

DEPARTMENT OF COMPUTER SCIENCE

**The Evaluation Of: Encarta 97
A Multimedia Learning Package**

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Abstract

This paper reports the results of the evaluation of Encarta 97 (English Edition), one of the well known Educational Multimedia Encyclopaedia. An experiment has been carried out in Kuwait University and a random sample of 17 Students participated in the evaluation.

A questionnaire approach was used, and the evaluation was based on four aspects: Usability, Learnability, Enjoyability, and Media Capability. The study indicates that Encarta is a very good multimedia learning package, it scored 4.20 in the scale of 1 - 5, where 5 is excellent and 1 is poor, and shows that Learnability is the best aspect.

The researcher outlines some recommendations for designing and evaluating Multimedia Learning Packages, and suggests the need for carrying out further studies which might present different results.

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1. Introduction

The use of computers in instructional technology is not new (Hill, Buerger 1996). Since the 1970s, Computer-Based learning (CBL), Computer-Assisted Learning (CAL), and Computer-Assisted Instruction (CAI) have been used in education. Evaluation methods have been carried out and showed its positive effectiveness on learning. Yet, recent developments in computer technology have changed the role of computers in learning by presenting multimedia and hypermedia.

Most Instructional methods are sequential in nature (Books, video, .. etc.), where the learner is presented with the topics linearly. However, multimedia systems are different. Within these systems, the information is unstructured and the learner can freely navigate and access information which includes a wide diversity of media formats such as text, graphics, audio, animation, and video.

Although multimedia is generating a fresh excitement amongst many educators, there is little known about the true potential of multimedia as a teaching medium (Haddon et al, 1995). Interactive multimedia software is widely regarded as a tool to improve the quality of learning. This tool supports cognitive constructivism, enhances learners engagement and interaction through self-paced learning.

Evaluation of interactive multimedia learning materials is challenging because of the way it is designed, the integration of media, and the interactivity which provides learners with access to vast and varied information, as well as the control of the learning process. Although individual evaluation methods are currently being applied in several investigations of multimedia learning materials, evaluators should consider the use of a broad-based set of methods and criteria to accommodate self directed learning, and to evaluate interactive multimedia learning materials.

This study evaluates Encarta 97 a Multimedia Encyclopaedia which contains the content of a traditional 29 volume print encyclopaedia plus thousands of pieces of multimedia (text, sound, graphics, animation, and video) in one CD-ROM. Summative evaluation were carried out to investigate the package by looking at its Usability, Learnability, Enjoyability, and Media Capability. A random sample of students from Kuwait University took part in this experiment.

2. Experimental Design

2.1 Subjects

The random sample was 17 students (15 female and 2 males) from the College Of Education, Kuwait University. The random sample was selected for the reasons herein:

- 1- The Head and staff of the Educational Technology Department in the College of Education fully co-operated in assisting the researcher in conducting the experiment by providing both the Multimedia Computer Laboratory and selecting the students' random sample.
- 2- The provision of the multimedia computer laboratory in the college with the full screen projector made the environment suitable for carrying out the experiment.

3- Students were undertaking an introductory “computers in Education” course, as one of the university requirement courses. The researcher believed that, Introducing the use of multimedia learning materials to the students, who in the future will become teachers, is a good educational approach, as it increases students awareness about the existing CD-ROM multimedia educational packages and their effectiveness in teaching and learning.

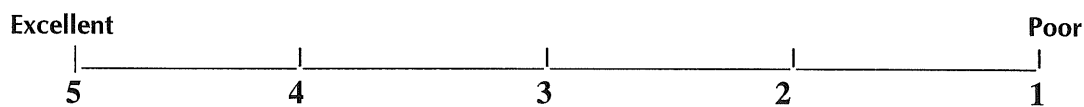
2.2 Evaluation Methods

Two methods of evaluation were used:

1- Direct Observation: involved observing and monitoring students' behaviour while using Encarta 97.

2- A Questionnaire: was designed in order to address students' subjective opinions about Encarta 97 (*See Appendix B*).

Students responded to the questionnaire by crossing on any appropriate point on the scale as shown bellow. Number **5** on the scale represents the response **Excellent**, while Number **1** represents the response **Poor**.



Summative evaluation were carried out measuring three aspects which have been identified in the Horizon Project (**Barker, 1996**). These aspects are:

A- Usability: a measure of the effectiveness of the interface, display, and functions.

