

Malaysian Perspective: Designing Interactive Multimedia Learning Environment for Moral Values Education

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Abstract

The field of education is faced with various new challenges in meeting with the demands of teaching and learning for the 21st century. One of the new challenges is the call for the integration of ICT (Information and communication technologies) in teaching and learning as an alternative mode of instruction delivery. Multimedia technology for instance, has the potential in transforming traditional classrooms into a world of unlimited imaginary environment. This paper reports on a research project on development of an interactive multimedia courseware package for moral values education using traditional Malay oral narratives called CITRA. CITRA uses CD-ROM and the computer as a means of dissemination. It is a didactic tool created for the teaching and learning of good moral values in an interactive multimedia environment. It is made up of four learning modules: Storytelling World module, Enjoyable Reading World module, Word Enrichment Corner module, and Mind Test Land module. The tool's most important feature is its user interaction capability. The principle objective of this project is to create a pedagogical tool that combines on-screen text, graphics, animation, audio and video in an enticing environment and thus enables the positive values and images of stories to be projected.

Keywords

Interactive multimedia, Traditional Malay oral narratives, Storytelling, Moral values, Education

Introduction

Multimedia technology is one of the most exciting innovations in the age of information. The rapid growth of multimedia technology over the last decade has brought about fundamental changes to computing, entertainment and education. The exponential growth of multimedia technologies and applications has presented society with unprecedented opportunities and challenges. Educational multimedia courseware and applications are in many ways similar to printed textbooks and other teaching and reference materials in that they come in a wide range and variety. Some multimedia applications are broad and comprehensive while others are more focused. Applications either address introductory and advanced students or teachers and scholars of particular subject areas. The potential of interactive multimedia in the learning environment is well-recognised world wide, as evidenced by various projects funded by universities, schools, government bodies and private organisations.

Today greater demands are being placed on education systems at all levels to produce citizens who can apply knowledge in new domains and different situations. With the gradual increase in the integration of computer and multimedia technology in educational activities, there is a need to consider not only the unique opportunities they bring to learning and learners, but also the benefits that may be derived from their use. However, a majority of the teaching-learning courseware available in the Malaysian market focuses on subjects such as Malay language or Bahasa Melayu (our national and official language), English, Chinese Language, Mathematics, and Science. Therefore, there is a need for computer-aided learning materials in educational activities, which can provide students with practice and foster moral values at the same time.

It can be observed that there is an emphasis on the importance of ICT in the social and economic development of a country at the expense of moral values. Toffler (1984) notes that developed nations are facing moral degradation and breakdown in the family institution. Lee Lam Thye, a renowned Malaysian activist states "Economic and technological development must not be at the expense of moral and human development which is crucial to enable us to cope with the many social maladies besetting our society" (Juhana, 2001). In addition, the former Prime Minister of Malaysia, Tun Dr Mahathir bin Mohamad points out that:

“This country must develop in total in all aspects that encompass racial unity, social, and economic integration, political stability, administration system, quality of life, social and spiritual values, national pride and self confidence” (Nappie, 1991).

It is thus crucial that the development of moral values is in consonance with the development plan of the Malaysian government - Vision 2020. Vision 2020 launched by the Prime Minister of Malaysia, Tun Dr Mahathir bin Mohamad in 1991, is a comprehensive 30-year plan ensures that Malaysia becomes a developed nation in the new millennium. Today’s children are the ones who will realize Vision 2020. Society is responsible in instilling good and positive moral values in the children within the framework of religion and culture. One of the means of fostering good moral values is through storytelling. Honesty, diligence and tolerance are some of the best motivating elements needed in the development of personalities and good behavior in children, which can be taught through stories.

