

THE USE OF THE DBD (DIGITAL BOOK DISK) FOR EFFECTIVE TEACHING IN HISTORY

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Introduction

The primary significance and purpose of History Education is to provide present day individuals with 'experience in a nutshell' and to assist these individuals to understand the complexity of the present world. To serve this role, History Education depends on information transfer about yesterday. Therefore, it is important to take cognisance of the development of communication, and particularly the ICT-revolution, that is characterising the daily lives of modern individuals. This article will introduce the DBD (digital book disk) as affordable and robust electronic media to integrate the different communication genres and thus enriched the reporting on the history, the days of the past. This will enhance the relevancy of and meaningful learning in History Education in present day schools. The aim of the article is not to provide a step-by-step explanation of the development of the DBD as concept (because of the Intellectual Property and commercial considerations).

When a report is given, in the format of an article, on the development of new technologies, it is necessary to explain which methods that were used during the development. Usually in planning a research project, the decision is made before hand about which research methods are going to be used. However, in the case of the development of this new technology, a process of iterative and systematic critical reasoning was followed. Based on the critical reasoning, it was through a mixed (and not necessarily initially decided upon) application of several (applicable) scientific methods and processes, such as observation, analysis and synthesis, induction and deduction, that the development and refinement of the idea took place and resulted in the development of a new technology, namely the DBD (Stoker, 1961: 62-90; Mouton & Marais, 1989: 102; Mouton, 1996; 77-78; Harden & Thomas, 2005: 258) (Insert 1).

Several research projects, to test the outcomes of the previous mentioned development work, were executed (Van der Westhuizen & Richter, 2004, 2005, 2006a, 2006b; De Sousa; Richter & Nel, 2006; Golightly, 2006, Steyn & Dreyer, 2005). In these studies, the research methods typical of the quantitative as well as the qualitative research paradigms were used. The results of each of these projects provide further information to improve the features of the DBD, as concept. All the projects confirm the successful applicability of the DBD in teaching and learning. However, it was not through the research methods that the quality of outcomes of the research and development project was assured, but the quality assurance was found in the level to which the DBD support the provisioning of effective teaching and learning.

Insert 1

Methods of research

- Critical reasoning is an important research instrument when creating new knowledge or technologies, because “. . . it is what experts . . . engage in when they are doing some of their best work” (Bensley, 1998: 3). Critical reasoning is described as reasonable, reflective thinking that is focussed on deciding what to do and that involve the relevant evidence in order to reach a sound result (Ennis, 1987: 9). Critical thinkers must have the following characteristics, namely: knowledge of reasoning; a set of cognitive skills involved in reasoning; knowledge that is relevant to the particular problem or issue and a set of dispositions to think critically, eg the tendency to reason critically in approaching a question (Bensley, 1998: 5-6). The research methods of analysis, synthesis, induction and deduction are useful instruments in critical reasoning.

- The methods of analysis and synthesis are actions of reasoning in order to know. Analysis is the method through which the 'parts/elements/sections' of a 'totality' are identified, described and/or characterised with the optimal aim to acquire knowledge about the totality and/or the parts. The analysis exercise provides an opportunity to focus on the 'totality' as well as on the characteristics of the 'parts'. Synthesis is the method to combine the parts of a totality in a unit in order to acquire knowledge about the totality and/or the parts (Stoker, 1961: 85; Walsch & Downe, 2005: 204-205; Potter, 2004: 75-85). The synthesis exercise provide opportunity to link (perhaps in a different way) the parts in such a way that resulted in the better understanding or functioning of the 'totality'.
- Deduction is the process through which knowledge about the particular is 'afgelei' from the general knowledge and induction is the process through which knowledge about the general is 'afgelei' from the particular (Stoker, 1961: 80; Larossa, R. 2005: 853). These are also important tools in critical reasoning because the relation between the features of individual 'objects' and the generic features of the 'class of objects' provides valuable information.
- Observation is the process through which knowledge about a particular object or situation or setting is acquired through the careful systematic engagement of the researcher with/in the particular research field/object (Cresswell, 2003: 185).

