

## TO QUALITY SCREEN DESIGN OF A COURSEWARE FROM A VIRTUAL UNIVERSITY! A SUMMATIVE EVALUATION.

By

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### ABSTRACT

*The Business Communication courseware is a supplementary learning tool used in Universiti Tun Abdul Razak. It is used to complement face to face classes, online tutorials and lecture notes. The courseware's Instructional Design has been summatively evaluated with positive results. To ensure quality, the screen design is evaluated as well. Students' evaluations of the screen design of the courseware are gathered and analyzed. The results of the research show that the courseware's screen design is favoured and effective as a supplementary material in the university. The outcome of the summative evaluation will be used to improve the quality of teaching as well as the development of other courseware or instructional materials in the future.*

### INTRODUCTION

Universiti Tun Abdul Razak, UNITAR is one of the leading virtual universities in Malaysia. It started its operation on the 18<sup>th</sup> of December 1997. It is an English medium, virtual university which combines the use of Online Tutorials (OLT), face to face interaction and multimedia environment specifically, Interactive Multimedia courseware. The philosophy of the university is to develop a renaissance in the goals, content and method of teaching and learning (Unitar, 1996).

Education per semester here is through weekly face to face classes (2 hours per class), OLTs once a fortnight (2 hours per session) and the use of courseware as supplementary materials. Other channels needed to communicate with the educators are via email, fax or telephone. The objective of the university is to provide quality education for any person, of any age and from anywhere, via virtual education, hence, their motto is 'Through Quality We Educate' (Unitar, 1996).

Investments of millions have been made by the university

to create and design courseware for every courses taught. Business Communication is a compulsory course for all students at the university as it is a language course. It is a requirement for all students to have certain prerequisites before going through the course. They need to have at least a C6 or the New Code 6C from the Malaysian Education Certificate (SPM) English examinations or a Band 2 for the Malaysian University English TEST (MUET).

After three years of implementation, this is the first time that the courseware is being summatively evaluated for its screen design. Instructional materials need to be evaluated after they have been produced. This is to ensure that they are effective instructional tools. Hence, there is a need to take the fifth step of the ADDIE model here. The ADDIE model is a 'generic model that includes the processes of Analysis, Design, Development, Implementation and Evaluation' (Gibbons, 1981) The model is created based on the fact that learning or the creation of materials should happen in a planned and orderly manner.

The study is a general assessment of the overall product which is the courseware. Students are asked to rate the helpfulness of specific course features to identify and improve the quality of the courseware. The focus is on the screen design and not on the learners, even though they are the ones who judge what they like or do not like and suggest ways to improve the courseware.

## Statement of the Problem

All courses offered in Unitar are divided into three components. They are the face to face classes, online tutorials and courseware as a supplementary tool. The aim is to ensure that the students of the virtual university will achieve mastery of knowledge and skills effectively. Here, the focus is on the students. There is no barrier in time or space. For example, for the online tutorials, students do not have to be physically present in Unitar to attend a class.

All students are given a courseware in the form of a CD ROM. This works as a supplementary material for the course. The idea of using the courseware is thoroughly applaudible as it is considered to be a helpful Interactive Multimedia tool that may help the students to understand the course better especially when they are on their own at home.

The tool, just as any other instructional tool has gone through the Analysis, Design, Development and Implementation stages but the last and equally important stage which is the Evaluation Stage has not been administered. No summative evaluation research or study on the screen design has never been done on the courseware. As all tools need to go through the Evaluation stage to determine its effectiveness, this study is vital.

## Purpose of the Study

The purpose of this research is to summatively evaluate the screen design of a Business Communications courseware. The courseware is specifically known as The Fundamentals

of Business Communications 1. It consists of additional information of the subject and quizzes to complement the Business Communication course. The steps to be taken are, to have students evaluate the courseware and later the researcher could reveal any weaknesses in its screen designs. The study is mainly to determine the attitude of students towards using the Business Communication courseware as a supplementary material in Unitar.

## Research Question

This study is designed to answer the following research question :

How effective is the screen design of the Business Communication courseware?

## Significance of Research

In this study, a Business Communication Courseware is evaluated based on the guidelines from research findings and learning theories. The need for research to be done here is to analyze the effectiveness of a Business Communication courseware and to check if it has fulfilled the criteria of a good courseware. To do that, the fifth step of the ADDIE model needs to be taken. If the courseware does not meet the targeted criteria as an instructional tool, some faster steps are needed to be taken to enhance the quality of the courseware used. The criteria to be covered are the instructional, screen and interface designs based on existing literature. For this study, focus is on the screen design of the courseware. Here are the criteria breakdown

Screen Design - The Text

The Graphics

The Layout

(Hannafin & Hooper, 1989; Schwier & Misanchuk, 1993)

## The Screen Design

Screen Design is the process of displaying texts, graphics and layout on a device with a surface made of clear glass or plastic and attached to a computer. Screen Design

looks at the text style, size and colours. The graphics is in terms of the menu bars, video, pictures, diagrams, animations and photographs used, and the layout covers the screen layout, background graphics and colours (Hannafin & Hooper, 1989; Schwier & Misanchuk, 1993).