Fittro (1997) postulates that children develop morality slowly and in stages. Each stage brings a person closer to mature moral development. Fittro also notes that one of the effective ways to help our children turn their moral reasoning into positive moral behavior is to teach by example. However, children are surrounded by bad examples. What can we do to ensure that our children will grow up with love and integrity? Besides setting a good example for children, one of the simplest things we can do is to read a story to which they can relate to that illustrates a principle or value (Custom made children stories, <http://www.teachingvalues.com/custommade.html>). Every culture in the world seems to create stories (narratives) as a way of making sense of the world. Storytelling, one of the oldest forms of folk art, takes children on an enthralling journey and at the same time instructs them in history, culture and moral values. The moral values within the stories have as much relevance today as in the past. The stories can be effectively used as starting points for discussions on issues of personal right and societal values. Storytelling is a valuable teaching tool in an outcome-based education classroom. It can effectively assist in the acquisition of literacy, numeracy and life skills in the foundation phase and provide a valuable resource for language learning and teaching at both primary and secondary levels of schooling. Stories can be used by teachers in their classrooms as a source of supplementary reading. Storytelling also develops learners' creative skills by stimulating their imagination. According to Mhlophe (The Teacher/Daily Mail & Guardian, 2000), storytelling is about the theatre of the mind. It allows children to set free their imagination.

Today, besides traditional books, computers provide a new means of presenting literature to children. Computer can be the vehicle for presenting stories to children on CD-ROM or to evaluate children on stories that they have read. In addition, with access to the Internet, computers can be a means of learning more about literature and serve as a vehicle for sharing ideas with others. Multimedia is suitable in presenting stories to children for it facilitates learning and enjoyment of stories. For the purpose of multimedia courseware development, popular traditional Malay oral narratives comprising six humorous tales, three edifying tales and two animal tales, were selected for this project. These stories expose children to both positive and negative values in life.

Statement of the Problem

The colonization of Malaysia by the British tremendously affected traditional Malay oral narratives. Boehmer (1995) defines colonial literature as a general term in reference to concerned with colonial perceptions and experience, colonial expansion, the superiority of European cultures and the rightness of empires, which are written incidentally during colonial times. Boehmer points out that colonized peoples were represented as less human, less civilized, as infants or savage, a wild man, animal, or headless mass in contrast to the superiority of an expanding Europe. This influence could have also affected portrayals of ancient Malay society in traditional Malay oral narratives. Malays are seen as foolish, lazy, a glutton, greedy, delinquent, and so forth in well-known foolish antics of the simpleton Pak Pandir, Pak Kaduk or the escapades of Pak Belalang. According to H. Ahmad (1997), the stories also contain positive and didactic elements, which however had been reduced to a lesser degree. Thus, in the present study, multimedia is used to project positive images and didactic elements of traditional oral narratives to foster positive perceptions toward the stories in children and to instill good moral values.

Software profit-making and curiosity-seeking potential have largely ignored educational software as a potential market. It is because the investment in the education field is limited. Therefore software development is seldom related to education although software development has grown rapidly in recent years. Software developments were mostly related to business or are games-oriented applications. (Meziane et al., 1999). Besides, most of the multimedia-based educational software available in the Malaysian market focuses on the major teaching subjects

such as Bahasa Melayu, English, Mathematics, and Science. Thereby, the effort for developing computer and multimedia-based educational applications locally, which can help to foster good moral values in children.

Software developments in storytelling especially with ones local content and in the vernacular language are scarce in the Malaysian market. The market of storytelling software is dominated by imported software which popularizes their traditional narratives such as “Snow White and The Seven Dwarfs”, “Cinderella”, “Sleeping Beauty” and so forth. As a consequence, our younger generation is more exposed to foreign narratives than to local narratives. A survey on 397 secondary school students aged 13 to 16 shows that there are more respondents who know stories of Cinderella (68.5 %), Beauty and The Beast (42.1 %) and Snow White and The Seven Dwarfs (38.5 %) than those who know stories of Legenda Mahsuri (18.1 %), Si Tanggang (20.5 %) and Bawang Putih Bawang Merah (13.3 %). Moreover, the sources of local traditional narratives such as Puteri Gunung Ledang, Nakhoda Tanggang and Batu Belah Batu Bertangkup are limited. Malaysia is rich in its oral tradition, however not much of it has been popularized. The amount that has been published is still very modest. Youngsters are still relying on foreign literature, which contains alienating elements that are not appropriate for our local culture. The positive values in social, moral, and religious education can be fostered in the young through reading materials with local content. In addition, most of the imported software are in the native language. Given that the medium of instruction in a majority of Malaysian schools is in the Malay language or Bahasa Melayu, so there is a need to have more storytelling software in this language, which contains local literature such as traditional oral narratives.

