and one with which they would be less familiar, both from a technical standpoint and also because they are creating the machinima from the viewpoint of the avatar as narrator of the research experience. The dichotomy of the two approaches (research paper and machinima) was meant not only to expand students' experiences with different literacies, but also to help them make comparisons between the more-familiar academic (real-world) research paper and the less-familiar genre of virtual world machinima.

Summary

Overall, students' reactions to this class experience were extremely positive, even though they expressed frustration at times with the technology and navigating their way around *Second Life*. Throughout the process, students were able to expand not just technical skills, but conceptually gain a better understanding of the different literacies associated with writing within/about virtual worlds.

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Development and Evaluation of a Pedagogical Model for an Open University in Nepal

Abstract

The article discusses work under progress towards the development and evaluation of a pedagogical model for an Open University in Nepal

The Model

There is much talk these days of the enormous potential of educational technology to 'open the doors' and bring global academic knowledge to all citizens of the world. The ability of ever-expanding mobile technologies certainly has the hypothetical potential to be 'the great equalizer', allowing students in poor countries and isolated locations to obtain higher education degrees, certificates and knowledge without leaving home.

The reality of what may actually happen when students are offered courses online still requires research and testing. Will the current infrastructure allow for regular access to a Moodle platform? Do potential students have the IT skills to participate successfully in an online course? How much face-to-face assistance (if any) is required for student success?

Other than incorporating consideration of the country's diversity, an open university pedagogical model will embrace the basic features that promote open learning. Open learning represents approaches that focus on opening access to education and training provision, freeing learners from the constraints of time and place, and offering flexible learning opportunities to individuals and groups of learners (UNESCO, 2002). Therefore, the pedagogical model is designed to meet the students' demands in light of their needs (Gosper, McNeill & Woo, 2010). Moreover, open or online education is student-centred, flexible, interactive, and inclusive of digital technology (Gosper, McNeill & Woo, 2010; Pereira et al., 2010).

Over the next year Nepalese volunteers will participate in a 2-week online course entitled, An Introduction to Online Learning. The course will be offered in 7 regions of Nepal in order to identify the challenges and the successes in each region.

Students are being recruited through social networks such as LinkedIn and Facebook, as well as through word of mouth within the Nepalese community. They first visit the project website and complete an identification survey for the region in which they live. Those who complete the survey and indicate that they would be interested in participating as a student in an online course are then contacted with course details and dates.

Western Nepal is being targeted for summer 2012. Students in this region will have no 'ground' support. They will be expected to register with minimal assistance and then once the course begins, the tutor will work through the course with the group, assisting as much as is required. At the end of each course, students will complete a post-course survey and then both students and the tutor will be interviewed face-to-face by the researcher, Susan Bainbridge.

It will not be until September 2012, that all data from surveys, Moodle and interviews from the Western Region will be ready for assessment and collation.

This is a very exploratory project. It will be fascinating to see how many individuals actually register and complete the course. The dilemmas that ensue and the challenges faced by such an endeavour.

It is only after data analysis of the Western region program, will it be determined to continue with the status quo or switch to a case study approach, and offer the courses in Eastern Nepal with refinements and changes to improve the success rate.

It is hoped that within a year, the results of this research project will determine aspects of the pedagogical model which require adjustment to meet the needs of students in developing countries and in particular Nepalese open university students. An in-depth study of Nepal's history and diversity, existing open university models worldwide and educational theory will form the foundation of this study. Combining the aforementioned review, with the information gained through the surveys, short pilot course, interviews, and observations will assist in assessing the proposed pedagogical model for an open university in Nepal. The primary aim of this research study will be a generalization of the research findings to represent the desired target population which consists of the people to be served by the pedagogical model to be developed. Revisions to the model will be suggested at the conclusion of the research study.

The educational system in Nepal is in a state of reform and advancement, in an attempt to meet the needs of its population. As a result of the political instability over the past twenty years, and the isolation of many communities, many nationals have not had the opportunity to further their education. The fact that the country is among the world's poorest nations compounds the problem (Bharati & Takao, 2009). There are evident inequalities in educational quality and access (Koirala-Azad, 2008; Shields & Rappleye, 2008). The nation's history, linguistic plurality and mountainous terrain have each contributed to the national diversity and resultant inequalities.

