Learners' Attitude Towards Learning Through CD-ROM Courseware: A Case Study of An Organisation

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ABSTRACT

The paper seeks to explore two factors associated with learners' attitude toward learning through CD-ROM courseware: (1) learners' characteristic; and (2) characteristics of CD-ROM courseware. Data were administered using an instrument custom designed for the study. The respondents were 150 employees of the selected organisation who had used any CD-ROM courseware in any of the organisation's learning centres during a specified one-month period. Results show that: (1) the majority of respondents surveyed found to have favourable attitude toward the last CD-ROM courseware they had used; (2) learners' attitude towards computers was found to be highly correlated with learners' attitude towards CD-ROM courseware; and (3) courseware characteristics of textology and immediate feedback were identified as two of the most highly correlated factors. In learning through CD-ROM courseware, learners' characteristics such as learners' attitude towards computers, their working experience and educational achievement need to be taken into consideration. In CD-ROM courseware development, characteristics such as textology and immediate feedback are important elements that facilitate positive attitude towards learning. This study is useful to CD-ROM courseware developers and training managers in developing a more appropriate training for learners.

INTRODUCTION

The advance of information technology enables program developers to innovate a new system of delivering educational programs to trainers and learners. The change of technology is so rapid that in 2002, it was estimated that 55% of the training programs would be technology-based (Elearnframe, 2000). The use of CBT, especially multimedia CBT is still perceived as more advantageous than its web-based counterpart (Computer Industry Report, 1997). CBT has been used in various organisations: for instance, military training (Roberts, 2001), transportation industry (McInnis, 2003) and higher and technical education.

In Malaysia, Information Technology-Based Training (ITBT) is gaining popularity, especially in technology-based corporations. Sani (2005) reported that there is an emerging trend among local businesses to use computer-based training. In order to help local organisations in implementing CBT and acquiring new technology, the Malaysian government launched a CBT scheme in 1995 (Ministry of Human Resource Malaysia, 2001). The selected organisation in the study is one of the leading communications companies in Malaysia and is extensively employing ITBT using multimedia CD-ROM for employees' training and development.

Learning theories and principles that have been applied in traditional mode of learning are also being applied in CD-ROM courseware. However, it is important to know if these also facilitate learners' positive attitude towards learning through computer-based courseware. Attitude is a prerequisite of effective learning. In her Chain-of-Response Model for Participation in Adult Education, Cross (1982) highlights the importance of having a positive attitude in order for an adult to succeed in any learning activities. In the context of computer-based learning, learner's attitude towards learning through CD-ROM courseware depends greatly on the characteristics of the courseware (Willcox, 1998). Therefore, it is necessary to identify factors that contribute to the effectiveness of learning through CD-ROM courseware.

OBJECTIVES

The study seeks to explore factors associated with learners' attitude toward learning through information technology-based training (ITBT), with special reference to multimedia CD-ROM courseware. Specifically the study seeks to determine:

1. Learners' attitude towards learning through CD-ROM courseware.
2. The relationships between learners' characteristic and learners' attitude towards learning through CD-ROM courseware.
3. The relationships between characteristics of the courseware and learners' attitude towards learning through CD-ROM courseware.

E-learning has been commonly defined in many ways. For the purpose of this paper, e-learning is used in the same context as computer-based learning or computer-based training.

RELATED LITERATURE

The use of technology in training has been discussed in various types of organisations: for instance in large organisations (Buch and Bartley, 2002), small organisations (Sambrook, 2003; 2001; Sadler-Smith *et al*., 2000), biotechnology (Dahlqvist and Ramberg, 1999), telecommunications (Gasco *et al*., 2004), higher education (Poon *et al*., 2004; Kaur and Abas, 2004), banking (Vaugan and MacVicar, 2004), service (Zwick, 2002) and public sector (Wagner and Flannery, 2004; Hennesy and Sawchuk, 2003; Ministry of Human Resource Malaysia, 2001).

Role of Technologies in Organisations

The literature reviewed discuss role of technologies (Bell et at., 2004; Gasco *et al*., 2004; Long and Smith, 2004), effects of introduction of technologies in the workplace (Hennessy and Sawchuk, 2003; James-Gordon and Bal, 2002), attitude of users toward ITBT and characteristics of courseware used in CBT. In the context of human resources development, the role of technologies is described as transformative (Bell *et al*., 2004), facilitates the learning process of staff as self-directed learners (Gasco *et al*., 2004; James-Gordon and Bal, 2002) and provides a new mechanism (Long and Smith, 2004) for training.