B- Learnability: a measure of the ease with which information, media, and knowledge are accessed and learned.

C- Enjoyability: a measure of how interesting the learner thinks the package is, it answers the questions: Is it Interesting, Interactive, exciting, and enjoyable?

The researcher, however, added another aspect for evaluation which is:

D- Media capability: a measure of the effectiveness of the media used in the package.

There were some difficulties, however, in classifying the questions under the above mentioned aspects. Some questions might be overlapping and can be used for more than one aspect. The researcher, therefore, classified them under the most relevant aspect.

2.3 Procedures

An IBM Multimedia Computer Laboratory was prepared for the experiment. Encarta 97 was loaded to the stand alone PCs which are equipped with CD-ROM Drives and speakers. The experiment lasted 2 hours. The first half hour was used to introduce Encarta 97 to the students in the multimedia lab, to familiarise them with the nature of the electronic encyclopaedia and the basic functions of the package. The instructor used PC and LCD projector for this purpose.

Students, then, were able to use the package individually and sometimes in pairs. A list of tasks was given to the students (*See Appendix A*) in order to ensure that they used most of the package's functions and features. While students were using the package, direct observation was carried out in order to monitor their performance while interacting with the interface. At the end of the time, students were given the questionnaire.

3. Results

Table 1 shows characteristics of the students involved in the experiment such as gender, average age, and what year they are in the university. It also shows the number of students who used computers in their university education, secondary school, intermediate school, and finally in their elementary school. Tables (2, 3, 4, and 5) on the other hand, summarise the results of the analysis of the four aspects of evaluation: Usability , Learnability, Enjoyability, and Media capability.

Table (1): Student data (17 Students involved in the study)

Personal Data	Number of Students
Gender	
Female	15
Male	2
Average Age	22 Years
Year in University	
Second Year	1
Third Year	1
Fourth Year	15
Using Computers in Elementary School	0
Using Computers in Intermediate School	1
Using Computers in Secondary School	12
Using Computers in University	17

Each table below, represents one aspect of the evaluation and consists of:

- 1- Questions related to the aspect, and the question number (as in the questionnaire).
- 2- The calculated average score for each question.
- 3- The calculated average score for the aspect or category.

It is worth mentioning here that, the average score which is shown in each table, is based on calculating the total students' scores for each question and dividing it by the total number of students, however, the average score for the aspect or category as shown at the last line of each table, is an average of the average scores of the questions in the table.

Table (2): Usability

Q: No.	Questions (as in the Questionnaire)	Average Score
Q4	Did you find Encarta an easy to use Multimedia Package?	4.21
Q5	Were you able to do what you wanted to do in ENCARTA?	4.04
Q6	Did you want some help from an expert when using ENCARTA?	2.34
Q7	Do you think that information can be accessed and searched easily in ENCARTA?	4.26
Q8	Was it easy for you to end and exit ENCARTA?	4.70
Q13	Did you feel that you were in control of ENCARTA?	3.87
Q15	Did you like the colours used in ENCARTA?	4.30
Q16	Do you agree that screens were usually pleasant to look at and use in ENCARTA?	4.50
	<i>Average Usability</i>	4.03

Table (3): Learnability

Q: No.	Questions (as in the Questionnaire)	Average Score
Q9	Did you learn a lot from using ENCARTA?	4.62
Q14	Is ENCARTA a useful tool to search for general information in any topic?	4.59
Q17	In the media feature section, did you find that (Guided tour, Interactivities, Atlas, Timeline, and Mindmaze game) enjoyable?	4.60
Sec2/Q9	Did Audio add any interest to your learning from ENCARTA?	4.79
Sec2/Q11	Did the use of Audio in ENCARTA help you to understand better?	4.70
Sec2/Q15	Did the use of animation in ENCARTA help you to understand better?	4.59
Sec2/Q17	Did moving video motivate you and add an interest to your learning?	4.65
Sec2/Q19	Did the use of moving video in ENCARTA help you to understand better?	4.60
	<i>Average Learnability</i>	4.64

Table (4): Enjoyability

Q: No.	Questions (as in the Questionnaire)	Average Score
Q1	How interesting did you find using ENCARTA ?	4.71
Q2	Would you like to use ENCARTA again?	4.51
Q3	Do you think that using ENCARTA is fun?	4.61
	<i>Average Enjoyability</i>	4.61