The Higher Education system in Nepal is only able to offer programs on-campus in Kathmandu and a few larger cities. The two major universities are experimenting with online courses and this research project should also offer insights for their programs.

There is no open university operating to offer flexible programs in outlying regions to potential students who are unable to attend classes on a campus in an urban setting or to potential students in urban areas unable to attend on-campus classes.

The problem this study will address is therefore how to provide education to all citizens of Nepal, through open and distance learning offered by an Open University, based on a nationally relevant pedagogical model.

It is hoped that the insights resulting from this project will assist in the progress of open education for citizens of many developing countries, offering them flexible and equal access to important knowledge and skills they would otherwise not have the opportunity to obtain.

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An Authoring System for Adaptive and Intelligent E-Learning Courses

Abstract

The article presents the architecture of an authoring system based on computer graphics, interactive simulators, intelligent and adaptive systems that can be easily used by the authors to build interactive and adaptive e-learning courses.

Introduction

Information and Communication Technologies (ICT) provide a high level of interactivity and autonomy to students rather high and may be potential tools in promoting meaningful learning. Especially, Adaptive Hypermedia Systems (AHS) and Intelligent Tutoring Systems (ITS) dedicated to educational environments are excellent options to customize the learning content.

The AHS offer an adaptive content through construction of hyperdocuments which have their presentation and navigation adaptable to students' needs [1][2]. The ITS also being used to adapt the content, however, they use artificial intelligence techniques to provide a learning environment that take into account the different cognitive styles of students [3]. Current researches have made the combination of ITS and AHS giving rise to Adaptive and intelligent Web-based Educational Systems [4]. However, most of the current studies don't explore the use of interactive simulations in these educational systems due to the large time spent to produce them.

In order to facilitate the use of such resources, this work aims to present the architecture of an authoring system based on computer graphics, interactive simulators, intelligent and adaptive systems that can be easily used by the authors to build interactive and adaptive e-learning courses.

The Authoring System

The architecture of the authoring system is shown in figure 1 and contains the following modules: (a) SWF Creator Application; (b) Adaptive Hypermedia Library; (c) Computer Graphics Library; (d) Interactive Simulation Library; (e) Interactive and Adaptive Learning Object; (f) Intelligent and Adaptive Tutor System (IATS).

Basically, the content author produces text files with metadata which are accessed by (a) providing enough information to be used by (e). The IATS produces an interactive and adaptive learning object using the authoring tools (b), (c) and (d). According to the interaction with the student, the IATS can also access the authoring tools promoting adaption in real time.

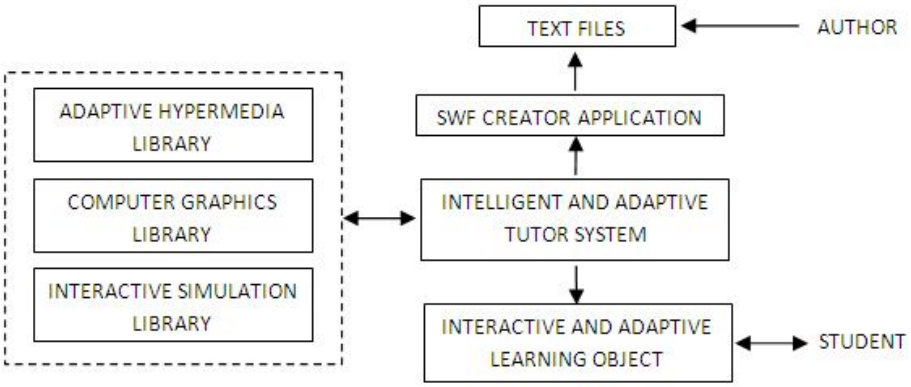

Figure 1 - System architecture.

All applications were built with *Adobe Flash CS4* and *ActionScript* programming based on the concepts of Meaningful Learning of Ausubel [5][6]. The Adaptive Hypermedia Library has functions and applications based in techniques and methods of Adaptive Hypermedia [2][7]; the Computer Graphics Library has functions and applications such as clipping 2/3D, exhibitions 2/3D, intelligent cameras [8]; and the Interactive Simulation Library has functions and applications that produces physics simulations such as collisions detection, collisions treatment and movement integrators.

The modules of the authoring system were produced and it was possible building some engineering lessons. With these learning materials, the system was tested and it is currently in process of improvement and additional tests.