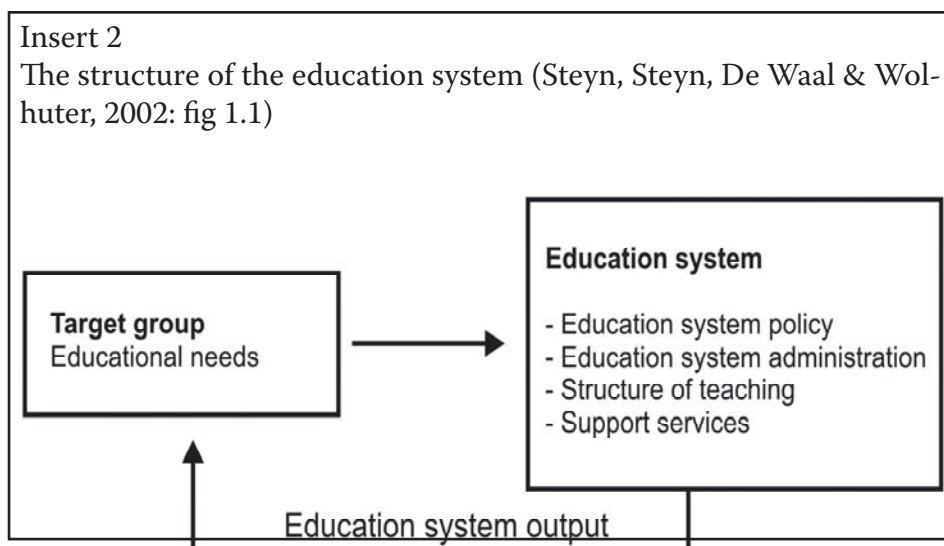
Characteristics of Education

• Education and the education system

Education can be defined as the planned activities of educators to support learners to acquire the required competencies (knowledge, skills and attitudes) to prepare themselves for their different roles in life (Steyn, Steyn, De Waal & Wolhuter, 2002: par 2.3.2).

The education system is generally accepted as the major vehicle to distribute effective, organised education throughout a particular country. Therefore, the primary task of the education system is to provide in the real education needs of the inhabitants of a particular country (Insert

2). In the education system the capacity to provide effective teaching and learning should be provided while simultaneously increase the productivity in education. The education system should provide the opportunities to change education according to the (modern) teaching and learning needs of the education clientele and thus include modern teaching practices into the education environment.

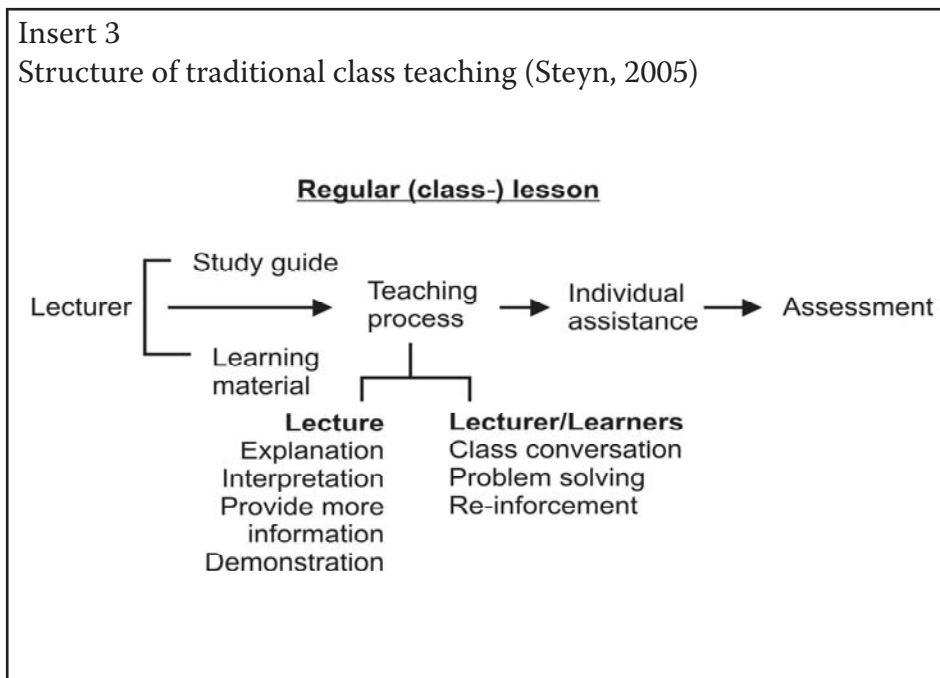


• **The traditional view about education**

Education, or effective teaching and learning, was traditionally viewed as the face-to-face interaction between the educator and the learner. During this interaction the educators teach/support the learners regarding the acquisition of the required outcomes. The educator provides the learning aims and the learning materials and, in the class, provides the context, explains the new information, provides information not in the learning material and provides opportunities for problem solving and re-inforcement (Insert 3). Education was also generally viewed as teacher directed, linear, sequential activities, starting at the provisioning of the learning material, followed by the class meeting and ending at assessment (Insert 4). Transfer of information was primarily through the spoken and the written word. However, the teaching and learning scene has changed completely.