A majority of children have encountered stories even before they start school. Children are told stories by their parents and other significant people in their lives (Weinberger, 1996). Today’s, society wherein parents lead busy lives and thus do not tell stories to children, the impersonal communication media of films and television take the place of parents in entertaining children (Julongo, 1992). It is thus important to increase the production of the media form of storytelling. The art of oral storytelling by professional or amateur storytellers is gradually disappearing in modern life, but it still survives in the Malay villages. Many old people are reluctant to tell those tales because they assume that they are of no use to the present generation. They fail to realize that a rich cultural heritage will be irrevocably lost if those tales are preserved. The traditional oral narratives in Malay culture can be preserved only when they have been put into writing. For example, the stories concerned with a manikin mouse deer called “Sang Kancil” stories are popular not only for the Malays society, but also for the whole community of Malaysia. The stories about “Sang Kancil” have been recorded down from oral tradition, but they are known to have existed in manuscripts. Malaysia is rich in its oral tradition, but not much has been popularized. The amount that has been published is still very modest. Many more tales can be brought to light if collectors are diligent enough to track them down. Since traditional oral narratives represent a rich literary heritage from the past, they have to be preserved in writing or media form. Therefore, the collection or recording of traditional narratives especially using sophisticated technology such as multimedia is much needed to prevent these traditional narratives from extinction and to make making the tales accessible to a wider audience (Mohd. Taib Osman, 1988)

Based on Ambigapathy’s survey, the average of Malaysians read only half a page in a year, which is a rate far below the UNESCO leisure reading recommendation of 80 pages per person per year. Many Malaysians do not even read a single newspaper every day (Ambigapathy, 1997). Besides, according to a literacy survey carried out in Malaysia (Halimah, 1998; Munir, 2001), approximately 30 percent of the children studying in secondary schools are illiterate. Realizing this problem, there is a need for a research into a suitable program to promote literacy skills and to cultivate people to read especially at an early age. The reading habit should be instilled at a young age and this can be done through various pre-reading activities such as storytelling and writing. The activities or modules built into CITRA may assist children in acquiring literacy skills and in cultivating learning and reading habits

Storytelling in Multicultural Malaysian Society

The focus of the paper is on the tradition of storytelling among indigenous groups in Malaysia: the Malays and the Proto-Malays or Orang Asli. In preliterate Malay society, traditional oral narratives such as myths, legends and folktales belong to the oral tradition, which have been transmitted through time by means of oral narratives in countless generations. Unlike modern forms of literature, which are the creation of individuals, such narratives do not belong to anyone, but to the whole community. They are social manifestations, which believed to be related to nature. They also relate aspects of culture such as the belief system, world-views and social values of society (Md. Salleh Yaspar, 1985; Mohd Taib Osman, 1988).

The carriers of the tales are known by many different names, but play similar function -- they are storytellers who are able to enthrall their listeners with marvelous tales. The common term used to describe the storytellers in Malay society was what is technically termed a "Penglipur Lara" or the "Soothe of Cares" (Mohd Taib Osman, 1988: 139). Specific names were also given to the storytellers in certain states of Malaysia. The storytellers of Perlis and Kedah are often referred to as "Awang Batil" or "Awang Belanga" who relates stories to the accompaniment of the beating of metal bowls or pots in rhythm with the storytelling. A unique characteristic of "Awang Batil" or "Awang Belanga" is that he puts on different masks for each character of a story he assumes. In Kelantan, the storyteller is called "Awang Selampit" or "Tuk Selampit" and he recounts his tales to the accompaniment of a rebab (a two-stringed bowed instrument). The storytellers are not merely entertainers, but they are also the carrier of moral teachings and wisdom and the provider of wondrous visions beyond the mundane and harsh world (Mohd. Taib Osman, 1982).

Radio, television and the cinema have a profound effect on Malay village life. In some areas, however, traditional forms of entertainment such as storytelling, wayang kulit (shadow play), and berdikir or hadrah (chanting) have continued to thrive with vigour. This shows that the traditional arts and pastimes still have a place in the life of Malaysian society. Oral traditions have continued to exist, although to a lesser degree than before as reflected in the collections by Dewan Bahasa and Pustaka (Language and Literary Agency), the students from the local universities and individual collectors (Mohd. Taib Osman, 1988). At present, Malay traditional narratives are either in oral recorded or in written forms. However, the presentation of traditional Malay oral narratives in media or digital form, especially in the vernacular language, is still limited.