Conclusions

Based on the tests it was verified that the authoring system shown may be a good way to facilitate the production of interactive, adaptive and intelligent courses. The next step of this project is working to improve the IATS module, build a module to support the production of text files with metadata and testing with the target audience.

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Google SketchUp for Media Architecture Communication

Abstract

Japanese have an international image as communications (i.e. technologies) rich but communication poor. This article seeks to redress this communications/communication dissonance by exemplifying a university course which empowers students to actively engage in technology supported communication. Undergraduate students studying Information Systems at Future University Hakodate, Japan consider alternative energies for Japan's future. Final designs are developed using Google SketchUp and displayed within a unique App on Apple iPads. The Media Architecture Communication course facilitates an interdisciplinary approach involving computer science, cognitive science, social science, design and communication.

Background

Although computers have been installed in all Japanese schools, the 2009 results of the Programme for International Student Assessment (PISA) is disturbing. Of the 3,400 respondents from 109 Junior High (ages 12 to 15) and Senior High (ages 15 to 18) schools in Japan, fewer than 5% of students use computers at school and less than 10% use computers at home for study or homework. In contrast, the PISA results indicate that in Australia and Norway, students' use of computers at school and home for educational purposes is over 70%. Of the OECD countries, Japanese students ranked lowest in ability to use a computer to create a presentation or use a spreadsheet to plot a graph (OECD, 2009). Japanese school education consequently leaves pupils ill-prepared to deploy the kinds of digital and emerging analytical skills required at university level (Vallance & Wright, 2010).

In Higher Education, of the top 50 countries in the National Science Foundation (NSF) rankings of research output in 2006-7, Universitas 21 ranked Japan as 20 (Williams et al., 2012). According to a Global Competitiveness Report the overall quality of the Japanese university system is ranked 31st, and its Math and Science education has fallen to 25th. The 2010 Times Higher Education World University Rankings listed Tokyo University at 26 and Kyoto University at 57. China and Singapore universities now rank higher than Japan's national flag bearers (cf. Field, 2012).

Media Architecture Communication

The aim of the Media Architecture Communication course at Future University Hakodate, Japan is to develop much needed multi-modal, multi-literacy skills of Japanese undergraduates in particular contexts which embody aspects of design, science, cognition and communication. The four main objectives of the course are:

- To comprehend a problem and use strategic tools to consider possible solutions;
- To seek quantitative data and develop meaningful interpretations;
- To design possible solutions using particular workflows;
- Use multiple media to present solutions to a local and global audience.

The course is implemented in three distinct stages: Input; Controlled Practice; Output. During the Input stage the instructor presents a 'design for communication' pathway. The rationale is based upon Dewey's experiential learning and Kolb's social constructivist philosophies for

effective education (Dewey, 1938; Kolb, 1984). A coursebook (ePub and printed) written by the instructor is provided (see Figure 1).

Figure 1 - Media Architecture Communication coursebook.

The Output or production stage is open-ended but requires students to design, digitally develop and present unique solutions to a provided problem. In the aftermath of the March 11th tsunami and the subsequent Fukushima nuclear power plant accident, students in 2011 were presented with a scenario: *due to the environmental, social and political negativity recently aimed at nuclear power, citizens are becoming engaged in seeking alternative energy sources.*

The students were tasked to design, justify and present alternative energy futures in an interactive and engaging manner. The preferred solution was Google SketchUp which has a number of benefits:

- Design students should be developing in 3D nowadays, especially given the employment opportunities that are going to transpire as augmented reality applications proliferate and become ubiquitous (cf. Nakashima, 2010);
- Viewers can control their own experience by scrolling around an animation of the 3D design;
- Free and cross platform.

To justify their designs students conducted a Strengths - Weaknesses - Opportunities - Threats (SWOT) analysis of nuclear power, gathered data from online sources and a local survey, and brainstormed new ideas. The students implemented the theories and skills presented in the Input and Controlled Practice stages. Figure 2 illustrates some typical designs for alternative future energies.