Bell *et al*. (2004) pointed out that although e-learning is regarded as having transformative role in training and development of business organisations, the implementation is not as smooth as expected. Gasco *et al.* (2004), in discussing the role of technologies in Telefonica, a Spanish telecommunications company, highlights the following advantages: easy accessibility of learners to the learning materials, the learning materials are tailored to the needs of learners and the ability of technologies to simulate real-life situations. Long and Smith (2004), in discussing the web-based distance learning in HRD, view that the internet technology provides "new mechanism" (p.272) in developing human resources for organisations looking for a competitive advantage.

Learners' Attitude Towards Technology-Based Learning

Learners' attitude towards learning is found to be improved with the use of information technology (Sandler, 1998). The use of computers improves attitude towards school and subject matters (Roblyer *et al*., 1988). According to Datzbaz and Kalafatis (2003), learning using computer is better than the traditional instructor-based method in terms of recall. They also found that using hypermedia courseware would produce better results. Baldwin-Evans (2004) analysis shows that e-learning "makes positive difference" (p.271) to learners in five identified areas: tangible business benefits, improved processes, improved communications, personal skills development, and IT and computer literacy.

Characteristics of Learners in Technology-Based Learning

Among learners' characteristics associated with learning through CD-ROM are socio-demographic factors and attitude towards computer (Stoel and Lee, 2003; Bassoppo-Moyo *et al.* , 2002).

Socio-demographic factors. Our experience suggests that learners' socio-demographic factors such as age, educational achievement and working experience affect their attitude towards learning through CD-ROM courseware. The influence of demographic factors is recognised by Karuppan (2001) in his study of web-based user's profile. Meta-analysis cited in Maddux *et al.* (1997), for instance, concluded that computers are more effective for lower achievers and also there is no gender difference in effectiveness of computer applications. A study by Teo and Lim (1996) however concluded that there are gender differences in terms of usefulness of computers, whereas Karuppan's (2001) study shows that gender had a significance influence on web use.

Attitude towards computer. Studies on attitudes showed positive correlation between attitude and the use of computer in learning. Learners were found to develop a more positive attitude toward computers in general as a result of their exposure to educational programme using computers (Stoel and Lee, 2003; Chambers and Sprecher, 1983; Kulik, *et.al*, 1980). Wagner and Flannery (2004), in their study of factors affecting learner acceptance of a computer-based training support tool found that attitudes towards use was one of the strong predictors of perceived usefulness. Vogt (1996) pointed out that learners who are afraid to use computers would have more barriers to learn through computer-based training. In education, the use of computers has resulted in an improvement in students' attitudes toward school and subject matter (Roblyer *et.al*, 1988).

Courseware Characteristics

Characteristics such as individualisation of programs, interactivity, multimedia elements and textology are important for effective and attractive information technology-based learning materials (Sambrook, 2003; Fran, 1997; Barker, 1996; Toh, 1996; Wong *et al*., 1996; Phillips, 1991). The term textology in information technology-based training (ITBT) context refers to how words or text are presented on the screen of the computer (Fran, 1997). Sambrook (2003), for instance, in exploring factors that influence learner's perception of the quality of computer based materials identified the following factors as important: user-friendliness; presentation, graphics, engagement, information, knowledge, understanding, level, type of learning, language, and text. According to Chambers and Sprecher (1983), the basic principles in developing effective courseware are: interactivity and individualisation, the application of multimedia elements, textology and instructional systems.

Interactivity and individualisation. The importance of interactivity in CD-ROM courseware is recognised by Barker (1996). Low interactivity is related to decision-making passiveness in controlling and executing learning activities in the CD-ROM courseware. To make a courseware interactive, Feifer (1996) emphasises the need for a user to be in control. Seven characteristics of interactivity have been identified: immediacy of response, non-sequential access of information, adaptability, feedback, options, bi-directional communication and interruptability (Borsook, 1991).

Individualised instruction has been recognised as an effective educational methodology (Phillips, 1991; Bixler and Bergman, 1997). Individualisation allows a learner to control the pace and entry level of the learning materials.

Multimedia elements. Multimedia refers to the use of multiple media elements such as text, graphics, motion, voice data, sound, animations and digital video (Neo, 1997; Moore *et al*., 1994). The use of sound and graphics, for instance, facilitates learners' understanding the learning materials (Toh, 1996), especially in learning abstract concepts (Lai, 2000).

