The paper describes an ongoing research on electronic learning media (eLM). There are already a number of types of eLM exist such as courseware, video, and TV shows. This study proposes an alternative to those types which is called reality learning media (RLM), where experience-focused design is its major concern. So, this paper aims at defining the term RLM and proposing the conceptual design model of RLM with relation to user experience (UX). First, different viewpoints of UX are addressed. Next, the processes involved along achieving these two aims are described. Then, as the findings, the definition of RLM is elaborated extensively, together with a diagram illustrating the concept of RLM. As the conclusion, potential contributions of this study are stated.

Keywords: eLearning, eLearning media, reality learning media, user experience

INTRODUCTION

Electronic learning media (eLM) a.k.a. electronic learning materials is defined as any kind of information in digital form, which is viewed on screen and not on paper, as part of learning contents. They come in many formats, including courseware, video, and TV shows.

Coursewares are developed for access through the web, or for use on CD. For instance, Baloian et al. (2002) uses courseware in their computer-integrated classroom as the content repositories. Among the advantages of courseware, in which hypertext are utilized, is the ability for learners to read in different orders. Every page contains links to a number of different pages which can be read next. Basically in courseware, the ‘browse and click’ is the main interaction approach. Regan and Sheppard (1996) classify interactive multimedia courseware into five categories, in which videos are also playing similar roles:

- **Case studies** – to illustrate some design, development, and/or failure of devices/structures/systems; and to show relationships among design issues and devices.
- **Tutorials to develop specific skills** – contain exercises aimed to help learners better understand concepts through visual thinking.
- **Laboratory mentor** – serves as guide, stepping learners through the various aspects (e.g. theory, physical setting) of performing physical experiments.
- **Supplement to lectures** – or as resources to complete assignment homework.
- **A major vehicle for dissemination of lectures** – include course materials and/or homework, and references.

Meanwhile, educational TV programmes (ETP) are reported to begin more than 40 years ago (Kodaira, 2005). Very small percentage of viewing hours was allocated for ETP. However, inline with the growth of development in technological tools and equipment, more and more hours are allocated for ETP. By definition, ETP are specially programmed for learning, to disseminate huge capacity contents in various formats. Previously, ETP were broadcasted during schooling hours and viewed in school (Aufenanger, 2005). However, sophistication in
broadcasting technologies has been initiated. In Malaysia, ASTRO\(^1\) provides more than five channels containing ETP. Currently, ETP are integrated with interdisciplinary curricula such as environmental and life education that transcendent conventional school subject\(^2\) (Kodaira, 2005). As mentioned above, there are channels on TV allocated specifically for ETP, so that viewers can always view at any time. Besides, formats of ETP are also changed, combining both entertainment and intellectual contents.

An alternative to existing types of eLM is reality learning media (RLM), which is defined as uncut learning content; a type of video learning where the content is not cut and not edited. The conceptual idea of RLM is that it is viewed on TV for learning formal and informal contents in uncut presentation. The uncut content presentation leads to the feeling of aroused, amused, and entertained; as seen in most reality TV shows. The feeling of aroused and amused can be found in things that are entertaining and creating fun. Obviously, the aim of this paper is to clearly define RLM and to propose the concept of RLM. These aspects of feeling aroused and amused lead to better learning experience.

Studies related to user experience (UX) has proposed that eLM should be designed beyond typical usability, incorporating fun and entertaining to intrinsically motivate learners. This serves as part of this paper which is to determine the ways the concept of RLM maps to UX.

**User Experience**

There are three viewpoints to UX. Jesse (2000) and Morville (2004) see the UX by addressing the elements. Another viewpoint is brought by McCarthy and Wright (2003) by addressing the threads of experience and processes of making sense in experience. Each viewpoint is elaborated in the following paragraphs.

In his book, Jesse (2000) focuses the UX especially for web sites. Jesse identifies the elements of UX for web in which he differentiates the web as software interface and web as a hypertext system, as shown in Figure 1.

![Figure 1: Elements of UX for web sites](image)

From Figure 1, it is noticeable that the elements of UX for web as software interface (from abstract to accurate outcome) include the site objectives, user needs, functional design, interaction design, information design, interface design, and visual design. While the elements of UX for web as hypertext system (from conception to completion tasks) include site objectives, user needs, content requirement, information architecture, information design, information design, information design, and visual design.