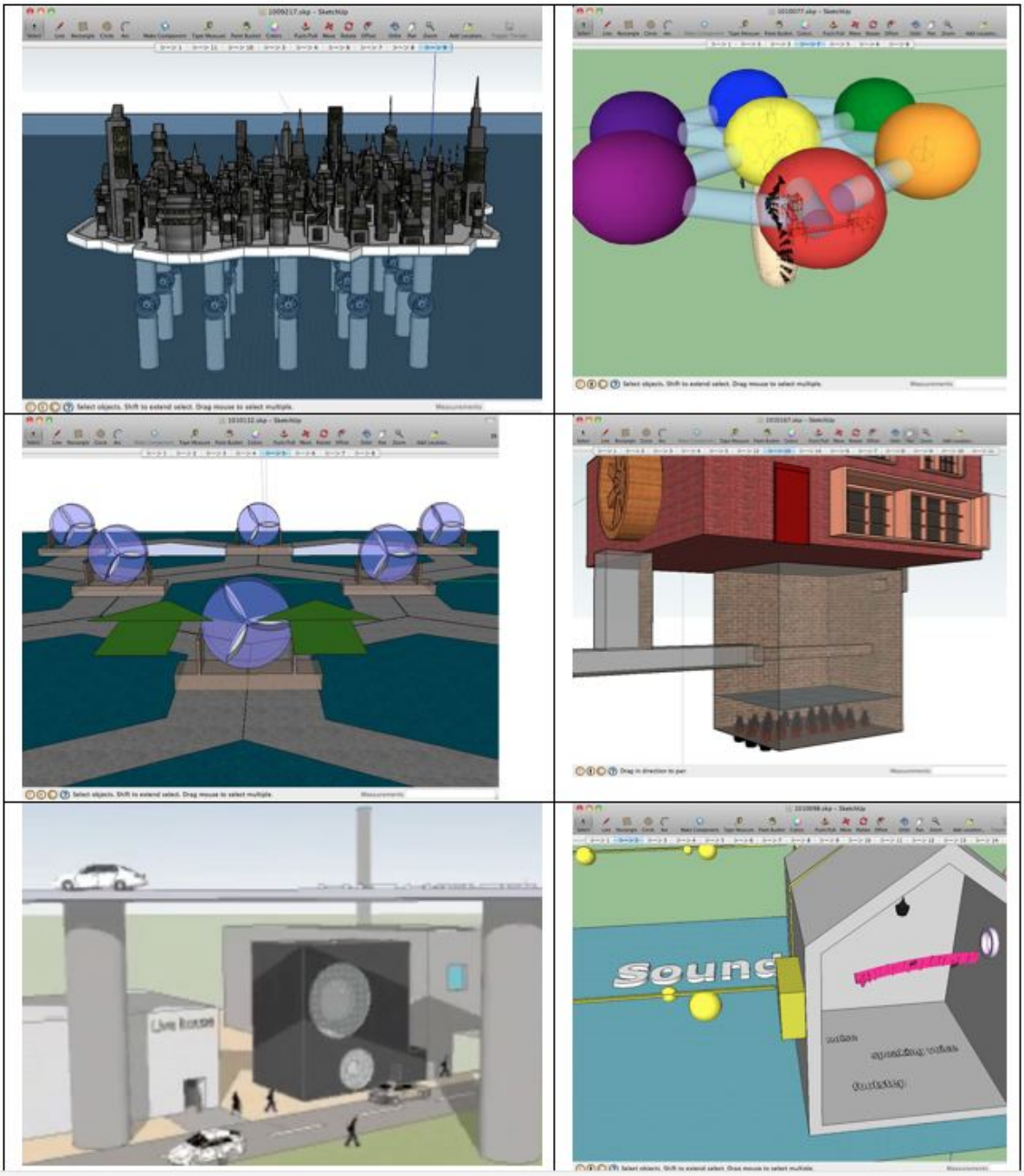

Figure 2 - SketchUp designs by students

An iOS App was used to create a means of demonstrating the designs in a multi-modal, mobile, transmedia manner. As the students study programming (particularly C), an Apple Xcode template for iOS devices was provided for modification using Objective C (see Figure 3). The iPad App enabled students to insert images, text and audio summaries. The images could be rotated, zoomed in and out (pinching), and viewed as animations. A number of iPads were set up in a public space for visitors to experience.