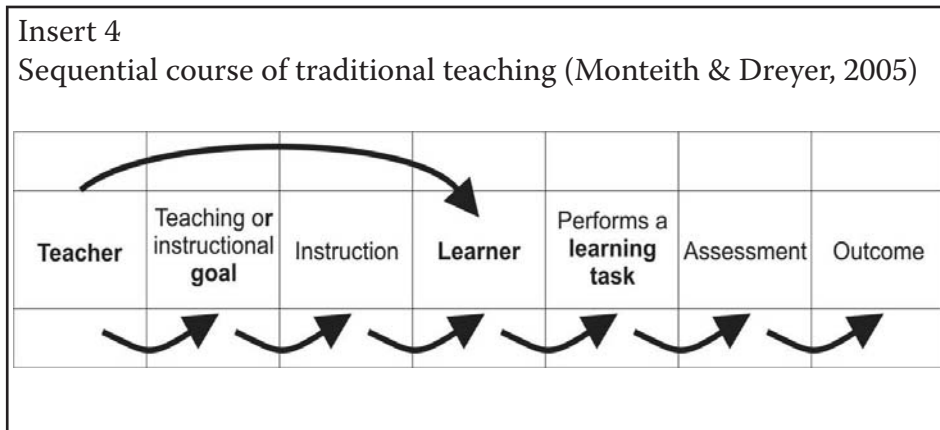
Insert 3

Structure of traditional class teaching (Steyn, 2005)



Insert 4

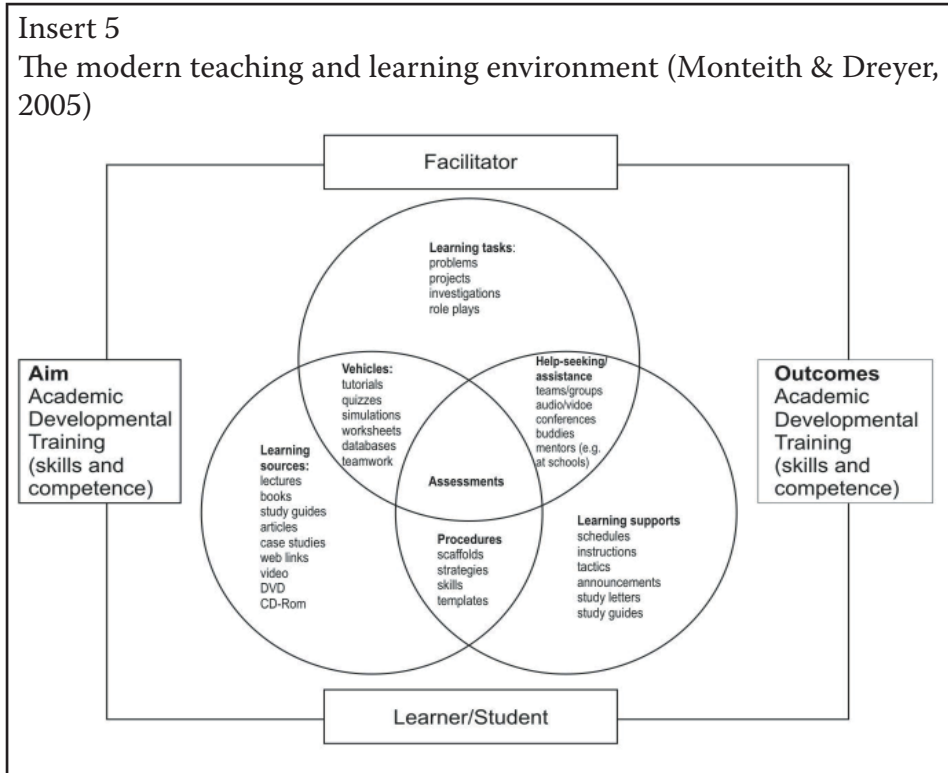
Sequential course of traditional teaching (Monteith & Dreyer, 2005)



• **The modern view about education**

According to modern theories and practices, education is provided in a learning environment that does not function linearly. Teaching and learning is not a linear activity, but is rather a self-guided tour at the hand of a road map, eg a study guide, and a compass, namely the support provided by educators to the learners. Three main elements in the design of relevant learning activities are the learning sources, the

learning tasks and the support mechanisms. Learners do not only interact with the educator but the interaction is multi-dimensional and with several sources, such as the educator, peer groups, experts and different types of expert information (Insert 5).