## Summative Evaluation

Summative Evaluation is the judging of a completed and not a developing teaching material, according to Kemp, Morrison and Ross (1994). A lot of times designers, creators or even users think that materials they have produced are satisfactorily good products. Valid support is needed to confirm the materials produced.

Summative evaluation is also implemented because there is a need for information that will be used to base decisions on for adoption. It was stated that it is 'more credible if the design team does not summatively evaluate the instructional materials because they are less likely to be objective about what they created'. Here the objective is to diagnose 'specific instructional disadvantages in order to improve instructions' (Bass, 2000).

To get true answers and honest opinions on the quality of materials created, it is important to carry out a summative evaluation. Kemp, Morrison and Ross (1994) mention that some of the important issues that can be examined using summative evaluation are :

- ? The effectiveness of learner or trainee learning.
- ? The efficiency of learner or trainee learning.
- ? The cost of programme development and continuing expenses in relation to effectiveness and efficiency.
- ? The attitudes and reactions to the programme by learners, faculty and staff.
- ? The long term benefits of the instructional programme.

If deficiencies are discovered, designers, creators and trainers should know and improve them for the sake of

handling the present materials in class better as well as improving on them for future use.

In this study, the fourth issue by Kemp, Morrison and Ross is focused on. Here, the researcher looks at the effectiveness of a supplementary material by studying the attitudes, reactions and responses to the programme by the learners in terms of the courseware's screen design.

Although it was stated that 'measurement of effectiveness can be ascertained from test scores, ratings of projects or performances and records of observations of learners' behaviour and that the current interest is on summatively evaluating programmes by measuring students' portfolios, seminars, performances and exhibits' (Seels & Glasgow, 1998), this study will only look at the responses to the programme by the learners. This is because, as a supplementary material, the test scores, ratings of projects, performances, portfolios, seminars and exhibits do not speak of the courseware's effectiveness or the lack of it as a supplementary material and will not fairly represent the quality of the courseware's screen design.

If 100 students' responses were evaluated, the effectiveness of the courseware can be determined. If 80% of them evaluated the courseware as excellent, this would mean that the courseware is highly acceptable as an effective supplementary material and if the evaluation is below the acceptable level, a proposal could be made to the higher authority, lecturers, designers and all involved in the use of the courseware. The lecturers can be aware of the existence of certain disadvantages of the courseware and guide the students with some instruction on how they can use it.

No doubt that in most circumstances, judgement by experts is one popular way of evaluating the instructional materials (Dick & Carey, 1996). However, Dudley-Marling & Owston (1990) suggested another view which the researcher finds refreshing. They said that 'the efficacy of a

piece of educational software must be judged according to the responses of students to that programme and not the predictions of adults'. It seems that some experts have evaluated some instructional materials as excellent only to find that some students found the jerky and slow ones, excellent (Heath, 1989). The overall quality of an instructional material should be viewed by experts as well as the actual users who are the students themselves.

## **Business Communication**

The courses in the English Unit of UNITAR provide a bridge from basic skills in Listening, Speaking, Reading and Writing, to transfer level courses in English for business communication and information technology. The Business Communication courses are designed with immediate and long-term aims in mind. The immediate aims are to provide the students with a conducive learning environment in which to acquire the cognitive skills of reading, thinking, and understanding texts for their core courses, and the productive skills for them to converse, to do their assignments and answer to take examination questions in English.

The long-term aims are to ensure that our students develop the skills necessary to succeed in their careers in a world of continuous change, and lead lives that are meaningful, happy and fruitful (Unitar, 1996).

## **Courseware as a Supplementary Material**

'Teachers and books are severely limited in what they can transmit to students out of their experience and content alone. Media and technology can provide students with effective means of learning from vicarious experiences' (Edgar, 1954).

The use of courseware in higher learning institution is said to be the best revolution and innovation that can ever happen in our education system. Being an extremely unique supporting material for the classrooms, it caters for

individual needs as well as changes in the whole environment of the classroom. Instead of the conventional teaching and learning styles, usage of courseware changes the teaching system of today.

## *Authentic Context/Activities*

Interactive Multimedia (IMM) courseware invites real life exploration and brings into the classroom the real world. For instance, by using a courseware, a student can 'swim' with the haemoglobins, leucocytes and hormones in the human bloodstream and understand and experience the advantages and improvement that take place with the consumption of the Paracetamol.