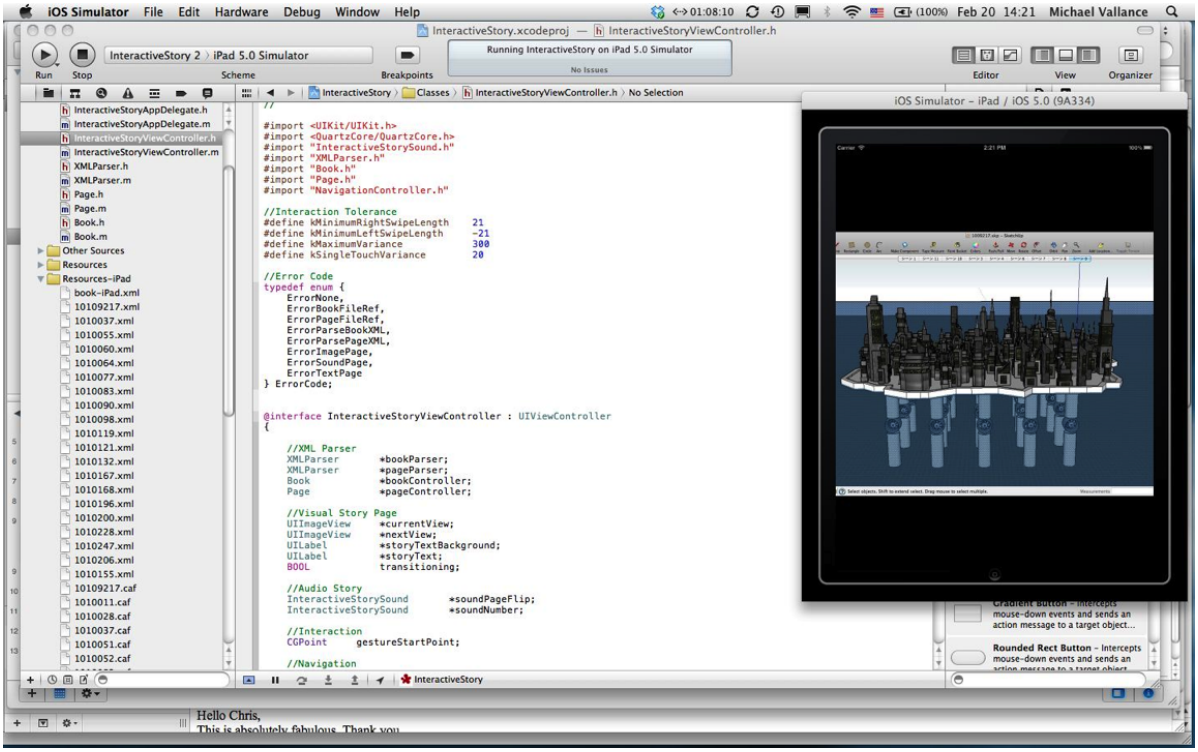

Figure 3. Xcode application with iPad simulator

A post-course evaluation of learning was designed using a neo-Bloomian taxonomy developed by Vallance and Martin (2011). Initial observations suggest a high level of cognitive engagement, and that students were very positive about the inter-disciplinary transmedia approach.

Conclusion

Media Architecture Communication engages students in design procedures, develops digital literacy skills, and achieves a high level of cognitive engagement. The foreseeable ubiquity of augmentation, ambient technologies, and near field communication requires academics to implement inter-disciplinary courses urgently. Media Architecture Communication academics can now begin that process as instructors and researchers of inter-disciplinary Information Science.

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Re-thinking a Cognitive presence framework for the utilization and transferability of the Jigsaw technique in open source virtual worlds

Abstract

The article describes the implementation of an innovative "hybrid" course that derived in the existence of a combination between the Cognitive presence framework and Jigsaw transferability for describing and assessing more widely the adequate of the learning procedure.

Introduction

Open source virtual worlds (VWs), assert the persistent corollary of interactivity and social formalization of modeling, and allow users to design learning activities, in juxtaposition with contemporary pedagogical approaches.

Accordingly to these provisions the scope of this work focuses on the implementation of an innovative "hybrid" course (face-to-face and online) that derived in the existence of a combination between the Cognitive presence framework (Akyol & Garrison, 2011) and Jigsaw transferability (Pozzi, 2010) for describing and assessing more widely the adequate of the learning procedure.

The goals of this course:

- Engaging students in activities that exacerbate current key skills, such as exploration and critical thinking.
- Constructing the knowledge field in an authentic framework, as a result of teamwork, between active participants in learning communities.
- Developing, supporting and assessing innovative visual artifacts that students firstly taught from the instructor and the production was resulting from the connectedness with Open Simulator (OS grid).