Instructional system. Instructional systems comprise of objectives, appropriate learning experience, immediate feedback and reinforcement. Tyler (1949) proposes the following principles of instruction: "(1) defining appropriate learning objectives; (2) establishing useful learning experiences; (3) organising learning experiences to have maximum cumulative effect; and (4) evaluating the curriculum and revising those aspects that did not prove to be effective" (p.1). These same principles are further described by Schiewer and Misanchuk (1993) in designing IT-based courseware.

METHODOLOGY

Population of this study was 150 employees of a selected organisation who had taken any CD-ROM courseware at any of the learning centres during a specified one-month period. The questionnaire, which was designed for the purpose of this study, was used to collect data. The questionnaire has three main sections.

The first section consists of three open-ended questions to obtain information regarding the use of CD-ROM courseware. The main purpose of this section is to find out what latest courseware the respondents had used and to prepare the respondents to answer questions based on the last courseware they had used.

The second section of the questionnaire consists of sixty-two statements, on a five-point Likert scale, ranking from 'strongly disagree' to 'strongly agree'. The purpose was to measure the relationships of the identified variables with learners' attitudes towards learning through CD-ROM courseware. The variables are interactivity, individualisation, multimedia elements, textology, clearly stated learning objectives, immediate feedback, appropriate learning experiences and attitude towards computer.

The third section comprises eight items: six fixed-alternative items and two open-ended ones. The purpose was to collect information on the respondents' demographic background and the frequency of using computers at home and at work.

The questionnaire was drafted based on conceptual framework, observations, discussion with CD-ROM courseware providers and learners and recommendations from expert judges. The final draft was prestested on ten employees of the selected organisation who had used CD-ROM courseware at one of the organisation's learning centres. The purpose of the pretest was to identify any shortcomings of the questionnaire, especially in the aspects of ambiguity, inappropriate vocabulary, and unclear instructions.

The instrument was made available in two versions: electronic and printed versions. The electronic version was distributed to all employees in the organisation using e-mail while the printed version was made available in all learning centres of the organisation. Out of 107 sets of returned questionnaires, 2 were incomplete. The analysis of 105 sets of questionnaires was carried out using the SPSS program.

Pearson Product-Moment Correlation was used to determine the relationships between learners' attitude towards CD-ROM courseware and the selected variables. The magnitude and the degree of relationships followed the rankings of –1.0 and +1.0 were compared. The interpretation of the levels of relationships between dependent variable and independent variables was based on the rule of thumb method as suggested by Davis (1971). The level of significance selected for the statistical analysis is 0.05. This level is used because it is the level most commonly used in the field of Social Sciences.

FINDINGS AND DISCUSSION

Most respondents were below thirty years old. In terms of gender, about 62% were females. In term of educational achievement, the respondents' lowest education qualification was upper secondary or SPM (equivalent to O Level); and the highest was Masters degree. The majority (74.3%) had a diploma or a Bachelor's degree. Over half of the respondents (56.3%) had one to five years of working experiences. On the average, the respondents had 6.4 years of working experience. Most of the respondents perceived their English proficiency as "good".

Learners' Attitude Towards Learning Through CD-ROM Courseware

Table 1 shows the distribution of respondents by attitude towards CD-ROM courseware. The five-point Likert Scale with the highest possible score of 60 and the lowest possible score of 12 was used to measure the attitude. Out of 150 respondents, 76.2 percent had favourable attitude with scores ranging from 44 to 60.

Table 1: Distribution of Respondents by Attitudes towards CD-ROM Courseware

Attitudes	Frequency	Percentage
Unfavourable (12-27)	0	0
Moderate (28-43)	30	23.8
Favourable (44-60)	75	76.2
Total	**105**	**100.0**

This implies that respondents generally have a positive attitude towards CD-ROM courseware that they had recently used. None of the respondents scored below 28. Beside that, 23.8 percent of the respondents had moderate

scores of 28 to 43. From the scores obtained, it can be concluded that respondents viewed their recently used CD-ROM courseware as favourable.

The Relationship Between Learners' Characteristic and Learners' Attitude Towards CD-ROM Courseware

In order to determine the relationship, a correlation test was conducted. The selected variables of learners' characteristics were years of schooling, working experience and attitude toward computers. The result is as in Table 2.