## *Coaching and Scaffolding*

According to the Oxford Advanced Learner's Dictionary, coaching is, 'the teaching and training of students especially for an examination'. Another related concept is scaffolding. An expert on educational scaffolding, Winnips (2000) defines the process of scaffolding as 'providing support to student learning and then retreating that support so that the students become self-reliant. Scaffolding, in the form of coaching or modeling, supports students as they develop new skills or learn new concepts. When the students achieve competence, the support is removed. The students, then, continue to develop the skills or knowledge on their own.

Almost all IMM courseware provide a step by step guidance into the educational and navigational processes involved in dealing with tutorials or assessments. Being able to observe an expert's performances before attempting, allows the students to absorb strategies of the processes modeled. So, students can observe, learn and follow the steps portrayed by the 'expert' of the IMM courseware. It provides an environment that supports the students when in trouble, somewhere in the middle of a tutorial. The provision of coaching and scaffolding helps the students to become independent enough to stand on

their own. For example, when the question 'Who is the first Prime Minister of Malaysia' is asked, a student who clicks on Datuk Seri Dr. Mahathir Mohammad will be given immediate feedback that says 'Datuk Seri Dr. Mahathir Mohammad is the fourth Prime Minister of Malaysia'. Here, the student actually 'learns from his mistake'. Lajoie (1993) describes an environment for 'avionics troubleshooting entitled Sherlock 1' that may provide coaching similar to a human tutor's exhibition of coaching. If this happens in the Malaysian education, learning would go to a much higher and desirable stage than ever possible.

IMM courseware caters to the need of each student's learning differences as well. Students get to proceed at their own pace in this comfortable environment and receive immediate feedback. Both proficient and slow learners can fully utilize the same IMM courseware with satisfaction.

### *Integrated Assessment*

Assessments, short tests and quizzes of an IMM courseware are formative and summative. These tests are not formal. They are informal, interactive and students do not feel the pressure or stress as they would normally feel when given a paper and pencil test. They are given positive feedback that motivates them to either try again or go to a new level. With the IMM courseware, they learn within the tasks given and feel comfortable receiving feedback on the mistakes they make.

### *Easy Information*

There is a riddle that shows the capability of an IMM courseware and it goes like this; 'How can one child carry 3,00,000 pages of printed materials by himself using only one hand? He carries a courseware. An IMM courseware contain numerous tutorials and tests as compared to one book. It brings to education the extraordinary storage and delivery capabilities of computerized materials which are hard to obtain, but extremely important for those who find

books and other resources from the libraries.

Apart from that, the linkages that an IMM courseware provides could take students from one related idea to the next in ways that vary depending on the students' interest and background experience. The process is only done with a click of a button and students do not have to flip through to search for a lost page or topics of interest. Users have control over what they are experiencing and this builds confidence and caters to students' individual learner differences.

Historical films such as Hitler's cruel research in 'hypothermia', rare sound recordings of famous speeches like Malaysian's first Prime Minister, 'Tuanku Abdul Rahman's Declaration of Independence are easily accessible now with the technology existing in IMM. As we know, the human mind does not operate in a linear form. Provided that the needed information is stored, the IMM has the ability to allow a person to view different information side by side leading to the fulfillment of Malaysian Educational Philosophies (Jaring, 1995).

### *Interactivity*

Agnew, Kellerman & Meyer (1996) said that 'students learn better if they construct knowledge actively and not merely receive information passively'.

Students learn to think more effectively and become more self directed when they learn actively. Some students can better absorb information through a particular medium, for example: songs, plays, colours and pictures. IMM technology appeals to all senses of the human beings. When all senses are triggered, the learning that takes place is better. It also caters for a much wider variety of people. Students read, listen, look and manipulate the materials of their own choice actively. Thus, the attention span is prolonged and lengthened than normally possible and information is stored better in memory.

## *Good Resource For Students and Educators*

With the use of IMM courseware, teaching is enhanced because classroom presentations are not only about an educator coming in, talking and bringing in some materials while students listen. The whole process of learning changes. Instead of teaching, educators facilitate and guide the students towards the completion of their tasks.

The productive use of IMM courseware makes teaching and learning more efficient and effective. Educators or students can refer to any IMM courseware if some questions arise and the information is presented for cognitive construction in a very engaging way. Another useful tool that it has is, its capability to keep student's records individually. Students can type in their name and all information pertaining to their performances will be displayed. Educators and even students themselves will get to check their own progress.

## *Social Benefits*

There are always situations where one educator has too many students to teach i.e. 1:50 ratio. Whether we want to or not, we somehow would 'neglect' some students due to the insufficient time and energy that we have. Thus, we do injustice to some students. IMM courseware can solve this problem and erase the guilt and frustration in educators for not being able to give sufficient attention to all students. It meets all students' needs and nobody's need will be overlooked. Educators need only to guide the students.