Table (5): Media Capability

Q: No.	Questions (as in the Questionnaire)	Average Score
Sec2/Q1	Did you like the way different text fonts and sizes and colours are used in ENCARTA?	3.90
Sec2/Q3	Did you find the graphics useful?	4.66
Sec2./Q4	What is the quality of the graphics in ENCARTA?	4.44
Sec2/Q5	Did you find some graphics unnecessary?	4.07
Sec2/Q6	Is the sound of speech clear and understandable in ENCARTA?	4.16
Sec2/Q7	Is the sound of music clear in ENCARTA?	4.54
Sec2/Q8	Are sound effects meaningful throughout ENCARTA?	4.42
Sec2/Q10	Did you feel that the use of audio was sometimes unnecessary in ENCARTA?	4.21
Sec2/Q14	Did you find Animation useful?	4.49
Sec2/Q16	Did you feel that the use of animation was sometimes unnecessary in ENCARTA?	4.02
Sec2/Q18	Did you feel that the use of video was sometimes unnecessary in ENCARTA?	3.89
	<i>Average Media Capability</i>	4.25

4. Analysis and Discussions

The researcher, In this section, discusses the results related to the four aspects of the evaluation: Usability, Learnability, Enjoyability, and Media capability.

4.1 Usability

Usability issues are presented and discussed in this section. The discussion is based on students' opinions, researcher's observations, and what has been mentioned in the literature. Questions related to Usability aspect are shown in table 2.

Screen Design

The visual display and the screen design were good. There was a consistency on the screen layout. The placement of text, graphics, buttons, and menus on the screen is appropriate. Although some students felt that some screens were very busy, the visual interface, format and content of information displayed on the screen were appealing. Preece suggests that organising information in an easily accessible form can reduce the time taken to find a specific piece of information (Preece, 1990).

The home screen of Encarta appears when the program is first started, and it is a good place to begin exploring. From the home screen, students can browse the articles by taking a guided tour, viewing the timeline, looking up words from the dictionary, or simply clicking on the world map. Students can also use the search tool "Pinpointer" from the home screen.

Accessibility and Searching

The interactive design and features of Encarta make it easy to find information or to explore new topics and ideas. The Pinpointer is a powerful search tool that lets students find various topics. Students also were able to narrow down the topic search by keyword, category, media, time or place. As criteria are added to students' search, the list of all articles shrinks.

The searchable text and hypertext links in Encarta, as Will and Swart pointed out, provide added tools for exploration which is not possible in the printed-based materials (Wills, Swart, 1994). However, the search engine in Encarta is confusing sometimes, as it produces hits which may not be exact matches with what have been typed.

Colours

The combination of colours used in the package was convenient. Colours were used to facilitate learning, and there was no excessive use of colours in the package. Durrett and Stimmel indicate that the excessive use of colours may have a negative effect on learning (Durrett, Stimmel, 1987). While the use of certain colour combinations can lead to a complete lack of perception (McAteer, Shaw, 1995). However, some students stated that Encarta occasionally uses dark text on a dark background in places such as title bar and other pop-up windows, which can be difficult to read.

Control

Student felt that they were in control using Encarta. The interactivity of Encarta provides the students not only with access to vast and varied information, but also with control over the way they learn. This control, as McKerlie and Preece describe, takes three ways: control over the structure, control over the media, and control over the working environment (McKerlie, Preece, 1993). Although students can construct their own knowledge by searching and browsing articles and media, their control requires responsibility and decision making, and it might be confusing and disorienting (Marchionini, 1987).

Ease of Use

Although students agree that Encarta is easy to use, half of them felt that they needed help from an expert when using the package. This was probably due to the lack of students' computer background and to the difficulties in understanding some of the commands. Students' responses to this question minimised the average score of Usability aspect.

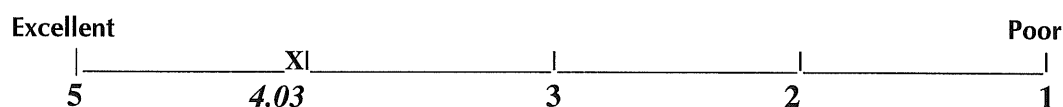
Other Functions

Exiting Encarta can be done by clicking on the exit button on the main window. Consequently, students, sometimes, exit Encarta unintentionally. When too many windows are open, and a student wants to close any open window, he/she might click mistakenly on the exit button on the main window of Encarta which gets the student out of the program without any notification. Students, therefore, have to load the program again.