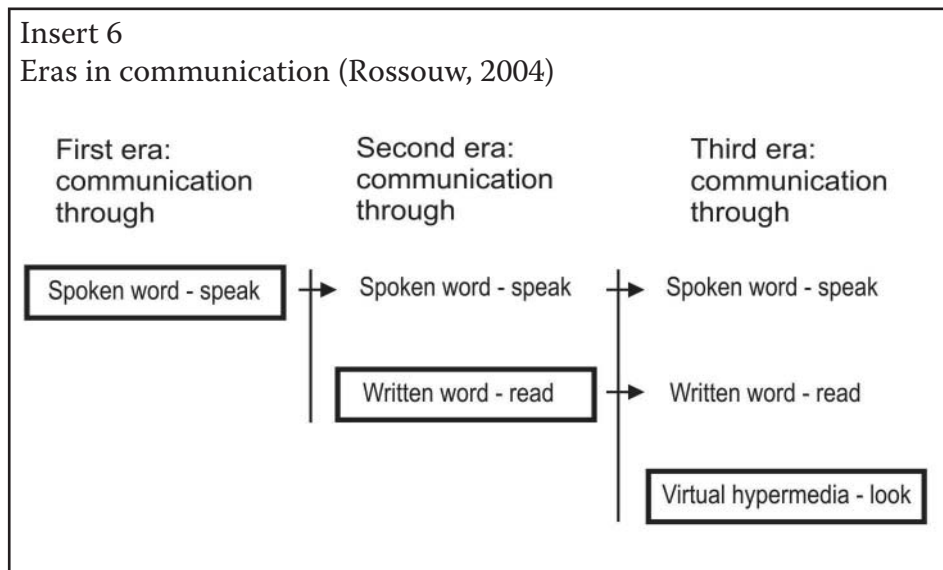


♦ **Modern education and communication**

According to Rossouw (2006), the developments in the history of mankind can also be illustrated by the history of communication. Communication developed from an era where only the logosphere was used, to the second era during which the logosphere and the graphosphere were used up until the present era characterised by the use of the logosphere, the graphosphere and the video sphere (Insert 5).

One of the primary prerequisites for effective teaching and learning is quality communication. The quality of communication used for the transfer of (new) information will co-determine the success of modern education. Therefore, it is of paramount importance to use and integrate the modern types of communication in order to realise the mod-

ern way of effective History Education.



The digital Book Disk (DBD) for information transfer in History Education

♦ Introduction

The integration of the three types of communication, namely the spoken word, the written word and the virtual hypermedia, is generally called e-communication. The computer, the Internet and e-books are presently accepted as the primary media for e-communication. However, the computer infrastructure required for the use of e-communication is expensive, fragile, susceptible to infection by viruses and the computer programmes used are constantly changing. These obstacles are the reason why a discussant from the Chicago University, USA, stated at the Conference of the Book (Oxford, September 2005) that the e-book will not be generally accepted until the 'paper-back version' of the e-book has been developed.

♦ Features of the DBD

Due to the fact that television and the DVD may be regarded as common property in the world as well as in South Africa, even in the squatter camps where electricity, television and DVD-players are commonly

available (Insert 7), it was decided to use the DVD-basis for the DBD and not the CD with computer programmes as basis. Because the the underlying programming of DVD does not change often, the DBD can be shelved for longer periods than a CD, the use of which is limited due to ever-changing computer programmes. In addition, the DVD-basis is not susceptible to computer viruses. The DBD can be read by means of any DVD-player on any television. However, the use of portable DVD-players is preferred (Insert 8). Therefore, the DBD may perhaps be seen as the paper-back version of the e-book. .

The structuring of the information on the DBD was primary determined through the iterative application of analysis and synthesis. These provide a mechanism to isolate particular features of the backbone of the DBD as well as the different types of inserts and correct identified contextual, format and technical problems. The combination of the different parts of the DBD into a user-friendly unit could also constantly been addressed. By using induction and deduction throughout the process to evaluate the individual DBD's, as tested in individual projects, against the generic features, as becoming clear in the combination of all the projects, constant development could take place.

Therefore, the format of the DBD consists of the text enriched with different types of inserts (Insert 9). The text is used as backbone of the DBD because it enables the readers to, at their own time, scroll through the DBD while the inserts provides for the enriched information.