Table 2: Correlation between courseware's characteristics and learners' attitude towards learning through CD-ROM

Variables	n	r	p
Years of formal schooling	90	-0.20	0.01
Working experience	103	0.26	0.01
Attitude towards computer	105	0.66	0.00

Years of formal schooling. The table shows that learners' characteristics and years of formal schooling have significantly negative correlation (r=-0.20). This shows that educational achievement and attitude toward CD-ROM are negatively correlated. The longer the years of schooling, the lower the score in attitude towards learning through CD-ROM courseware. As cited in Maddux *et al*. (1992), meta-analysis shows that learning through computers is more effective for lower achievers. The negative relationships between the two variables can be attributed to two reasons: (i) most CD-ROM courseware are on general management and respondents with higher education qualifications might perceive the content of the courseware as not suitable to their needs; (ii) the CD-ROM courseware has its limitations in terms of profundity or the depth of learning.

Working experience. Working experiences shows significantly positive correlation (r=0.26) with the respondents' attitudes towards CD-ROM courseware. It means that the longer the working experience, the more positive is their attitude toward learning through CD-ROM courseware. However, the r-value shows the level of relationship is very low.

Attitudes towards computer. Attitude towards CD-ROM has a significantly positive correlation with attitude towards computer. The r-value of 0.66 shows that the two variables have a high correlation. It means that the more respondents work with computers, the more positive is their attitude towards learning through CD-ROM courseware. The finding is in line with Vogt's (1996) view. Learners' attitude towards learning through CD-ROM courseware to a certain extent depends on their attitude toward the computer.

The Relationship Between Courseware's Characteristics and Learners' Attitude Towards CD-ROM Courseware

The selected variables of learners' characteristics for the correlation test include interactivity, individualisation, textology, multimedia elements, clearly stated objectives, learning experiences and immediate feedback. The result is shown in the following table.

Table 3: Correlation between characteristics of the courseware and learners' attitude towards CD-ROM courseware

Variables	n	r	p
Interactivity	105	0.50	0.00
Individualisation	105	0.50	0.00
Textology	105	0.85	0.00
Multimedia elements	103	0.52	0.00
Clearly Stated Objectives	104	0.38	0.00
Learning Experience	105	0.40	0.00
Immediate Feedback	104	0.60	0.00

Interactivity. The correlation between interactivity and the respondents' attitude towards the CD-ROM courseware has a significantly high correlation (r=0.50). This implies that the level of interactivity will affect the

respondents' attitude towards CD-ROM courseware. As postulated by Hannafin (1985) in his study on interactive technologies, the more interactive the instruction is, the greater will be the learning. The result of this research further shows that the level of interactivity will also give an impact on learners' attitude toward learning through CD-ROM courseware.

Individualisation. The r-value for attitude towards learning through CD-ROM courseware and individualisation is 0.50; this indicates that the two variables have a high positive correlation. It means that if the program allows higher learner control and is autonomous where learning is concerned, the learners' attitude towards a CD-ROM courseware would be more positive. Individualised learning is very important, especially for adults. All respondents are adult who have accumulated an expanding scope of experience. They are also self-directed learners. They prefer programs that allow them to decide on the learning pace and style, and to navigate the learning material based on their needs.

Textology. It is found that the relationship between attitude towards learning through CD-ROM courseware and textology has significantly high positive correlation (r=0.85). This supports the notion that the principles of textology have to be considered carefully as this will help one to design better texts on computer screens. This would enable the learners to learn better.

Multimedia elements. The result shows that multimedia elements have significant positive relationship with attitude towards CD-ROM courseware. The r-value of 0.52 implies that the correlation is high. The appropriate use of multimedia elements will lead to positive attitude toward leaning through CD-ROM courseware. Multimedia elements allow more senses to be engaged in the learning process. It has become clear that people find it easier to learn and remember with audio and visual aids (Ambron, 1990). Besides that, the use of multimedia makes learning more interesting, especially in computer-based learning. In using multimedia elements, however, appropriateness should be considered. The important principle is that multimedia elements will help in the understanding of the subject matter and facilitate achievement of the learning objectives.