Encarta allows students to change some settings, such as enlarging text, and changing the appearance of the articles. It also allows students to copy and print a whole article or just the part specified, as well as copying and printing graphics and maps.

The on-line technology, which is one of the features of Encarta, has not been investigated in this study. This feature lets users update articles. Yearbook builder enables users to stay current on a monthly basis with up to date information on a wide variety of topics.

In summary, students understood the purpose of Encarta, the way the content is structured, and how to access, control, and navigate through the information. Therefore, students felt that Encarta is an easy to use package. As shown in the scale below, students' average score on usability is 4.03.



4.2 Learnability

Learnability issues are presented and discussed in this section. The discussion is based on students' opinions, researcher's observations, and what has been mentioned in the literature. Questions related to Learnability aspect are shown in table 3.

Content

Encarta is a useful reference tool that covers and presents various topics to learners. Although it doesn't have the depth of a print encyclopaedia, there is a wealth of information available and some other interesting tricks and activities that students use to learn about different topics. Encarta allows students to experience a single subject from a diverse series of angles.

Interactivity

Encarta is very interactive especially with the Media Feature section, it enhances students' learning through interactivity and experimentation. With Media Feature and Interactivities, students can discover a variety of topics from world music and art to natural wonders, orbits, nutrition, and languages. Each lesson provides learners with information, then, asks them to solve a puzzle using the information learnt.

New guided tours let students interact and browse through collections of intriguing information and discover facts about interesting people, places, and history. The media gallery supports students browse through all Encarta's rich multimedia. The timeline of world history encourages students watch history from the beginning of time to our era.

Exploration

The Exploratory learning which Encarta provides for its users offers increased freedom and motivation to students (Oren, 1990). Encarta is a successful package in involving the learners with the various activities. No doubt that learning by performing tasks, making notes, and making conceptual links will provide a full learning experience for students (McAteer, Shaw, 1995). However, feedback is not provided on the results of the student's responses.

The game MindMaze encourages students to explore the encyclopaedia. The game places the player in a castle which is cursed. In order to break the curse, the student needs to answer questions drawn from information included in the articles. This kind of game naturally incorporates problem-solving skills and motivates the exploration of the environment (Quinn et al, 1993). Atlas helps students explore various parts of the world using hundreds of maps, and links the students to the encyclopaedia articles.

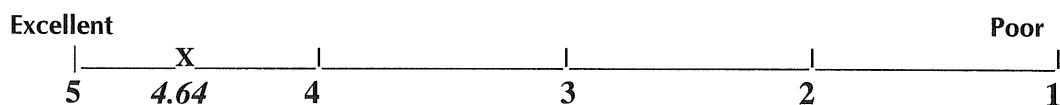
Media and Learning

The use of graphics and pictures is very helpful especially if it is an addition to text. Encarta uses different type of media extensively throughout the package. Table 3 indicates that students strongly believe that graphics, audio, animation and video enhanced their understanding and learning. Research shows that graphical information is retained faster than textual information (Standing, 1973). Graphics as well as sound, significantly help the learning of text which is displayed with them, however, text must be directly related to the graph or the sound. Peter Davies states that learning is enhanced when ideas, principles, or phenomena are presented to learners if several different related media is incorporated (Davies et al, 1994).

Animation, on the other hand, can be a powerful tool for effective learning. A study by Allesandri and Rigney indicates that performance on a learning task improves the use of animation (Allesandri, Rigney, 1981). In another study Large found that the addition of animation to text produces more impact on inference than on recall (Large et al, 1994).

Video clips were added to enhance students' learning. The incorporation of video and text reinforces learning, Stratfold describes three roles that video can play, motivational in which it motivates the learner, cognitive, where the learner can learn from it, and experimental, in which it fulfils experimental objectives (Stratfold, 1990).

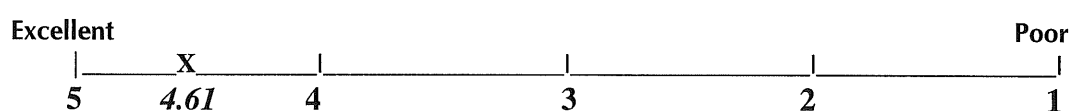
In summary, Encarta provides a good learning environment in which it enhances students' learning experience by the way the content is structured, the various motivational learning activities, and the use of media. Students' average score is the highest which is 4.64.