Storytelling in Digital Age

Every culture has its share of a rich history of storytelling in oral, visual, textual, and digital form. The tradition of oral storytelling exists in the days when radio, television, and other information and communication technologies were unknown. It is an art to tell a story through the medium of voice. Oral storytelling was the only way of communicating before the advent of the written word. Wagamese (1997) states that the oral storytelling tradition is the process by which a culture's myths, legends, tales, and lore are formulated, communicated and preserved in language by word of mouth. The art of the oral tradition encompasses such essential considerations as memorization, intonation, inflection, precision of statement, brevity rhythm, pace and dramatic effect.

Digital storytellers are artists and writers who are passionate about combining the ancient arts of storytelling with the new and powerful tools of multimedia technology. Practitioners of this art form include anyone concerned with producing creative work on a computer and who has a high appreciation for the narrative arts such as poetry, storytelling, theater, fiction, essays and film (Mullen & Lambert, 1999). These storytellers use new tools and techniques such as HTML hypertext linking for the Web, animation programming in Macromedia Director and digital movie making with Adobe Premiere to tell their stories (Hitchcock, 1997). With the advent of digital storytelling, storytellers – both professional and amateurs are learning to use new technology to share their stories.

Digital storytelling offers an enhanced level of communication flexibility, multi-medium distribution, interactivity, freshness and engagement:

1. **Non-linear flexibility:** Digital stories are produced in separate modules. Thus, the storyteller has the option, based on audience feedback, to genuinely respond to the specific interests of the audience. Taking control of the presentation, the storyteller tailors each in-person presentation to respond to the interests of that particular group. Similarly, on the Internet, visitors can view only those modules that they think are of interest, and then respond in kind with a multimedia story of their own.
2. **Multi-medium distribution:** Digital stories can be both broadcast and narrowcast via multiple media including Internet, Intranet, CD-ROM, DVD, VHS, television, as well as right off one's laptop.
3. **Interactivity:** Digital stories provide the quiet time in between story modules that permit real-life storytelling, audience feedback and a respondent flow of new information based upon audience input.
4. **Freshness:** Digital stories, because of their computer-generated nature, can be updated easily and quickly. Sometimes in a matter of just hours a digital story can be refreshed with new video, photos, graphs and audio.
5. **Engagement:** Digital storytelling provides the ultimate medium for employing creative storytelling technologies and techniques. The result is in content that doesn't just entertain, but engages the audience.

Hence, the authors adopted this approach in design to develop an interactive multimedia learning environment for children to foster moral values in education.

Designing and Developing CITRA

The package of interactive multimedia courseware, CITRA (Courseware development to project positive values and Images of TRAditional Malay oral narratives), was developed in this study is based on various pedagogical approaches and learning theories deemed suitable for children age 8 to 9 year-old. According to Piaget (Crain, 1992), children at the age of seven to eleven can develop the capacity to think systematically. The design and development of CITRA was based on a well-researched conceptual framework (Fig. 1).