'The student thinks, the teacher guides and the computer facilitates' (Kaur, 1996). This opportunity can solve the burnt out syndrome, that most teachers suffer within the Malaysian education system. Dwyer (1995) reports in the Apple Classroom of Tomorrow (ACOT) that 'there was dramatic decrease in teacher-led activities and a corresponding increase in cooperative activities' with the use of IMM courseware. IMM courseware promotes

cooperation and collaboration among students and educators. They help each other without being asked, when using the IMM courseware, hence, the inculcating of moral values as well.

## **The Screen Design**

The Screen Design is the process of displaying texts, graphics and layout on a device with a surface made up of clear glass or plastic and attached to a computer. 'If properly developed and properly implemented could revolutionize education'. (Menn, 1993). The Screen Design refers to the title and text sizes, colours and appropriateness, as well as the functions of graphics and layout.

## **Screen Texts**

The structures of the text cover the font style, colour, height, spacing and their readability. Pert (1989) named four factors that affect instructions and they are 'size, style, spacing and contrast between lettering and background'. Baker (2000) stated that text used in courseware should be clear. This is because, though the courseware may be 'evolving significant multimedia capabilities, it is still home to primarily one medium which is the text'. In an instruction, the screen design and all the elements placed on it, especially the text, communicate to the students. A selection of fonts should be chosen and used consistently throughout the courseware. Two different font types should be used for headings and for the body of the text.

The header text serves as the document structure and helps students scan the document. Well defined header text should stand out from the body text and should be

1. Bold
2. Larger than body text
3. Serif or sans-serif; not script

Body text which is the basis of most content, occupies a large part of the page. The text should not be smaller than

the default size even though the screen is filled with other graphical elements. Generally, body text should be black serif text on a white background or any other lighter colours. Georgia, Verdana, Arial or Comic Sans MS fonts which are large enough and clearly designed for the screen should be used according to their functions. Body text characteristics should be of default size or slightly larger. The screen font should be preferably serif or a well designed sans serif font, plain or bold or italic for emphasis and no more than double spacing. (Baker, 2001)

The texts should be well structured and if all instructions are positioned at the bottom left of the screen, it should be followed through, till the end of the lessons. Above all, the content provided should not be too long. If there are a lot to be provided, keywords should be used. Otherwise the instructions will lose its ability to hold attention.

The letter height should be consistent and should be around the area of 1/4 inch but it can still be reduced or added depending on the light and colour used.

There should be a consistency and coherency in the use of colours for text. If the colour red, is used on the first screen, the concept must be followed through until the end of the lesson. Mixing and changing colours of texts for the sake of brightening the screen without thinking of the students' needs and the effects on the lessons, would jeopardize the whole instructions planned (Pert, 1989). Basically, text should be legible and clear for the best teaching and learning to take place.

## Screen Colour

The colours used on the screen should also be based on principles of colours in instructions. Bright colours represent actions and excitement whereas darker colours present a more formal mood. For business purposes, blue and white are suitable for they present the corporate and executive looks to the screen. The same kind of looks should be maintained throughout the lesson. Visited links should also

change colours to provide the users with a notion that they have been there. Red or purple is normally used for the visited links and blue for the unvisited links. The basic principle to use colours in screen design is, to use colours that are not too colourful or too bright.

## Screen Graphics

The graphics used must be symbolic graphics which means that they have certain meanings or purposes that are widely understood by any user for example, a small graphic of a house is widely accepted as 'home'. Apart from that, the graphics should fill the screen comfortably. Some designers forget that graphics that are too large will not only take up a lot of space but also cause disturbances to the users' eyes. However one basic rule to follow in screen designing is to have a few large sized graphics rather than a lot of smaller ones.

To make instructions even better, graphics can be enhanced with light source coming from behind or 'glow' to draw emphasis to a certain area. A 'halo' can even be positioned around a graphic to provide the same effect. If the use of logos is included, make sure that there are no words or letters in them. This will make it easier for editing or changing of information, if it is needed in the future (Jong and Sarti, 1994).

## Screen Layout

The layout must be simple and consistently presenting the text, graphics, instructions and feedback areas. It should not be too crowded and there must be a separation between the instructions and the texts so that users know where they exactly are, and what to look for at a particular area of the screen. Graphics should not be cluttered to one side and cause imbalance to the screen or spreaded everywhere to cause an untidiness that prevents learning from taking place.

The layout must follow the humans' physiological ways of viewing and they are from left to right and top to bottom.

Human eyes instinctively move like that and so the designer must not try to adapt a new 'creative' style and change the norm to something that will disrupt learning. For any design, the success of an instruction lies on the layout outline that is prepared. This is called a 'storyboard'. A storyboard is the outline and steps that come with complete instructions for the interface, audio, video, screen and graphic designers as well as programmers, prepared by the instructional designer. It is for the designers to visualize and create animations or other features while scripting is being done especially in the development of media elements. Without it, the creation of instructions will not be possible.