3.4 Enjoyability

Students were motivated and interested in using Encarta. This motivation and interest were not only because of the media and the content, but seems to be linked to structure and presentation. Jacques believes that good presentation style makes a good initial impression, and motivates students to continue working on the package (Jacques et al, 1993).

As illustrated in table 4, students felt that the use of Encarta is enjoyable. This may reflect the ease of use, content, navigation, access, and control over the package. This indicates that Encarta designers have incorporated appropriate human factors issues which seem to create an enjoyable and motivating learning experience for users. Thus, students felt that they wanted to use Encarta more often. The students' average score for Enjoyability is 4.61.



4.4 Media Capability

Media Capability issues are presented and discussed in this section. The discussion is based on students' opinions, researcher's observations, and what has been mentioned in the literature. Questions related to Media Capability aspect are shown in table 5.

Text

The use of text is consistent throughout Encarta. There isn't too much variation in text type. The range of text type, size, style, and colour is kept to a minimum. Although some articles carry large quantities of text, which is sometimes, do not encourage reading, Encarta allows students to enlarge the size of text, copy it, paste it in any Microsoft word document, and print it if students prefer to read printed articles. Most students stated that they would like to use an Arabic version of Encarta instead of English, simply because Arabic is their mother tongue.

Graphics

Graphics are displayed in a good quality. Encarta does not run on a 16 colour machine, the minimum is 256 colours, in which it ensures the good display of the graphics. Although the amount of memory available for storage and display increases for this matter, it is very vital to use the best quality of image possible to enhance students' learning throughout Encarta.

Audio

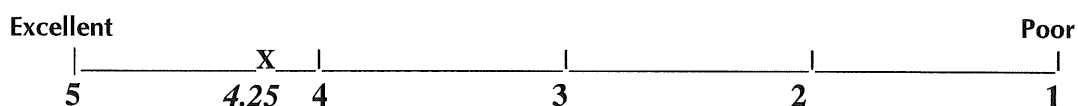
Human speech is incorporated with the World Language Interactivity. It lets students choose from dozens of languages and then listen to phrases spoken in the chosen language. Human speech is clear. Some students however, were not satisfied with the speech, that is probably because they had their speakers' volume turned down. On the other hand, natural sounds played effectively throughout the package and their addition is effective.

Music is played at the beginning of Encarta as a welcoming introduction. It is short, clear, and allows time for students to become familiar with the program. It is played effectively throughout the program. Music is also incorporated in World Music Interactivity to add interest in learning about international world music. The selection of the traditional world music and songs are clear and interesting. Blattner and Meera characterised music as saying "...can complete the total picture and produce a kind of dramatic truth, which the visual element is not always capable of doing" (Blattner, Meera, 1993).

Animation & Video Clips

There weren't many video clips in Encarta. That is due to the big storage space they require and to the absence of efficient compression techniques (Vaughan, 1996). Although sound, graphics, and animation are in high quality and seem to be well selected and fit with the written articles, the researcher is not sure, however, about the video clips that are included in the package. In some instances, video clips were not of high quality, and seemed to be added just for the sake of video.

In summary, media is used extensively throughout Encarta and it is well integrated. Thousands of photos and illustrations, and hundreds of sound and video clips have been integrated along with text articles. Research indicates that the effective integration of media in any application with consideration to students' cognitive constraints creates an exciting, creative and supportive system (McKerlie, Preece, 1993). Students' average score for Media Capability is 4.25.



5. Further Discussions

The graph below, figure 1, shows students' average scores for each aspect of the evaluation, and indicates that Learnability aspect scored the highest average **4.64**, while Enjoyability scored **4.61**, Media Capability **4.25**, and Usability **4.03**.

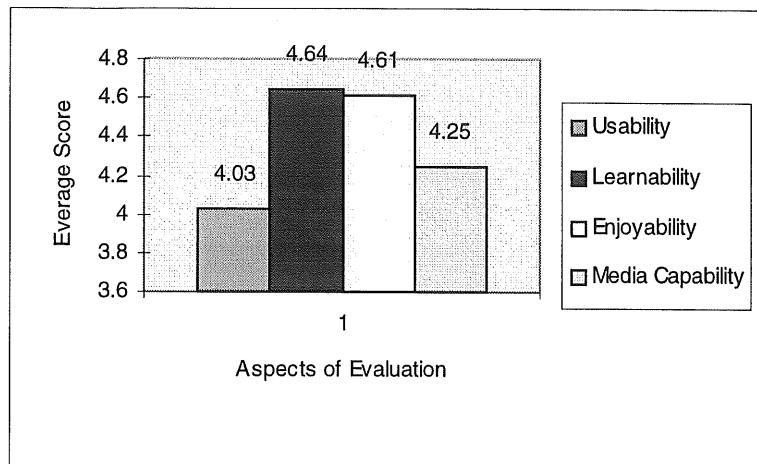


Figure (1): Average scores for Aspects of Evaluation

The researcher however, believes that the results of the study are not final. They could be different if the experiment is applied on other sample with different computer background, environment, and culture, therefore, the researcher sees the need for further studies. Some factors which might have affected the results of this study are as follows:

- 1- Students don't have computer experience, as students' responses indicated that they always need help when using Encarta.
- 2- Students had some difficulties in understanding some commands, simply because English is not their mother tongue.
- 3- Introducing Encarta with its multimedia capabilities, as well as its interactivities, may have created full satisfaction and motivation for the students involved in the study, who had never previously experienced using these sort of packages. This full satisfaction could have given them the feeling that they like the package, and they would learn a lot from it.
- 4- Media capability average score could be different if the multimedia computer lab is equipped with higher screen resolution and faster processors, and if students were provided with headphones.

6. Recommendations for designing Multimedia learning packages

From this study, the researcher summarises some recommendations. Designers of multimedia learning packages can benefit from them in designing their packages. They can also be used as checklist when evaluating multimedia learning packages. The recommendations are as follows:

Screen Design

- ◆ Avoid busy screens allowing space in each screen.
- ◆ Place text, graphics, buttons, and menus where appropriate on the screen.
- ◆ Design your screens and the visual interface to be pleasant to look at.
- ◆ Keep the screen layout consistent.

Use Of Colours

- ◆ Keep good combination of colours.
- ◆ Avoid the excessive use of colours.

Use Of Text

- ◆ Be consistent in using text in the programme.
- ◆ Keep the range of text type, size, style, and colour to a minimum.
- ◆ Avoid presenting text in large quantities.
- ◆ If text has to be scrolled, make scrolling in a good quality.

Help

- ◆ Provide help throughout the programme.
- ◆ Provide feedback on users' wrong responses.

Accessibility and Control

- ◆ Organise your content in an easily accessible form.
- ◆ When using hyperlinks, make sure that the structure of the content is not misleading.
- ◆ Put as much control as you can in the hand of users.
- ◆ Provide a significant mechanism for text searching.

Functionality

- ◆ Make exiting accessible throughout the programme.
- ◆ Make it easy to get in and out of any activity.
- ◆ Give learners an option to change some settings.
- ◆ Provide other functions such as copying, printing, etc.

Use of Sound

- ◆ Enable the sound to be switched on and off .
- ◆ Provide an adjustment for the sound.

User Interaction

- ◆ Make your multimedia learning programme as interactive as possible.
- ◆ Include many learning activities that let learners explore and extend their learning.
- ◆ Create an enjoyable environment (simulations, games) to motivate users.

Use of Media

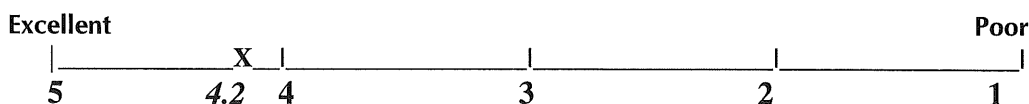
When using Media (text, graphics, sound, animation, and video) keep in mind:

- ◆ The good quality of media.
- ◆ The effective integration of media.
- ◆ Meeting the learning objectives.
- ◆ Assisting the learner in working through the materials.
- ◆ Motivating the learner, and maintaining his/her interest.

7. Conclusion

In this study, Encarta 97 Multimedia Encyclopaedia, has been evaluated. A random sample of 17 students from Kuwait University representing the Kuwaiti Higher Education have participated in the evaluation. Four categories of evaluation have been considered, Usability, Learnability, Enjoyability, and Media Capability. Students' responses for all of the aspects show that general average score is 4.2 out of 5. The researcher added the average scores of the four categories and divided them by four as follows:

$$(4.03 + 4.64 + 4.61 + 4.25)/4 = 4.2$$



In conclusion, Encarta 97 is a very good Multimedia Learning Package, however, the researcher suggests conducting further experiments which might present different results. Based on the results obtained from this study, some recommendations have been given for designing and evaluating Multimedia Learning Packages.