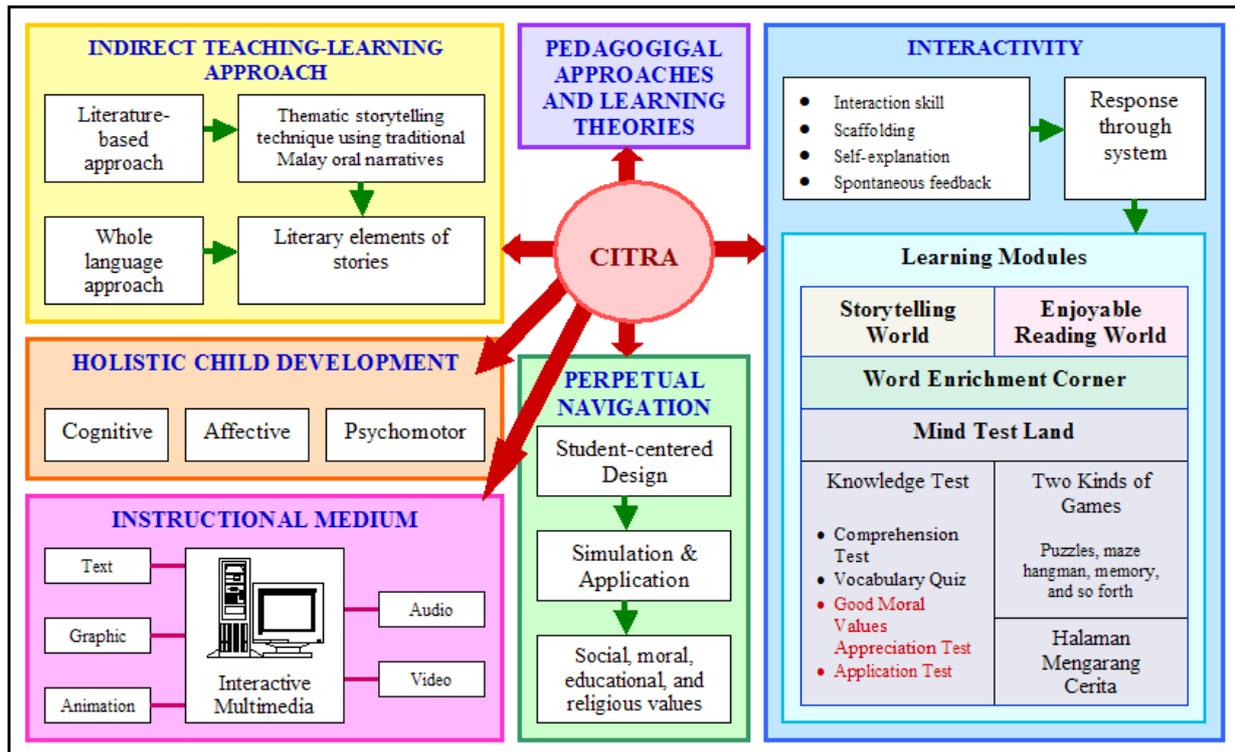


Figure 1. Conceptual Framework of CITRA

The design of content and activities in CITRA was also made using the experience from other systems and from education, Malay literature and ideas of ICT specialists. CITRA is designed and developed as a multimedia based tutoring system that not only incorporates various media, but also various teaching and learning strategies based on sound pedagogical theories. This ensures that the package developed can eventually assist children to understand the stories and foster positive moral values more effectively and expeditiously. As can be observed from the conceptual framework in Figure 1, it incorporates a number of elements. The elements are

Indirect Learning Approach

The stories are delivered through an indirect learning approach namely the thematic literature-based approach, to involve the learner in mind and spirit. Literature in this context means local literature based on traditional Malay oral narratives. Literature or stories are chosen since the story response approach brings another dimension into moral development, that of story development. Many researchers in moral education have adopted this narrative approach- influencing curriculum through a story-response approach. Through interacting with stories, children are given the opportunity to reason out such things as cause, effect and consequences, and to consider moral choices, and to also use the word of a story as a mirror for their own life experiences (Menz & Dodd, 2003). In addition, through stories, children are exposed to a wide range of challenges: it offers them an opportunity to widen their past experiences and develop new ones; it affords the unfolding of the pleasures of language; it

furnishes a cognitive understanding of human behavior; it expands life experiences; and it yields a sensitivity to the use of languages as an important tool in coming to terms with human experiences (Ruddell, 1992). Using local content and vernacular language in developing CITRA is an important issue because teaching and learning becomes more effective when the content suits the local culture and way of life, hence learners can identify and relate themselves to the courseware.

In addition, it is developed based on the whole language approach in that children can learn reading more effectively. The whole language approach is chosen as storytelling is adaptable to this approach. Whole language is a term that has gained increasing interest within education in the past two decades. What is whole language? Bergeron (1990) defines the term as follows:

Whole language is a concept that embodies both a philosophy of language development as well as instructional approaches embedded within, and supportive of, that philosophy. This concept includes the use of real literature and writing in the context of meaningful, functional and cooperative experiences in order to develop in students' motivation and interest in the process of learning.