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\(^1\) ASTRO is a broadcasting and telecommunication company which provides channel-on-demand services in Malaysia. International channels such as CNN, BBC, ESPN, and Star Movie are included in subscription packages. Programmes are broadcasted 24 hours a day.

\(^2\) There are many more that broadcasted on many channels today such as National Geographic, Discovery, rather than special channels provided for ETP.
navigation design, and visual design. The works by Jesse has influenced the Information Architecture that contains the context, content, and user aspects to be reengineered by Peter Morville.

Accordingly, in 2004, Peter Morville introduced the experience honeycomb, a figure that contains seven identifiers for quality of experience; i.e. valuable, useful, desirable, accessible, credible, findable, and usable. Figure 2 shows the experience honeycomb (Morville, 2004).

![Experience Honeycomb](image)

Figure 2: Experience honeycomb

The honeycomb has several purposes. First, it serves as a great tool for advancing the conversation beyond usability and for helping people to understand the need to define priorities. This can be applied to determine which is more important between facets; e.g.: between desirable and accessible. The truth is it depends on the unique balance of context, content, and users; and the tradeoffs are made explicitly than unconsciously. Second, it supports a modular approach to product design such as concentrating only on credible aspects of a certain product when some disadvantages limit the resources. Finally, each facet can serve as a singular looking glass, transforming how we see what we do, and enabling us to explore beyond conventional boundaries. When Morville was developing the experience honeycomb, McCarthy and Wright have come out with threads of experience (2003).

There are four threads of experience i.e. the compositional, sensual, emotional, and spatio-temporal (McCarthy & Wright, 2003). These threads are used to describe the process of making sense in experience, which includes anticipating, connecting, interpreting, reflecting, appropriating, and recounting. Before elaborating the threads, it is better to consider the iceberg analogy of usability (Berry, 2000), which is illustrated in Figure 3. In the analogy, the usability of an interface can be analyzed by identifying three aspects: look, feel, and the things used. The look includes visual cues, feedback, and aesthetic. The feel aspects include keyboard mappings, menu structure, and shortcuts. Meanwhile the aspects of what users try to accomplish is a kind of things to do, which is referred to as the user model.

![Iceberg Analogy](image)

Figure 3: Iceberg analogy of usability

The compositional thread concerns with part-whole structure of an experience. Questions like what is it?, how to do?, and what will happen next? are examples of compositional aspects of the experience. Next is the sensual thread which consists of the look and feel of iceberg analogy. It involves sensory engagement with a situation. The sensation in ‘look and feel’ is an experience which is variously termed thrill, fear, and excitement. In addition, the look and feel aspects influence the willingness to become involved. Meanwhile, the emotional thread includes anger, joy, disappointment, frustration, fulfillment, satisfaction, fun, and so on. Although sensual and emotional threads are sometimes hard to separate, they need to be distinguished, so that we can engender the emotions associated with achievement through the exercise of control over sensations. Nonetheless, all experience has spatio-temporal

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3 For elaborations on each facet please visit http://semanticstudios.com/publications/semantics/000029.php
4 Refer to the semanticstudios.com blog at http://semanticstudios.com/publications/semantics/000029.php
thread because actions unfold in time and place. When one is in hurry, s/he may feel frustrated and perceives apace as closeting and confined. As a conclusion, usability remains vital in UX, but is not sufficient. Other aspects of UX should also be considered.

The works performed to determine the definition and concept of RLM, in relation with the UX are elaborated in the next section.

METHODS

The works involved along coming out with the definition and conceptual design model of RLM include communication with experts and content analysis. They are divided into two different phases as illustrated in Figure 4. Briefly, most of the tasks in these phases are to elicit relevant information about the topics. The constructive works are little, focusing on constructing the initial concept of RLM.

First, previous works on related topics including electronic learning, theories and concepts of learning, video-based learning, reality learning, components of electronic learning materials, and UX are studied. These elicitation processes take place not only through reading materials, but also through communication with many parties such as lecturers of higher learning institutions, students of higher learning institutions, and other researchers on similar topics. These processes lead to the formation of foundational ideas before constructively engaged in works of phases 1 and 2.