Malaysia is on the right path in starting the Smart School system and two virtual universities; Universiti Tun Abdul Razak (1997) and Multimedia University (1999). The blueprint entails the change in the culture and practices of Malaysia's education system especially in 'stimulating thinking, creativity and catering to individual abilities and learning styles'. With the implementation of such system, it is timely that IMM courseware is utilized in the learning institutions.

Moreover, it offers a reality of experience which stimulates students' self activity, develop a continuity of thought, provide experience not easily obtained through other materials and contribute to the efficiency, depth and variety of learning and concrete basis for conceptual thinking.

The importance of screen design must be of high priority in making courseware utilization for success. There is a need to learn and accept changes in education because it is not static but dynamic and so, keeps on changing.

## Research Methodology

The population is concerned from the virtual university itself UNITAR. The population represents students pursuing a Bachelor's degree and using the courseware entitled

'Business Communication'. The sample is 100 subjects from several 'Business Communication' classes. There are 72 females and 28 males involved in the study. Their age range from 18-25 and all of them have not taken the course before. The principle of randomization is applied here as 100 students of several 'Business Communication' classes are chosen randomly for sampling from the registration. These 100 students represent the whole new batch of students taking the 'Business Communication' subject. This means none of them has ever used the courseware. They are given a duration of two weeks to go through the courseware and after the two weeks are up, the instrument is administered and data are collected. Among the variables included are students' age, gender and level of exposure to information technology and courseware.

## Instrumentation

The instrument is built based on adaptations from *The Regents of the University of California's 'Sample Student Survey'*, *Abtar Kaur's 'Expert Review of Storyboards' (1996)* and *Educational Technology's 'Events of Instruction Used In Multimedia Courseware Design' (1990)* for research purposes. It is developed by identifying components and criteria of the courseware based on the literature review done on screen design. They are then listed and accompanied by 5 point ordinal rating scales for students' evaluation.

It lists items used to acquire the data of students' variables and their opinion on the courseware's screen design. The students are given about two weeks to go through the courseware before the evaluation is carried out. All the 100 subjects are asked to fill up the instrument provided according to their experience in navigating through the courseware. The interest lies in finding out how students react to the courseware.

## Pilot Study

A pilot study is done at the same university - UNITAR on a different sample. The randomly chosen sample here is 10 different students taking the 'Business Communication' subject. They have the same variables needed, follow the same procedures and processes of learning and are surrounded by the same environment and technological equipment and tools. The researcher deals with two stages in the pilot study. Stage one is observing one student navigating the courseware and jotting down anything that may help in perfecting the instrument. In stage two, the researcher observes the rest of the students as they go through the courseware and complete the instrument for reliability. After the evaluation is completed, a dialogue session is held to gather suggestions and further revise the instrument and make it a more valid and reliable one. The study is also done to check the time limit needed for the implementation of evaluation.

## Procedure

The 100 students are given an instrument of 91 questions. They are briefed on the evaluation process, the objectives of the study and what they have to do. The instrument is divided into two sections, which are the screen design and courseware in general. They are encouraged to ask questions and discuss with the researcher on the items given. They are informed that whatever difficulties they encounter while interacting with the courseware are not totally a result of their own shortcomings and so they should be as honest as possible with the answers they choose. They are given two weeks to go through the courseware and the questionnaires are then collected.

The analysis of this study takes into consideration learners' responses to the questionnaire regarding their attitudes toward the screen design of the courseware.

## Data Analysis

A courseware entitled 'Business Communication' is first,

given to the subjects. They are asked to carefully go through the courseware. The purpose of this is to let the students actually manipulate and navigate through the courseware and observe whether they face any difficulty or discomfort while handling the courseware.

Students are then given an instrument that they have to go through. The instrument is given to all subjects to gather information and collect data on screen design after two weeks. Items are analyzed one by one. The instrument is administered to gather information on the advantages and disadvantages faced while going through the courseware and includes attitudinal scale of Strongly Disagree, Disagree, Undecided, Agree and Strongly Agree. The data is processed using Microsoft Excel and they are presented with tables.