Goodman (1992) states "Whole language aims to be an inclusive philosophy of education. Language (as well as oral), learning, teaching, curriculum, and the learning community are elements that involve in whole language". Whole language has an influence in various trends in education. According to Wood & O'Donnell (1991), reading instruction is moving towards more process orientation, which stems from cognitive psychology, and focuses on more literature-based instruction rather than the product-orientation instruction that is rooted in behavioral psychology related to basal-reader programs. In the professional literature, whole language is widely viewed as a theory of knowledge as well as a theory of language, learning and schooling. The whole language views language as a whole and not in discrete units.

Holistic Child Development

The holistic approach takes into account the literacy experience of the child, which assists in the cognitive, affective and psychomotor development of the child. "Cognitive" refers to the aspects of children thinking, including knowledge, understanding, application, analysis, synthesis, and evaluation by children. "Affective" is the capability to receive, respond and determine values. Finally, "psychomotor" refers to children's physical movement or physical activities based on what they have learnt. The modules developed in the model contribute to the three aspects of holistic child development.

Instructional Medium

Multimedia is chosen as an instructional medium to present the content of CITRA. The stories with integrated various literary elements are presented not only in text, but also in graphic, audio, video and animation. Multimedia has a lot of different connotations and definitions vary depending on the context. In the context of education, interactive multimedia is defined by three criteria: (1) Interactive multimedia is any package of materials that includes some combination of texts, graphics, still images, animation, video and audio; (2) The materials are packaged, integrated and linked together in some way that offer users the ability to browse, navigate and analyze the materials through various searching and indexing features as well as the capacity to annotate or personalize the materials; and (3) Interactive multimedia is always "reader-centered". In interactive multimedia, the reader controls the experience of reading the material by selecting among multiple choices, choosing unique paths and sequences through the materials. One of the key features of interactive multimedia is the ability to navigate through material in whatever ways are most meaningful for individual users (Bass, 2000).

In this present study, multimedia plays an important role in projecting the intrinsic positive values of traditional Malay oral narratives. What criteria should be applied when evaluating literature for children? How can multimedia play its role in projecting the positive elements? Answers to these questions emerge when we learn to recognize and evaluate such literary elements as theme, plot, characterization, setting and other literary elements such as mood, tone, style, and embedded moral values. These elements contribute to the overall appeal of a story. So, before the process of courseware development commenced, the authors had read critically the selected stories to identify positive and negative elements integrated in the stories. Some of the stories may have to be manipulated in certain literary elements to project the positive images. For example, literary elements in Pak Pandir tales that need to be manipulated in order to project the positive values and images are plot, characterization, and language style. The authors attempt to draw the audience's attention from Pak Pandir to his wife, Mak Andeh. Pak Pandir was known as 'Father Folly' who is a numskull. Through his slow-wittedness he

produces silly actions that arouse laughter. On the contrary, Mak Andeh is intelligent, patient and tolerant. Through the admonition of Mak Andeh towards Pak Pandir's foolish actions, the didactic elements are presented.

Pedagogical Approaches and Learning Theories

The appropriate pedagogical approaches and learning theories play a vital role as a basis of CITRA development. It incorporates a variety of pedagogical approaches and learning theories to meet diverse learning styles of children. Designing CITRA for fostering moral and values education needs greater effort in the presentation of the content since this will partly determine the success of the learning process. According to Shiratuddin & Landoni (2001), it is important to carefully design the way content is structured, organized, and presented. The types of activity in which the users will be involved play significant roles in the success of pedagogic designs. Based on the pedagogical approaches and learning theories, the modules of the model was designed and developed based on children's capability.