Clearly stated objectives. The r-value of this particular correlation is 0.38, which implies that there is a significant positive correlation between attitudes towards CD-ROM courseware and clearly stated objectives. This shows that clearly stated objectives are essential in human-machine interface type of learning, where learners are on their own. According to Mager (1984), clearly stated objectives provide learners with the means to organise their own efforts towards accomplishing these learning goals. With clear objectives in view, learners are better able to decide what activities or learning experience they should undertake to facilitate their learning (Mazanah and Carter, 2002). For adult learners, knowing and being clear about what is to be accomplished from undertaking a learning experience or an educational event is important.

Learning experiences. Respondents' attitude toward CD-ROM courseware and their learning experiences have a significant relationship. The r-value at 0.40 shows that the level of correlation is moderate. The finding indicates that to draw forth the positive attitude of the respondents toward learning through CD-ROM courseware, appropriate learning experiences should be incorporated in the course. The features of a learning experience should be challenging, interesting, motivating, contributing toward understanding of the subject matter, and ongoing throughout the learning process. Appropriate learning experiences that a learner would engage and reflect upon is essential to facilitate learning (Tyler, 1949: Mazanah and Carter, 2002).

Immediate feedback. There is a significant positive relationship between the two variables. The r-value at 0.60 shows that the correlation is high. Immediate feedback is very important to reinforce and sustain motivation and interest in learning, especially in self-instructional packages. By providing immediate feedback, learners will know if their response was correct and to be aware of their progress.

IMPLICATIONS

This study has shown the factors related to learners' attitude towards learning through CD-ROM courseware. The findings could help administrators to choose a more appropriate CD-ROM for their organisations, and guide courseware developers in developing a more appropriate CD-ROM courseware.

Learners' Characteristics

The findings imply that to facilitate positive attitude towards learning through CD-ROM courseware, learners' attitude towards computer, working experience and educational achievement should be taken into consideration. As for learners' attitude towards computers; it is important that learners feel comfortable when they need to use the computer to complete a task. Positive attitude towards computers can be considered a prerequisite for learning through the computers.

Regarding the negative relationship between the learners' attitude towards CD-ROM courseware and their educational achievement, it is found that this outcome can be used as a guideline when conducting training needs analysis. To facilitate favourable learning experiences, the courseware should be challenging and they should commensurate the learners' needs and prior knowledge or educational experience.

Courseware's Characteristic

In terms of courseware's characteristics, the three most important aspects found are textology, immediate feedback, and multimedia elements. The other aspects are interactivity, individualisation, clearly stated objective, and appropriate learning experience. The implications of the three most important aspects are as follows:

- *Textology*. The observations of this research show that textology does affect ITBT. This implies that clarity of thought and clear language, as well as attention to details, fonts, logical links, and layout be used designing better texts for computer screens to enable better educational experience.
- *Multimedia Elements.* The use of the multimedia allows more senses to be engaged in the learning process and this makes the learning more interesting and lively - especially in the CD-ROM or computer-based learning context.
- *Immediate feedback.* Feedback is the information about the quality of the learners' response (Schwier and Misanchuk, 1993). Both the cognitivists and behaviourists agree that providing immediate feedback is an important means of reinforcement. The following criteria should be considered when providing feedback and reinforcement in the CD-ROM courseware context: (1) immediately after the response of the learners, (2) informative and helpful to the learning, (3) humanise, and (4) feedback message is clear and easy to understand.

CONCLUSIONS

There are two variables associated with learners' attitude towards learning through CD-ROM courseware: (i) learners' characteristics; and (ii) courseware characteristics. Learners' characteristics that should be taken into consideration are working experience and attitude towards computer. Courseware characteristics that regarded as important are textology, immediate feedback, and multimedia elements.

Instructional principles are also important aspects that need to be highlighted. Among the principles are clearly stated objectives, appropriate learning experiences, and immediate feedback. In conclusion, learning and instructional principles that have been applied in traditional mode of learning have been found to contribute to learners' attitude towards learning through CD-ROM courseware.

Recommendations

A learning centre that plan to use ITBT should identify the organisation and employees' needs, as well as the employees' background such as educational qualification and attitude toward computer. This would help the learning centre to select more CD-ROM training programs appropriate to their needs.

An organisation can fully utilise CD-ROM courseware by incorporating the courseware and classroom training. For example, when conducting training courses on 'Local Area Network (LAN)', the trainer can use the courseware to bring out some ideas to facilitate further human explanations and instruction. This can form reciprocity between computer-based training and classroom training because both of these training modes have their strengths and weaknesses.