## Data Presentation And Discussion

The evaluation is structured as follows :

### STUDENT'S PROFILE

1. Gender :

Male

Female

2. How old are you?

a).18-20 years old

b).20-25 years old

c).above 25 years old

3. I use the English Language at home.

a).Yes b). No c). Sometimes

4. My English Language grade in the SPM examination is

a.)A1 b.)A2 c.)C3 d.)C4 e.)C5 f.) C6 g.)P7

h.)P8 i.)F9

5. I use the computer \_\_\_\_

a.)Always b.)Seldom c.) Sometimes

d.)Hardly

6. I have been using the computer for \_\_\_\_

- a.) less than 1 year
  - b.) 1 year
  - c.) 2 years
  - d.) 3 years
  - e.) more than 3 years
7. I am familiar with educational software before coming to UNITAR.
- a.) Yes
  - b.) No

## Screen Design

1. There are enough items on the screen.
2. Important information is immediately obvious.
3. Instructions are placed consistently in the same place on the screen.
4. I feel encouraged to continue reading.
5. The screen layout helps me to remember what I read.
6. Media used is appropriate to the content (sesuai).
7. I can understand the graphics easily.
8. The media supports the lesson.
9. Using some media are necessary.
10. The screen design is consistent.
11. The colour used is appropriate.

## Menu

12. Main menu is well designed.
13. Sub-menu is well designed.
14. Graphics chosen are appropriate (sesuai).
15. Feedback is appropriate (appropriate use of sound, flashing).

## Font and Visual Quality

16. Font styles are easy to read.
17. Text font size is consistent.
18. Text font size is not too small.

19. Title font size is large enough.
20. Font colour is suitable.
21. Visual quality (colour, size, graphics, photography) is good.
22. There is enough animation.

## Students Background

The students who evaluated the courseware are 72% females and 28% males. Their ages range from 18-20 years old (62%, n=62) and 20-25 years old (38%). 12% of the students use the English Language at home, 58% of them sometimes use it at home while another 30% do not use it at all. There are 88% of the students (n=88) always use the computers and 44% of them have been using the computer for more than 3 years. The rest have been using the computers between less than 1 to 2 years. However, those who are not familiar with educational software before coming to Unitar as 58% of the students (n=58) choose 'no' to Item 7. That means their experience in using the computers is more on surfing the net or playing computer games. (Please refer to Tables 1 to 7)

| Item | Subject | Male  | Female |
|------|---------|-------|--------|
| 1    | Gender  | n / % | n / %  |
|      |         | 28    | 72     |

Table 1. Gender

| Item | Subject | 18-20 | 20-25 | Above 25 |
|------|---------|-------|-------|----------|
| 2    | Age     | n / % | n / % | n / %    |
|      |         | 62    | 38    | 0        |

Table 2. Age

| Item | Subject                 | Yes   | No    | Sometimes |
|------|-------------------------|-------|-------|-----------|
| 3    | Use of English Language | n / % | n / % | n / %     |
|      |                         | 12    | 30    | 58        |

Table 3. Use of English Language

| Item | Subject                       | 1to2 | 3   | 4   | 5   | 6   | 7   | 8   | 9   |
|------|-------------------------------|------|-----|-----|-----|-----|-----|-----|-----|
| 4    | English Language Grade in SPM | n/%  | n/% | n/% | n/% | n/% | n/% | n/% | n/% |
|      |                               | 2    | 10  | 8   | 14  | 26  | 36  | 4   | 0   |

Table 4. English Language Grade in SPM

| Item | Subject         | Always | Sometimes | Seldom | Hardly |
|------|-----------------|--------|-----------|--------|--------|
| 5    | Use of Computer | n / %  | n / %     | n / %  | n / %  |
|      |                 | 88     | 10        | 0      | 2      |

Table 5. Use of Computer

| Item | Subject                        | < 1 Years | 1 Years | 2 Years | 3 Years | 3 Years < |
|------|--------------------------------|-----------|---------|---------|---------|-----------|
| 6    | No of Years using the computer | n / %     | n / %   | n / %   | n / %   | n / %     |
|      |                                | 20        | 12      | 14      | 10      | 44        |

Table 6. Number of years using the Computer

| Item | Subject     | Yes   | No    |
|------|-------------|-------|-------|
| 7    | Familiarity | n / % | n / % |
|      |             | 42    | 58    |

Table 7. Familiarity with educational software before coming to Unitar

## Data Analysis

The analysis of data and the results are discussed based on the following research question.

How effective is the Screen Design of the Business Communications Courseware?

## Definition of Screen Design

The process of displaying texts, graphics and layout on a device with a surface made of clear glass or plastic and attached to a computer.

To answer this research question, the Screen Design section of the learner evaluation questionnaire is analyzed. This section covers the text, graphics and layout based on Hannafin & Hooper (1989) and Schwier & Misanchuk (1993)'s Screen Design outline. Based on the

criteria set by them, questions about the menu, font, visual quality, animation and media are set and presented in Section 2 of the learner's evaluation questionnaire. There are altogether 23 items in this section and learners respond by circling or ticking against their choice. The evaluation data are presented in table forms for easy understanding and interpretations.

Items 1 to 11 cover general statements about screen design.