IBL in OS grid: Instantiation of the Cognitive presence framework

As Van Joolingen, De Jong & Dimitrakopoulou (2007) noticed, IBL (inquiry-based learning), can engage the learners approach to build personal scientific approaches, offered in the area closest to the perception and reality. Participation in inquiry-based activities include critical examination of practices, involving users to develop comprehensive and relevant to their aspects knowledge and producing a "practical" understanding of what they do and what are finally trying to achieve.

For this case study we have used the IBL procedure. The present paper articulates and proposes a novel "blended" framework for Computer Supported Collaborative Learning (CSCL) approach, both in a computer lab and OS grid. The approach suggests a combined utilization of OS grid visual artifacts that created for the implementation of the course, in order to facilitate and examine the fruitful execution of the collaborative learning technique "Jigsaw" (see [J1]-[J7]) and its online transferability in OS grid (Figure 1). This premise frequently recapitulated through the use of a double-phased digital inequality approach for postgraduate students throughout June 2012.

The Cognitive presence framework describes (Garrison, Anderson & Archer, 2001):

- the core of the constructive learning procedure and exemplified as the result of an inquiry-based procedure,
- confirm the meaning of progression through the sustained reflection and discourse.

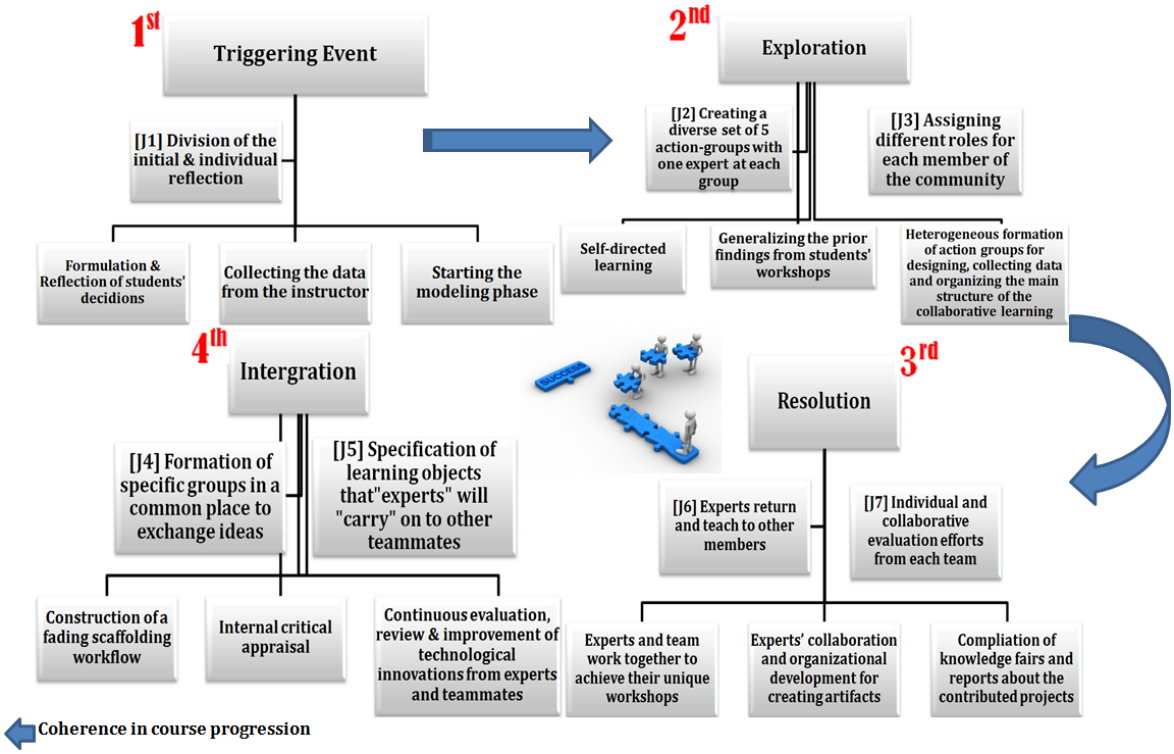

Figure 1: The outline of the learning progression and the transferability of Jigsaw in OS grid

The course describes the *"Designing of a Collaborative framework for Learning Spaces & Artifacts in Virtual Worlds"*. The decision focused on the possible use of *"Collaboration & Design in Learning"* (CDL) process and results in products, places, and experiences that are usable for the largest group of people and effects differentiated in teaching and learning process.