In phase 1, the collected information from the works stated above is deduced and the definition of RLM is initiated first. Besides the definition, components of RLM are also identified. The definition and components of RLM are then verified by three experts locating in the USA and Australia. The free emailing services are used for communicating with those experts. Also, local experts are engaged for their comments. It is an advantage to have local experts verifying the definition because real time communications through phone calls are possible, as well as face-to-face discussion. Consequently, sub-objective 1 of the research is achieved when the components of RLM are determined.

Activities in phase 2 involve gathering existing conceptual models, comparatively analyze the model, and develop the conceptual design model of RLM. Each step is described in the following paragraphs.
Gather models: Existing conceptual models are used as the basis for understanding the requirements for designing and developing eLM. Similarities and dissimilarities of the models are input for proposing a new concept of technology with similar purposes. There are many ways to gather the models. Usually, literature study can help eliciting the knowledge on the models. In this study, the models are gathered through examining the relevant literatures.

Models of electronic technologies, specifically content, that intend for similar purposes with the RLM (i.e. learning in reality environment) such as the conceptual model of interactive multimedia (IMM), conceptual model of video-based learning (VBL), conceptual model of reality TV shows (RTV), and conceptual model of video application are gathered. Selection of these three models was decided as those three technologies were the source of inspiration of this study. Having gathered the models, they are to be compared for determining important features.

Compare models: Norshuhada et al. (2004) apply the comparative analysis of existing models to gather features appropriate for an online bookstore. The features of all compared models are tabulated, separated in columns. With that, information for all models for a certain feature is seen on the same line, so that the decision is easy to form.

In this study, the technique by Norshuhada et al. (2004) is adopted. First, the models are presented in figures. Then, tables containing features follow. The results from the comparative study of three conceptual models (i.e. IMM, VBL, and RTS) are compiled and used as the input for developing the conceptual design model of RLM.

Conceptual model: Outcomes from the comparative analysis are used to further develop the conceptual design model of RLM (Preece et al., 2002). Conceptual design model as defined by Mayhew (1992) is the general conceptual framework through which the functionality is presented. Another definition of conceptual model is provided by Johnson and Henderson (2002), which says a conceptual model a high-level description of how a system is organized and operates.

Preece et al. (2007) clarifies the definitions of conceptual models by addressing that a conceptual model is an abstraction that outlines what people can do with a product and what concepts are needed to understand how to interact with it. It is important to note and stress that it is not a description of user interface but a structure outlining the concepts and relationships between them that will form the basis of the product or system (Preece et al., 2007). In a nutshell, a conceptual model provides a working strategy; a framework of general concepts and their interrelations. Preece et al. (2007) and Johnson and Henderson (2002) propose that a conceptual model should comprise the following components:

- The major metaphors and analogies that are used to convey to the user how to understand what a product is for and how to use it for an activity.
- The concepts that users are exposed to through the product, including the task-domain objects they create and manipulate, their attributes, and the operations that can be performed on them.
- The relationships between those concepts, such as whether one object contains another, the relative importance of actions to others, and whether an object is part of another.
- The mappings between the concepts and the user experience the product is designed to support or invoke.

In conjunction to the definitions and components described above, the conceptual model of RLM is targeted at providing guidelines appropriate for designing and developing an RLM. In common words, it helps everyone who put efforts to design and develop an RLM formulating the requirements.

Deliverables of those two phases are the definition and concept of RLM. Next section describes these two findings at length.
FINDINGS
The findings of these two phases are twofold; the definition of RLM and the initial conceptual design model of RLM. Definition of RLM contains also the characteristics of entertaining element. Then, the conceptual design model of RLM will address the components that RLM should have.

Definition of RLM
As briefly stated at the beginning of this paper, RLM is defined as uncut learning content; a type of video learning where the content is not cut. Further, the RLM is initiated to be beyond usable, incorporating elements that ensure learning contents are entertaining, making learners feel fun to use. In addition, characteristics of entertaining are also defined and provided in Table 1 (Carroll, 2004).