Perpetual Navigation

Navigation in an information space involves the learner's movements toward some learning goal or information retrieval task. It is clear that one method of making navigation easier is to carefully structure the knowledge contained in the information space. Like the layout of a good textbook, the careful sequencing of the material helps navigation through the corpus of information (Eklund & Sinclair, 2000). Perpetual navigation is the aspect of interface, which is designed for the learner-centered environment. With multimedia, navigational and participatory features provide more flexibility and control to the users. These unique features allow them to quickly access information when they need it. The learner is given more control over what and how s/he wants to learn. This transmission of information is done via the different modalities like sight, sound and touch, which is it allows learning through the most natural means - the senses. All-important icons based on the existing modules of the courseware are constantly presented on the screen. Although not all of the icons are activated, nevertheless they remain on the screen to enable the learners to know where they are at and where they can navigate to next. Users become participants in an exciting experience involving the sensory modalities of sight, sound and touch, all of which naturally facilitate learning. CITRA then incorporates simulation and application in teaching and learning to assist learners in exploring different aspects of subject matter (values of social, education, moral, religious, etc.) that is instilled in the courseware.

Interactivity

Interactivity within the program includes the use of active texts, buttons and icons linked to definitions, further information, other modules and so forth. Through interactivity that adopted in the four learning modules, the children practice good moral values.

CITRA merges the idea of stories with multimedia functionality to produce dynamic and flexible software to exercise thinking while acting, playing, exploring, navigating, and having fun. CITRA explore new horizons in the use of stories as a mean for helping young learners construct and reconstruct their thinking structures. CITRA may be seen as the electronic version of conventional literary stories. CITRA, which uses the CD-ROMs and computer as the means of dissemination, is a didactic tool made up of four key modules:

1. Storytelling World Module

Storytelling World or Dunia Mari Bercerita was the name given to the first module. This module incorporates a variety of media such as audio, graphics and animations in presenting the stories. It introduces the children to various kinds of traditional Malay oral narratives. The focus of this module is to project the positive values and images of stories using digital storytelling technique. Besides fostering good moral sense in children via projected positive images and moral values, it also allows children to practice and promote their comprehending and listening skills.

2. Enjoyable Reading World Module

Enjoyable Reading World or Alam Baca Ria was the name given to the second module. This module is developed based on the whole language approach which enables children learn reading more effectively. The whole language philosophy has been developing since the early 70s. Whole language as a reading strategy has gained popularity in recent years. Generally, the emphasis of whole language approach is on looking at words as wholes. Based on this approach, children are taught to read not phonetically but by meaningfulness of the word. Children will learn to discriminate the words through pattern recognition and then try to encode and decode the words. When the words are sounded by the system and children find them meaningful, they are able to remember the whole word better. The words chosen for the stories, which adopted the whole language approach, are based on the natural language of children age 8 to 9. Besides integrating audio, graphics and animation in presenting the stories as shown in Storytelling World module, this module also encompasses text. This is the different between the first and second module. In addition to projecting positive values and images, this module is able to motivate children and cultivate reading habit indirectly due to the multimedia approach and tutoring strategies of scaffolding, self-explanation and hyperlinks provided in this module. The words and sentences used are easily understood and are based on children's reading ability. This module also adopted interactivity and perpetual navigation approaches. Children can interact with the system.

3. Word Enrichment Corner Module

The third module included in the application is the Word Enrichment Corner or Sudut Pengayaan Kata. The difficult words or vocabularies as identified in the stories are reinforced and made meaningful to the children through text, graphics and audio in this module. For certain words, a motion video-in-a-window is attached to present the explanation, which makes the children understand the vocabulary better. This module is hyper-linked to Enjoyable Reading World module, in which the word or vocabulary is found. The learner can also retrieve the word or vocabulary using the quick search menu. It assists the children in understanding the story and appreciating the good moral values more effectively. The main objective of developing this module is to enrich the children's vocabulary.

4. Mind Test Land Module

Mind Test Land or Taman Uji Minda was the name given to the final module in CITRA. Four activities that adopted the problem solving, interactivity and perpetual navigation approaches are built into this module. The four activities are Knowledge Test, two kinds of games and Creating Story activity.