The ambition of this effort is:

(a) To create an effective framework for collaborative action that will help students to manage the organizational and structural complexity inherent by the utilization of Jigsaw and OS grid
(b) To discover and work collaboratively for the production of knowledge with instructor's assistance, thereby reducing gradually the "cognitive overload".

Decisions for supporting and enhancing the learning progression

The virtual platform of OS grid was entirely on a single server (standalone mode) to protect and block away any misbehaving users and supported by Imprudence client viewer (ver. 1.2). The persistent database SQLite adherent our research with the assistance of Freeswitch voice server (http://opensimulator.org/wiki/Freeswitch_Module) to accommodate verbal and non-verbal communication between members.

The pre-constructed spaces are one of the most important things that must be seriously on account, not only for the life cycle of a learning community, but also for the successful constructing projects. Thus, in this phase we proposed 3 different workplaces for the demonstration of knowledge filed in an "open source" VW and these are:

- *Students' meeting place*, an accessible and ergonomic design virtual space for different categories of users (newbies or experts).
- *The arena of collaboration*, a virtual space for users for assuming different and distinct roles of collaborative applications.
- *The simulation place,* where students provide artifacts and tools that help to reduce the "cognitive overload" (Figure 2).

Figure 2: Seperating experts and action groups in OS grid

Thusly, the decision was to utilize the OS grid Linden Scripting Language (LSL) for the construction of primary visual artifacts. These tools were in our plan for implementing and teaching students on how to construct for further courses and respectively are:

- *Presentation Board:* It is the main board in which students present their teamwork in other members by uploading with no cost jpeg or video files.
- *Interactive touch screen:* This screen includes machinimas (editing video of educational activities in a VW), and enhance scenes of constructing the knowledge field collaboratively.
- *Tablet:* Student's tablet is a personal calendar and storage of notecards.
- *OS grids docs:* It provides a combination with Google docs and let students to create a source that is connected to the Internet (copy-paste the text from note cards).

Conclusion

First findings and rates of multiple linear regressions from qualitative and quantitative questionnaires showed that Jigsaw transferability was the strongest predictor of the Cognitive presence during the learning process.

The beneficial affordances from the implementation of "hybrid" course in OS grid have created the following functions:

- The avoidance of the primary "cognitive overload" that usually happens after the introduction of students in a plausibility illusion that OS grid depicts, through the assistance of the instructor

- The removal of any initial reactions, which are usually exemplified through the unnecessary and excessive use or navigation in the virtual environment, without the necessary feedback.

Furthermore, in terms of linking the technological infrastructure of open source virtual worlds and with connectedness of the Cognitive presence added values that focus on computer-mediated learning procedure are:

- Enriching and exploiting visual artifacts, such sharp representation of learning spaces and opportunities to the students as cyber entities to deal with authentic contexts by using text or video files, simulations and visual artifacts.
- Increasing the options for greater quality and quantity of innovative dimensional interaction in a learning environment, as students started to become "seekers of knowledge".

Future-driven studies may enhance the value-added of virtual worlds and should promote the educational expectations for spatial and temporal flexibility in conjunction with 2D LMS.

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The ADDIE ISD Model - The Missing Components

Abstract

This article looks at two of the innovations included in the NEAL Redundancy Method created by co-author Carter to address the lack of attention to accessibility found in other ISD models. Pamela Beveridge, co-authoring this article with Carter, is doing so because she believes this model can have a positive impact on insuring that instructional designers create instruction with accessibility always in mind. The two innovations discussed here are the Non-Exclusive Analysis and the inclusion of learning aids that are automatically created to insure that accessibility will not be an issue for individuals with disabilities not represented in the target audience.

Introduction

Master of Instructional Technology students in the EDTC 6025 course at East Carolina University are challenged to create a unique ISD model that could be used for instruction. Curtis Carter, the co-author for this article, developed the NEAL Redundancy Instructional Design model to better address what he believes is a lack of attention to the instructional needs and delivery for educational instruction when it involves students with disabilities. This paper looks at two of the innovations from the Neal Model that the authors Beveridge and Carter believe should be included in all ISD models used to create educational instruction.