When developing CD-ROM courseware or selecting CD-ROM courseware for training purposes, courseware developers should take into consideration the followings: whether the courseware will allow interactive and

individualised learning; is the layout and display of the text is suitable; is the multimedia elements appropriate; does the instruction strategically facilitate favourable learning.

Many comparative studies on the effectiveness of the computer-based training (CBT) with traditional classroom training have been carried out in other more developed countries. In Malaysia however, research in this field is relatively new and there have not been many published empirical investigations available. Further research is much needed in order to effectively facilitate the use of CBT according to learners' needs. Another significant implication is to explore more opportunities in maximising the potentials of CBT..

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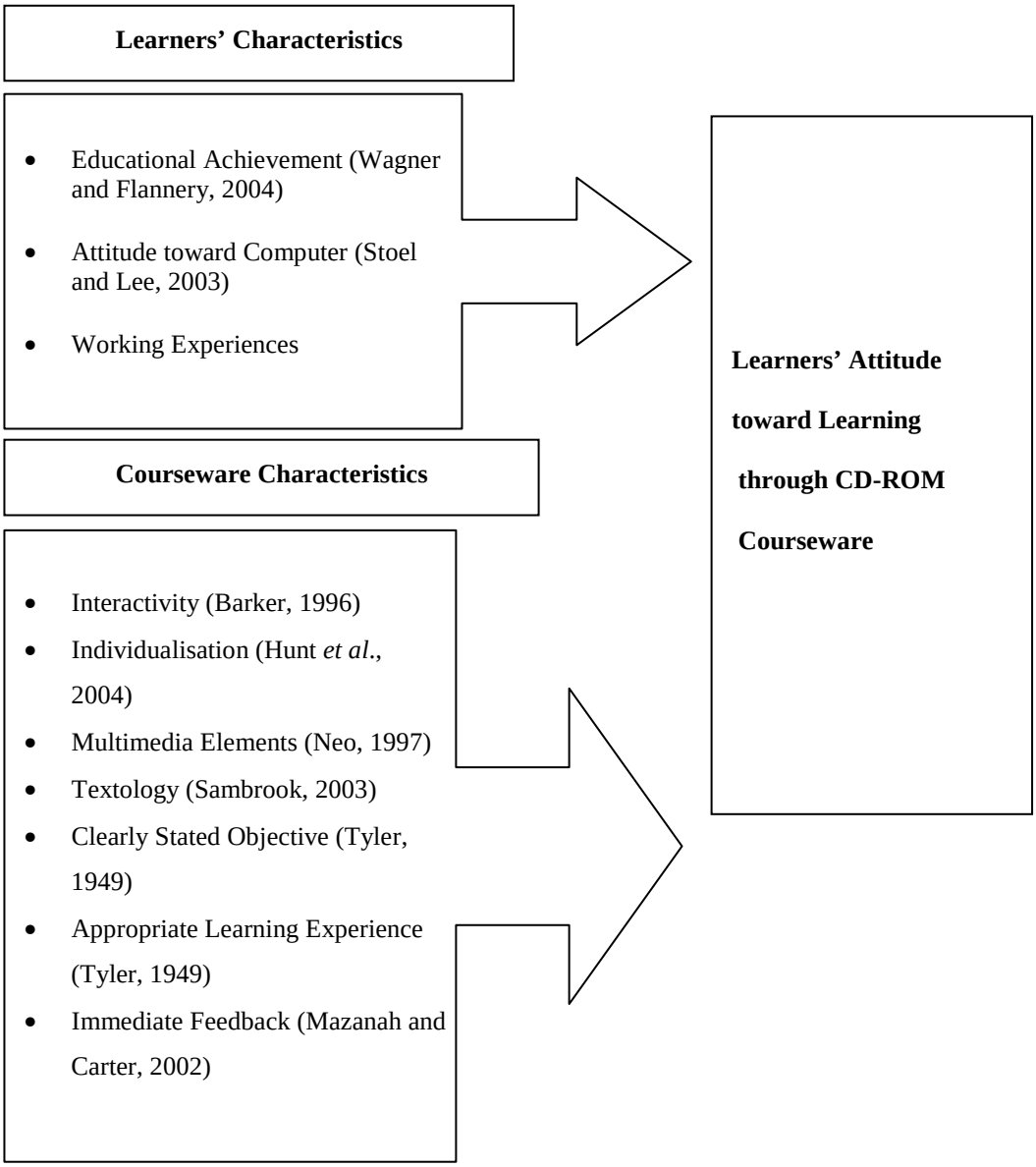