## General Screen Information and Media

Table 8 shows the results on General Screen Information and Media. Seven items are popularly evaluated favourably while half of it, four items are popularly evaluated unfavourably. Items 2, 3, 5, 6, 7, 10 and 11 have about averagely 45.7% of the students agreeing to the statements about having important information immediately obvious (item 2), consistently placed instructions (item 3), screen layout that helps students to remember (item 5), media which is appropriate to the content (item 6), graphics that are easy to understand (item 7), consistent screen design (item 10) and appropriate colours used (item 11).

However, on the other side of the anchor, 44% of the students (n=44) disagree that there are enough items on the screen. Item 4 has 34% (n=34) feeling discouraged to continue reading the courseware. 38% (n=38) disagree with item 8 and evaluated that the media does not support the lesson and finally, item 9 has 24% of the students (n=24) who decide that some media used are unnecessary. It is quite alarming to see that half of the most frequently chosen choice is 'Disagree'. This shows that generally, the screen design could be improved so that the students feel more comfortable using the courseware and are encouraged to continue reading and using the courseware. Items 13 to 16 that cover the menu and graphics receive the students' favourable reactions.

| Item | Subject   | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|------|---|-------------------|----------|-----------|-------|----------------|
|      |   | n / %             | n / %    | n / %     | n / % | n / %          |
| 1    | There is enough items on the screen.                                  | 2                 | 44       | 16        | 26    | 12             |
| 2    | Important information is immediately obvious.                         | 0                 | 8        | 32        | 48    | 12             |
| 3    | Instructions are placed consistently in the same place on the screen. | 0                 | 22       | 26        | 44    | 8              |
| 4    | I feel encouraged to continue reading.                                | 2                 | 34       | 32        | 24    | 8              |
| 5    | The screen layout helps me remember what I read.                      | 4                 | 12       | 16        | 52    | 16             |
| 6    | Media used is appropriate to the content.                             | 0                 | 10       | 18        | 56    | 16             |
| 7    | I can understand the graphics easily.                                 | 4                 | 26       | 24        | 34    | 12             |
| 8    | The media supports the lesson.  | 4                 | 38       | 36        | 18    | 4              |
| 9    | Some media used are necessary.  | 6                 | 34       | 16        | 32    | 12             |
| 10   | The screen design is consistent.                                      | 2                 | 32       | 26        | 36    | 4              |
| 11   | The colour used is appropriate.                                       | 2                 | 20       | 24        | 50    | 4              |

Table 8. General Screen Information and Media

## Menu and Graphics

Table 9 shows the results on Menu and Graphics. There are 54% of the students (n=54) who agree that the submenu is well designed and another 54 agree that the graphics are appropriately chosen. Another 38% however, are undecided whether the main menu is well designed and 36% of the students (n=36) are undecided whether the feedback and its application of sound and flashing are appropriately used in the courseware. There is a cause for worry because item 12, which is about the "well designing of main menu for which 30% of the students (n=30) disagree to it. Item 15, shows the appropriateness of

feedback, has 26% of the students disagreeing to it. Thus, there is a need to look deeper into the matter as the main menu and appropriateness of feedback that applies to media are important and if not done properly may disrupt the lessons.

| Item | Subject                          | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|------|----------------------------------|-------------------|----------|-----------|-------|----------------|
|      |                                  | n / %             | n / %    | n / %     | n / % | n / %          |
| 12   | Main menu is well designed.      | 4                 | 30       | 38        | 20    | 8              |
| 13   | Sub-menu is well designed.       | 4                 | 12       | 30        | 54    | 0              |
| 14   | Graphics chosen are appropriate. | 6                 | 12       | 18        | 54    | 10             |
| 15   | Feedback is appropriate.         | 4                 | 26       | 36        | 26    | 8              |

Table 9. Menu and Graphics

## Font and Visual Quality

Items 16 to 22 reveal students' evaluation of the Font used in the courseware. Table 10 shows the results collected on the Font and Visual Quality. There are 36% of the students (n=36) who strongly agree that the font styles are easy to read. 46% agree that text font size is consistent and another 46% agree that the text font size is not too small. 44% of the students (n=44) agree that the text font size is large enough, another 44% agree that the font colour is suitable and 50% agree that the visual quality which includes colour, size, graphics and photography is good. However, 42% of the students disagree and 26% strongly disagree that there is enough animation in the courseware (item 22). Ranging from the age of 18 to 20 years, a liking for a lot of animation in the courseware is normally seen. Animation, after all receives a lot of support and admiration (in computer games and movies) by people of that age range. To enhance the courseware, the producer could add more animation but there is a need to be aware of the fact that the product is an academic product and should not promote only fun.