The NEAL Redundancy Model was proposed by co-author Carter for his EDTC-6025 course as an ISD model that would better address the needs of designing and developing instruction used in educational environments. It differs in that it is divided into four rather than the traditional five phases found in the ADDIE model. The **NEAL** Redundancy Model was created borrowing principles used in the minimalist and rapid prototyping instructional design models. What is unique to this model and is the focus of this paper is two innovations the authors believe should be included in all ISD models that design educational instruction. These two innovations, the *Non-Exclusive Analysis and automatically creating learning aids, are discussed next with their relevance to the instructional design process.*

The NEAL Redundancy model is different from the traditional ISD models such as ADDIE because it includes an additional analysis that reviews specifically how the instruction can and will be used by students with disabilities. This analysis, known as the "*Non-Exclusive Analysis,"* is included to factor in both the accessibility opportunities and limitations when different media for delivery are used. The *Non-Exclusive Analysis is initiated during the needs-assessment by reviewing known accessibility issues for various delivery methods to determine any learners who may be excluded by using the instructional methods. This analysis remains an active part of the design, development, and evaluation process, implemented throughout the entire process to ensure learners are not being excluded.*

Brown & Green (2006) assert that it is useless to design instruction that individuals "…cannot or will not use"; the authors of this article believe their statement was inclusive of all users rather than exclusive to any (p. 122). Consequently, this analysis is proposed to be used in education, including K-12 and post-secondary education. While we believe accessibility should be a given, we also realize that corporate and private business will not always be able or willing to devote the resources necessary to include the *Non-Exclusive Analysis in designing new instruction. Education, however, has a legal mandate to provide*

instruction that is accessible; the Non-Exclusive Analysis provides members of a design team with the opportunity to make that a reality in the educational environment.

The second unique characteristic of the NEAL Redundancy Model is to insure students with disabilities are considered even when not included as part of the target audience. Learning aids are automatically created even if not needed immediately to insure that the instruction does not have to be re-designed to meet the needs of future learners requiring such aids. The learning aids are designed to address both accessibility and the needs of learners who may have more trouble completing the instruction. Learners with disabilities will know before-hand whether the instruction is or is not accessible because the design team will have this information having conducted the non-exclusive analyses.

Based on the minimalist approach, the learning aids are created as a reference and contain only the minimal information necessary. These aids are created by the design team using the current technology available to students with disabilities to determine accessibility and possible revisions required to address such issues. For example, creating instruction that is developed using screen-readers for the blind would provide design team members with a working knowledge of what will or will not work, and what revisions if any can be made to the instruction.

Conclusion

Justification for including these two innovations can be found by reviewing the lack of attention given to accessibility when designing instruction. While various text discussing ISD models briefly reference this population during the learner analysis, a model stressing accessibility needs of this group could not be located. There also does not appear to be any effort by those writing education textbooks to give more than a passing reference to addressing the accessibility needs of the disabled student population.

This same lack of attention is reflected in the education of both instructors and instructional designers to understand accessibility-related instructional needs. The authors of this paper were unable in reviewing different curriculums to find any university offering a course where emphasis is placed on designing instruction with accessibility as the primary consideration. This is not meant as a criticism of any individual or academic institution, but of an educational system that chooses to ignore rather than stress the need to understand the relevance of teaching accessibility when teaching instructional design. Emphasis must be placed on the understanding and then the implementation of instructional design that is always accessible for 100 percent of the student population- hopefully, including tools such as the non-exclusive analysis and automatically creating learning aids will begin to address that need.

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Call for Participation: ICT in Education

8th Pan-Hellenic Conference with International Participation
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The 8th Pan-Hellenic Conference with International Participation "ICT in Education" (HCICTE 2012) is the biannual scientific conference of the Hellenic Association of ICT in Education (HAICTE), aiming to address the main issues of concern within ICT in Education and e-Learning.

HCICTE 2012 covers technological, pedagogical, organizational, instructional as well as policy aspects of ICT in Education and e-Learning. Special emphasis is given to applied research relevant to educational practice guided by the educational realities in schools, colleges, universities and informal learning organizations.

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- Sociology of Education and ICT
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- ICT-enhanced Language Learning
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- E-learning and lifelong Learning
- ICT and lifelong Learning
- Distance Learning – Models, Systems and Architectures
- Digital Literacy and Digital Competence
- E-Assessment - Theories and Methodologies

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