Figure 1: Factors associated with learners' attitude toward learning through CD-ROM courseware

Table 1: Relationship between ITBT and CBT

Main concept	Categories	Forms/sub-categories
Information technology based training (ITBT)	**Computer-based technologies** Computer-based training (Long and Smith, 2004) Computer-based learning (Sambrook, 2003)	CD-ROM, virtual reality, simulation and web-based (Long and Smith, 2004) Internet, intranet and stand-alone PC (Sambrook, 2003)
	Other technologies	Videotapes, slides, audiotapes and films (Read and Kleiner, 1996)

Table 2: Reliability of Variables in Pretest and Actual Test

Variables	Pretest		After Amendment		Actual Test	
	No. of items	Alpha reliability	No. of items	Alpha reliability	No. of items	Alpha reliability
Attitudes towards CD-ROM courseware	12	0.96	12	0.96	12	0.92
Interactivity	11	0.72	11	0.72	11	0.73
Individualisation	9	0.78	9	0.78	9	0.71
Multimedia elements	8	-0.19	6	0.93	6	0.74
Textology	6	0.56	5	0.67	5	0.70
Clearly stated objectives	6	0.88	6	0.88	6	0.74
Appropriate learning experiences	7	0.88	7	0.88	7	0.75
Immediate feedback	7	0.38	6	0.75	6	0.76
Attitude towards computer	9	0.86	9	0.86	9	0.89

Table 3: Distribution of Respondents by Attitudes towards CD-ROM Courseware

Attitudes	Frequency	Percentage
Unfavourable (12-27)	0	0
Moderate (28-43)	30	23.8
Favourable (44-60)	75	76.2
Total	**105**	**100.0**

Table 4: Correlation between courseware's characteristics and learners' attitude towards learning through CD-ROM

Variables	n	r	p
Years of formal schooling	90	-0.20	0.01
Working experience	103	0.26	0.01
Attitude towards computer	105	0.66	0.00

Table 5: Correlation between characteristics of the courseware and learners' attitude towards CD-ROM courseware

Variables	n	r	p
Interactivity	105	0.50	0.00
Individualisation	105	0.50	0.00
Textology	105	0.85	0.00
Multimedia elements	103	0.52	0.00
Clearly Stated Objectives	104	0.38	0.00
Learning Experience	105	0.40	0.00
Immediate Feedback	104	0.60	0.00

Table 6: Checklist for CD-ROM Courseware

Courseware characteristics	Suggested checklist
Interactivity and Individualisation	1. The courseware is flexible in use. 2. The courseware enables learners to freely choose the subtopic they want to learn. 3. Learners can skip lessons they have already mastered. 4. Learners can continue from where they had stopped previously. 5. The courseware allows for self-paced learning. 6. Learners can repeat any lessons as they want to. 7. The courseware provides useful and informative "HELP" functions along the course.
Presentation of Text/Words	8. There are not too many text/words presented in one screen. 9. The way the text/words is presented on the screen is easy to read. 10. The fonts are comfortable to read. 11. The layout of text/words is comfortable to read (e.g. short sentence, point form/bulleted lists). 12. One screen present one idea or as little information as possible. 13. The text that is displayed on screen being read out is supported by background sound.
Appropriate Uses of Multimedia	14. The graphics in the courseware is appropriate used to illustrate the course content. 15. The multimedia used in the courseware makes learning easier. 16. The background sounds are not distracting. 17. The use of the multimedia contributes towards understanding of the course.
Clearly Stated Objective	18. The objectives of the course are clearly stated. 19. A clear course map is presented at the beginning of the course. 20. The contents of the course meet the stated objectives.
Appropriate Learning Experience	21. The course provides appropriate activities to allow learners to actively participate in the learning process. 22. The courseware provides appropriate exercises after every lesson. 23. The exercises given in the course are very challenging. 24. The exercises given become increasingly difficult. 25. The exercises given contribute toward the understanding of the subject matter.
Immediate Feedback & Reinforcement	26. The courseware provides immediate feedback to the learners' the responses. 27. The feedback given is humanised. 28. The feedback message given is clear. 29. The feedback given is informative and useful to the learning. 30. The courseware gives appropriate rewards upon the correct responses (e.g. Higher score, proceed to more challenging level).