Insert 7

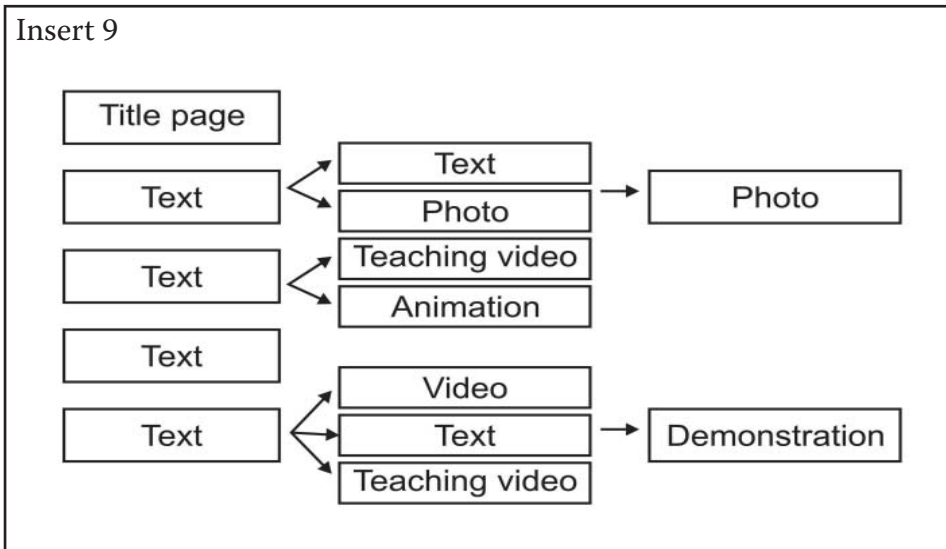
Photo of squatter camps with electricity



Insert 8

Photo of portable DVD-player





The text

The DBD is text-based, which implies that the text forms the back-bone of the DBD. The text on e-material should be different than on paper; it should be short and focus on the core of what one wishes to transfer. Moreover, one does not explain or argue in the text as one would do on paper. Explanations, arguments and enrichment of the text are provided by means of the different inserts. The page length on a DBD is short and paragraphs should preferably not run over to the next page. Therefore, one has to write paragraphs consisting of no more than 140 words.

The individual inserts can be one of the following: Text, photos, animation, graphs, tables, power points and videos.

The inserts

Different types of insert may be used to further illustrate, demonstrate, explain and enrich the (back-bone) text. The inserts are also particular the place to use the logo- and the videospheres. The following are typical examples of inserts:

Text inserts

Seeing that the text, as backbone of the DBD, should be concise and one-dimensional, further explanations may be provided in text format (Insert 10).

Insert 10

Text inserts

Text inserts should however also, as in the case of the backbone/central text, not be of an elaborate nature, because people reads differently on the electronic media. Large sections of text should be provided on paper, because that is the advantage of paper-based text. Readers read large pieces of text easier on a paper-based medium.

◆ **Photo inserts**

The saying goes: ‘A photo speaks a thousand words.’ Photos may be used for various purposes, for example to explain and illustrate the structure of an unknown building in a foreign country or to elucidate the characteristics of a rare painting (Insert 11).

Insert 11

Photo of unique building



Painting of Van Gogh



- **Animation inserts**

The animation inserts are very powerful tools to illustrate and explain the functioning of real life objects. The animations are also a direct integration of the logo- en videospheres.

- **Video inserts**

The video inserts also serve as powerful tools to illustrate, explain or provide readers with more information on an unknown object or particular real life situation. Another advantage of videos is that they can be rewound by the viewers to have another look. Congruent to the viewing patterns of modern TV viewers, it was clear that the video clips should not be too long and should relate to the intended viewer market. The video inserts can be broadly divided into two types, namely the teaching video and the information video.

- The teaching video refers to specific videos manufactured to assist learners in reaching the learning outcomes. The teaching videos may be presented in the format of single conversations, dual conversations or multi-conversations. The single conversation is usually used when the teacher or lecturer teaches. In this case, he/she may

use the power point or document camera during the presentation, similarly to what he/she would have done during a class presentation. The dual conversation can be used in a situation where the teacher explains a particular topic to a learner, whereas the multi-conversation can be used in a situation where more than two experts for example discuss a particular issue.