| Item | Subject                          | Strongly disagree | Disagree | Undecided | Agree | Strongly agree |
|------|----------------------------------|-------------------|----------|-----------|-------|----------------|
|      |                                  | n / %             | n / %    | n / %     | n / % | n / %          |
| 16   | Font styles are easy to read.    | 2                 | 10       | 20        | 32    | 36             |
| 17   | Text font size is consistent.    | 6                 | 12       | 18        | 46    | 18             |
| 18   | Text font size is large enough.  | 4                 | 10       | 22        | 46    | 18             |
| 19   | Title font size is large enough. | 2                 | 20       | 22        | 44    | 12             |
| 20   | Font colour is suitable.         | 2                 | 14       | 20        | 44    | 20             |
| 21   | Visual quality is good.          | 4                 | 6        | 32        | 50    | 8              |
| 22   | There is enough animation.       | 26                | 42       | 22        | 8     | 2              |

Table 10. Font and Visual Quality

Generally, the screen design, though needs minor improvements, is appropriate and evaluated favorably by the students. It therefore supports the use of the Business Communication courseware as a supplementary material.

### Summary

Apart from some minor needs for improvements which have been identified in the respective sections, the instructional design, is evaluated as effective in the Business Communication courseware as a supplementary material.

### Limitations of the Study

There are two limitations to this study. Firstly, the evaluation is entirely the effort of the students. This is not an ideal approach. The ideal approach would be to have the students, educators (Heath, 1981) and experts (Dick and Carey, 1996) evaluate the courseware. The data collected from only the experts are not enough because the students and educators are the actual users and would provide better feedback about the courseware. Hence, there is a need to have three phases of evaluation.

Another limitation of this study is that the study only involves the students from the Kelana Jaya Study Centre and not

the other Unitar satellite campuses all over Malaysia. Thus, it is not possible to infer that students from other study centres will provide the same outcome of results after using the courseware.

### Implications for further research

'Summative evaluation was conceptualized with the particular purpose of aiding educators in determining whether ongoing instruction is worthy to be continued and whether available instruction is worthy of adoption' (Briggs, Gustafson and Tillman, 1991).

The Business Communication courseware is created as a supplementary material in Unitar. It is an alternative teaching and learning tool that is used alongside with the face to face classes and online tutorials. The main objectives of the study are to summatively evaluate the courseware and to use the findings to improve future courseware or instructional materials. The findings of this study show that the Business Communications supplementary material possesses many positive instructional features. Nevertheless, there are certain areas of weaknesses that can be improved on the basis of the students' evaluations on the following items:

#### *Screen Design Strengths*

General Screen Information and Media

Important information as immediately obvious.

Instructions are placed consistently in the same place on the screen.

The screen layout helps to remember what is read earlier.

Media used is appropriate to the content.

The students can understand the graphics easily.

The screen design is consistent.

The colour used is appropriate.

#### *Menu and Graphics*

Submenu is well designed.

Graphics chosen are appropriate.

### *Font and Visual Quality*

Font styles are easy to read.

Text font size is consistent.

Text font size is large enough.

Title font size is large enough.

Font colour is suitable.

Visual quality is good.

### *Screen Design Weaknesses*

#### *General Screen Information and Media*

There are not enough items on the screen.

The students feel discouraged to continue reading.

The lesson does not have enough support of the media.

Some media used are unnecessary.

#### *Menu and Graphics weaknesses*

Main menu is not well designed.

Feedback is inappropriate.

#### *Font*

There is not enough animation

Quite a number of students felt that improvements should be made to the courseware to gain their attention. There are 44% students who want more items on the screen, 34% feel discouraged to continue reading, 38% feel that the media does not support the lesson and 24% feel that some media used is unnecessary. Most students want a lot more animation and thus, even though the researcher admits that the screen design of the courseware is evaluated as effective, there is a need for some necessary minor improvements to be made. The producer should think about improving on the screen items and media

used. Perhaps an extensive research could be continued from here to cater for at least 99% if not, 100% of the students' needs. This would not only improve the students' motivation but also the general teaching and learning skills of all users.

### **Recommendations**

From the findings, the Business Communication courseware has many effective features of screen design. Nevertheless, there are minor weaknesses that can be improved upon. The minor weaknesses do not actually affect the learning of the course in major ways and thus, given proper guidance, the educators can use the courseware as an effective supplementary material.

### **Conclusion**

The study shows the importance of summative evaluation of the screen design of instructional materials especially the Business Communication courseware used in Unitar. Even though the courseware was developed following theoretical steps, principles and procedures, there are minor weaknesses that are discovered. It is evident from this study that learners' responses to the courseware as a supplementary material, indicate overwhelming positive ratings. Findings from this study, if combined with other studies will help to support the use of courseware as a supplementary material in the university.

Since this evaluation is done at the students' phase, there should be more research done at the lecturers' phase and finally the experts' phase for expert judgement. (Dick and Carey, 1991)

Generally, the screen design is effectively used in the Business Communication courseware as a supplementary material.

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