<table>
<thead>
<tr>
<th>Things are entertaining</th>
<th>by</th>
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<tbody>
<tr>
<td>when they</td>
<td></td>
</tr>
<tr>
<td>• attract</td>
<td>• provoking new perceptions,</td>
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<tr>
<td>• capture, and</td>
<td>• provoking unusual perceptions,</td>
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<tr>
<td>• hold users’ attention</td>
<td>• arousing emotions</td>
</tr>
<tr>
<td>when they</td>
<td>when they</td>
</tr>
<tr>
<td>• surprise users</td>
<td>• do not feel like they look</td>
</tr>
<tr>
<td>• do not sound like they feel</td>
<td></td>
</tr>
<tr>
<td>when they</td>
<td>when they to</td>
</tr>
<tr>
<td>• challenge puzzles</td>
<td>• make sense and construct interpretations</td>
</tr>
<tr>
<td>when they</td>
<td></td>
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<tr>
<td>• transparently suggest what can be done</td>
<td></td>
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<tr>
<td>• provide guidance in the doing</td>
<td></td>
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<tr>
<td>• provide instantaneous and adequate feedback</td>
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<tr>
<td>• provide task closure</td>
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</tbody>
</table>

The components of RLM are included in the conceptual design model of RLM.

Conceptual Design Model of RLM
Having gathered and compared existing conceptual models of related technologies as stated previously, an initial concept of RLM is generated, and provided illustratively in Figure 5.

In Figure 5, it can be seen that RLM has five attributes; media elements, human entities, styles of flow, pedagogical strategies, and styles of presentation. Each attribute is defined further in the following paragraphs.

Live motions and audio are two components of media elements. Elements such as images, real objects, texts, graphics, animations and simulations can be captured in live motions to serve as the content.

Components of human entity are the audience and the actor. Audience is referred to the people who view the RLM, while the actor is the person appears in the RLM, taking role to deliver learning contents. An actor of RLM could be either a learner or an instructor.

The role of actor determines the styles of presentation, which comprise components i.e. instruction-base, documentary, and demonstration. Instruction-base style is appropriate if the contents are delivered by a learner, in which s/he perform tasks as instructed by a hidden instructor in a step-by-step basis. If an instructor acts as the actor, the most appropriate style is demonstration. In this style, hidden learner(s) asks questions at anytime, and feedbacks are provided as appropriate.

Components for styles of flow are non-separated scenes and separated scenes. Transition techniques are applied between the separated scenes. It is important to note that the contents are not cut, but separated scenes is referred to situations such as moving from
chapters (instruction-base style), locations (documentary style), and positions (demonstration style).

**Pedagogical components** are briefing or ice-breaking, objective, uncut contents, and closing. It is important to provide examples and use correct emphasis, stress, and terminologies at appropriate location in the speech because in RLM, the content is rich. Uncut content contains planned and unplanned knowledge. The planned content refers to the deliverables which are intentionally designed to include in the RLM. Meanwhile, the unplanned content refers to contents arisen from mistakes, interferences, and feedbacks which are caused by actions, speeches, environment, hidden actor(s), and the viewers.

Besides those components, there are four considerations to ponder when designing and developing RLM. Those considerations are also stated in the concept in Figure 5.

From the concept in Figure 5 and elaborated above, the obvious part that differentiates RLM than ordinary or existing VBL materials is the uncut content. This part is focused to contain entertaining elements. Carroll (2004) says that a design does not invoke fun merely because it incorporates color and animations, sound and music, or graphical fantasy content. He adds that distractions may surprise learners, may capture attention, but are annoying and not fun. In addition, he argues that the possibility of fun arises when one is both aroused and intrigued, and at the same time recognized an intention to communicate through a design. In short, from the concept above, it is seen that RLM maps to the UX.
CONCLUSION
This paper defines the term RLM. Additionally, an initial conceptual design model of RLM is proposed. Five attributes of RLM include media elements, human entities, styles of flow, pedagogical strategies, and styles of presentation. Each attribute consists of several components. They serve as sub-objectives 1 and 2 of this study, and are two of the contributions. There are altogether five potential contributions along achieving all objectives. Besides these two, there will be prototypes applying the concept of RLM, QVRT method which is designed specially to develop RLM, and FEE instrument which is developed to evaluate user experience of RLM.

REFERENCES