- The information video refers to 'general' videos obtained from, for example, a television news programme, or specific manufactured videos. These videos usually explain or illustrate real life situations or objects. The real advantage of these videos is that one is able to effectively link learning material with real life applications.

Important

It is important to remember that the different types of inserts serve a particular aim, namely to add extra information and to enrich the learning material of the learners. Therefore, the inserts should be chosen wisely in order to form part of the back-bone text of the DBD and in order for each insert to effectively fulfil its particular role.

Pre-request regarding the compositioning of the DBD

As a result of the completed and current research regarding the application of the DBD in teaching (cf. Golightly, 2006; De Souza, Richter & Nel, 2006; Van der Westhuizen & Richter, 2005 & 2006; Potgieter; Steyn; Roeloffse; Basson; Steyn & Nel, 2006) as well as of the development of the DBD, the following prerequisites for the composition of the DBD are evident:

- The contents of the text as well as the inserts should clearly relate to the level of development and particular interests of the target group.
- Text, as well as inserts, should be concise in terms of length and contents and should focus on the aim of the DBD. For example, a video insert should not be longer than five minutes. If a longer video insert is required, it is better to divide it into smaller clips and link it to different parts of closely related text.

- The technology should be user friendly and should operate without hitches.
- The outlay of the DBD should relate to the needs and general preferences of the target group. Learners in the Foundation Phase, for example, prefer a different kind of letter font, background colour and page layout and also appreciate a distinct kind of humour in the videos.
- Real life inserts seem to be preferred and have more effect (similar to reality TV) than, for example, videos that are formally video-taped in a studio. However, the aim of the DBD will determine the types of insert.
- It is important to vary the types of insert used in a particular DBD.

The DBD and meaningful learning

It must be remembered that the DBD is an e-book, and not a computer document. Therefore, the DBD is not interactive in the same way a computer programme is interactive. The DBD also does not replace the paper-based book (Insert 12), but fills a unique niche, namely to provide a concise and enriched transfer of information by means of a single basis (the DVD-disc). Particularly relevant to teaching, the DBD also provides guidance to learners regarding their responsibility to learn the particular contents in order to acquire the relevant competences.

Insert 12

Paper-based text (Steyn & Dreyer, 2005)

The need to read will always remain and will be determined by the needs of the readers. The following are examples of such paper-based material:

- Long argued reports: It is easier to read long text on paper and presently it is more user friendly to scan this paper-based material than on e-format.
- Short executive reports: Because of the cost and accessibility factors, it is easier to print and access a short report on paper than putting it on the electronic media.

- Flyers and advertisements: Flyers and advertisements on paper will be more effective, for example, amongst a crowd at a fair. On the other hand, a traveller will prefer an SMS-message to locate a B&B in a foreign city.

The research results currently available on the effectiveness of the DBD regarding meaningful learning clearly supported the relevant literature on the influence of multimedia on meaningful learning (cf. Mayer, 2001). The research indicates that the DBD, as multimedia source, increases the quality of verbal and visual information transfer and promotes the retention of the information (Insert 13).

The use of the DBD clearly supports the principles of the constructivist theory on learning. This may be summarised as follows (cf. Schunk, 1996: 208; Ram, 1996: 89; Ertmer and Newby, 1996: 1-24):

- The DBD supports the individual learners in developing their own concepts based on their prior knowledge as well as new information.
- The learners can better manage their own learning because of the availability of rich information as well as the guidance provided on the DBD by the educator.
- The autonomy of the learners is developed because they can scroll through the DBD and read/view as they wish.
- The use of the DBD supports the usage of alternative sources of information.
- The learning content is more relevant to real life situations than information on paper-based learning material due to the fact that video clips may, for instance, be used.

Insert 13

The pre-requisites as result of the said research, relates to the following design principles in the literature (cf. Mayer, 2001: 186, 191; Mayer & Moreno, 2003:44; Weinstein & Meyer, 1994: 16) and can be summarized as follows:

- Better transfer occurs when learners receive verbal and visual information.
- Related verbal and visual information should be closely linked.
- The core (cause-and-effect explanation) information should be used without extraneous verbal or visual information.
- The different types of information should be integrated (in such a manner that it addresses the visual as well as auditory channels of the human information-processing system).
- The integrated verbal and visual information should be easy to store and to revisited.

Conclusion

History teaching should be alive in order to support the value of History Education. Therefore, it is of importance that the information transfer includes all the types of present day communication, namely the inclusion of the logosphere, the graphosphere and the videosphere. The DBD fills this role and should be used to enrich History Education and at the same time supports meaningful education.

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