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APPENDIX (A)

List of Tasks

Dear Student,

While you are working with ENCARTA 97, make sure that you do the following tasks:

- 1- Run ENCARTA 97.
- 2- Choose **Overview** from the home page of ENCARTA and read the information that introduces ENCARTA and define each section of ENCARTA.
- 3- Find the meaning of **Encyclopedia** from the Dictionary.
- 4- Find an article about "**Internet**" then:
 - A- Copy the whole article.
 - B- Paste it to into the wordprocessor provided by ENCARTA.
- 5- Change the text size for all of the articles.
- 6- Get Help when needed.
- 7- How many articles in ENCARTA?
- 8- How many articles in ENCARTA about **History**?
- 9- How many articles in ENCARTA about **European History**?
- 10- How many **animation** in ENCARTA?
- 11- How many **sound** in ENCARTA?
- 12- How many articles of the **life sciences** that comes with **sound**?
- 13- How many articles in ENCARTA during **1900**?
- 14- How many articles in ENCARTA about **Brazil**?
- 15- How many articles in ENCARTA about **Brazil** with **pictures**?
- 16- Find all the Video clips in ENCARTA and play some of them.

From the MEDIA FEATURES do the following:

A- Media Gallery:

- 1- Play the **Kuwaiti** National Anthem.
- 2- Play a slide show of all **Scientists & Inventors** that have been mentioned in ENCARTA.

B- World Atlas:

- 1- Find the country **Cyprus** on the map then locate the cities Paphos and Limassol.
- 2- Look at different countries all over Africa and see what countries next to **Nigeria**.

C- Interactivities:

- 1- Explore the **Orbit**.
- 2- Interact with some **World Music** and listen to different musical instruments then play the game that comes with it.
- 3- Explore **world languages** and learn how to greet people in 4 languages.
- 4- Look at the collections of the **famous paintings** from the **Gallery**, read the description of each painting, then play the game that comes with it.
- 5- Explore the **Natural Wonders** and visit the most beautiful places, then play the game that comes with it.

D- Guided Tours:

- 1- Learn about **Dinosaurs** from the **Living World**. See a variety of them.
- 2- Take another tour to learn about **human body** in the **science and technology**. Look at various body systems and play the human eye and ear *animation*.
- 3- Take a new tour to learn about **famous leaders (People)**. Listen to *Mahatma Gandhi speech*. Also watch a **video of Nelson Mandela's election victory**.
- 4- Take a tour to see some beautiful **Famous Islands**.
- 5- Discover **Animal and Bird Sounds**, go through the guided tour, look at the animal pictures and hear some of their sounds.
- 6- Choose any other tour that you are interested in and explore by your self.

E- Time Line:

1- Go to **3500 BC** and learn about the civilisation. When you read the article, you will see the word "Pyramids" highlighted with red colour at the end of the article. Click it and discover the Pyramids.

2- Go to the period of time (**1400** and **1500 AD**) and read about the Ottoman Empire.

3- Find information about World War 2 (The period from **1920** to **1945**).

F- Mind Mase Game:

Play the Mind Mase Game.

Exit ENCARTA.

APPENDIX (B)

Sample of The Questionnaire

Dear Student,

I am a research student, doing a PhD. in Computer Science at the University of Hertfordshire, United Kingdom. This questionnaire will help me in evaluating ENCARTA 97 as a Multimedia Educational Packge. Please look carefully at each of the following questions and choose the appropriate response. Remember I am not testing you, I just want to know how you felt about the use of the Package.

Section 1-:

Please answer the following questions in section 1 by putting a cross on the scale, to show what you think. For example if the question asked:

Do you like ENCARTA 97?

Very much Very little
|-----X-----|

this means that you like ENCARTA almost very much. There is no need to spend too much time worrying about your answer, I would prefer if you can give your first reaction.

1- How interesting did you find using ENCARTA ?

Very Interesting Very Boring
|-----|

2- Would you like to use ENCARTA again?

Definitely Yes Definitely No
|-----|

3- Do you think that using ENCARTA is fun?

Definitely Yes Definitely No
|-----|

4- Did you find ENCARTA an easy to use Multimedia Package?

Very easy Very Difficult
|-----|

5- Were you able to do what you wanted to do in ENCARTA?

always _____ Never

6- Did you want some help from an expert when using ENCARTA?

very often _____ Never

7-Do you think that information can be accessed and searched easily in ENCARTA?