There are four different tests or quizzes built into the Knowledge Test: Comprehension Test, Vocabulary Quiz, Good Moral Values Appreciation Test and Application Test. The Comprehension Test and Vocabulary Quiz are designed and developed with the objective of testing and evaluating the children on their overall understanding of story and words presented in the previous learning modules. Children themselves can thus monitor their achievement and performance based on the feedback acquired from the tests or quizzes. The Good Moral Values Appreciation Test and Application Test focus on the presentation and evaluation of moral knowledge. Good Moral Values Appreciation Test is designed based on the Malaysian curriculum of primary school moral education. The moral values infused into the curriculum are of affective and emotional domains. It has been emphasized that some moral values need to be instilled into all children, so that they can achieve overall and balanced development. There are sixteen good moral values infused into the curriculum of moral education. They are: (1) compassion, (2) self-reliance, (3) respect, (4) love, (5) freedom, (6) courage, (7) physical and mental cleanliness, (8) co-operation, (9) diligence, (10) moderation, (11) gratitude, (12) rationality, (13) public spiritedness, (14) humility, (15) honesty, and (16) justice. Each moral value entails a number of sub-values respectively. However, not all the values and sub-values are integrated in a story. Therefore, before the process of CITRA development commenced, the authors had read critically the selected stories to identify positive and negative elements, and good moral values integrated in the stories. Good moral values that have been identified in a story and their sub-values will be explained briefly. Then only sub-values that embedded in story will be putting a question to the learner. Besides, the Application Test aims to evaluate and reinforce the moral sense of children that relates to their real life experience. The Good Moral Values Appreciation Test and Application Test intend to furnishes a cognitive understanding of human behavior, expand life experiences and yield a sensitivity sense to the use of moral sentiments as important tools in coming to terms with human experience. Meantime, the children can practice and promote their affective skills via the tests.

The next two activities built into the Mind Test Land module are various kinds of games such as jigsaw puzzle, sliding puzzle, memory game, maze game, hangman game, tic-tac game riddles, and so forth. These activities allow children to practice and promote their cognitive and psychomotor skills. The final activity in the Mind Test Land module is the Creating Story activity. This activity is instilled in the module with the aim to enrich the children's literacy experience and to motivate creativity sense in children. The activity allows children to compose their own stories based on the available graphics. This module can stimulate creative writing and allows children to write humorous or thought-provoking stories in a fun environment. It is believe that creative writing can be supported and encouraged through this activity.

Overall, the Mind Test Land module adopts the holistic child development approach that takes into account the literacy experience of the child, which assists in the cognitive, affective and psychomotor development of a child. It aims to reinforce the children's literacy and reading skills, promote and practice their thinking skills through activities related to the theme of the stories, and help to foster the cultivation of moral sentiments.

Creation of CITRA and Future Work

Many multimedia technologies are available for the researchers to create CITRA, an innovative and interactive multimedia application. These technologies include Adobe Photoshop, Adobe Premier and Snagit to create and edit graphics and video files respectively, SoundForge and Macromedia Flash to create or edit sound and animation files, respectively. CITRA development is done using a Macromedia Director authoring environment. Macromedia Director is chosen to be the primary authoring tool to integrate and synchronise all the media elements that have been created or modified and stored digitally in the computer into one final application for the purpose of conveying a specific message to the audience. Elements of interactivity and perpetual navigation are incorporated to involve the user in the application and to create a multi-sensory experience. CITRA then is packaged into a distributable format for the end-user. CITRA inevitably has large file sizes. Therefore, it cannot be accommodated by floppy disks, but by multimedia-capable optical storage devices. The researchers will save these multimedia applications as standalone presentations for CD-ROM delivery.

The development of CITRA is in 2D animation form. Future researchers are encouraged to do further research using 3D animation engines. The virtual reality (VR) and combination of VR and Artificial Intelligent (AI) to produce a mixed-reality (MR) application can be installed in the courseware. Virtual technologies will make the courseware more attractive to children and enhance the process of learning.

Conclusions

Stories are an integral part of human life. Stories are also something that we learn from others and we teach to others. The stories delivered to children should inculcate politeness and a sense of duty and honour. The interactive multimedia courseware reveals an interesting and exciting tool for teaching and learning. It may be used in class as a demonstration tool. On an individual basis it helps to reach pedagogic goals. In conclusion, we suggest that an additional feature for children's interactive multimedia application would be to present content by mixing different presentation modes and including various activities that support as much intelligence as possible. The interaction is the key feature and consists of quizzes, games, animation, etc. This project currently is at the stage of data analyses and courseware refinement. Finding of the study would be able to address some teaching and learning issues, in particularly the uses of interactive multimedia in stories for moral education.

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