Very easy _____ Very Difficult

8- Was it easy for you to end and exit ENCARTA?

Very easy _____ Very Difficult

9- Did you learn a lot from using ENCARTA?

Very much _____ Very little

10- Did you use HELP in ENCARTA?

Very much _____ Not at all

11- What sort of help did you need?

.....
.....
.....
.....

12- How clear were the instructions and help provided by ENCARTA?

Very clear _____ Very unclear

13- Did you feel that you were in control of ENCARTA?

Very much _____ Not at all

14- Is ENCARTA a useful tool to search for general information in any topic?

Very useful _____ Not useful at all

15- Did you like the colours used in ENCARTA?

Very much _____ Not at all

16- Do you agree that screens were usually pleasant to look at and use in ENCARTA?

Strongly Agree _____ Strongly Disagree

17- In the media feature section, did you find that (Guided tour, Interactivities, Atlas, Timeline, and Mindmaze game) enjoyable?

Very much _____ Not at all

Section 2- The use of Various Media:

Please answer the following questions by putting a cross on the scale to show what you think.

Text: *Text is the letters that you see in the computer screen. Text comes in different fonts, colours and sizes. Text could be a title, heading or body of an article. Text also could be used with graphics to describe and name things like text used for Maps.*

1- Did you like the way different text fonts and sizes and colours are used in ENCARTA?

Very much _____ Not at all

2- Did you like Scrolling text for large articles in ENCARTA?

Very much _____ Not at all

Any other comments about text:

.....
.....
.....
.....

Graphics: Graphics can take different forms. A graphic could be a high quality image, illustration, map, or object.

3- Did you find the graphics useful?

Very useful _____ Not at all

4- What is the quality of the graphics in ENCARTA?

Very good _____ Not good at all

5- Did you find some graphics unnecessary?

Very unnecessary _____ very necessary

Any other comments about graphics:

.....
.....
.....
.....

Audio: Audio is what you hear, coming out of the computer speakers. Audio could be talking, music, and sound effects such as the sound of fire, car and so on..

6- Is the sound of speech clear and understandable in ENCARTA?

Very clear _____ Very Unclear

7- Is the sound of music clear in ENCARTA?

Very clear _____ Very Unclear

8- Are sound effects meaningful throughout ENCARTA?

Very Meaningful _____ Not Meaningful

9- Did Audio (sound, Music, Speech) add any interest to your learning from ENCARTA?

Very much _____ Not at all

10- Did you feel that the use of audio was sometimes unnecessary in ENCARTA?

Very Unnecessary _____ Very Necessary

11- Did the use of Audio in ENCARTA help you to understand better?

A lot _____ Not at all

12- Did you ever want to switch off the sound?

very often _____ Never

13- Were you able to switch the sound off in ENCARTA?

Yes No Don't Know

Any other comments about Audio:

.....
.....
.....
.....

Animation and Moving Video: Animation and video are basically a moving image on the computer screen that are shown in a small window. Animation could show the rotation of the earth and the moon. While a video clip is similar to what you see on TV.

14- Did you find Animation useful?

Very useful _____ Not at all

15- Did the use of animation in ENCARTA help you to understand better?

Very much _____ Not at all

16-Did you feel that the use of animation was sometimes unnecessary in ENCARTA?

Very Unnecessary _____ Very Necessary

17- Did moving video motivate you and add an interest to your learning?

Very much _____ Not at all

18- Did you feel that the use of video was sometimes unnecessary in ENCARTA?

Very Unnecessary |-----| Very Necessary

19- Did the use of moving video in ENCARTA help you to understand better?

Very much |-----| Not at all

Any other comments about animation and video:

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.....
.....
.....

Section 3. Bad and Good aspects about ENCARTA:

Please list some good points and bad points and any comments about ENCARTA:

Good Points about ENCARTA:

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.....
.....
.....
.....

Bad Points about ENCARTA and how can we improve it:

.....
.....
.....
.....
.....

Any other Comments:

.....
.....
.....
.....
.....

Section 4 - General questions -

Please answer the following questions by filling out the spaces or answering with Yes or No :

1- Sex:

2- Age:

3- Faculty/ College:

4- Department:

5- Year in college:

6- Have you used computers in Secondary School? Yes No

7- Have you used computers in Intermediate School? Yes No

8- Have you used computers in Elementary School? Yes No

9- Have you use computers in your house, work, friends..? Yes No

**Many thanks for your help
Ahmed Al-hunaiyyan**