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# FORMAL FEATURES AS A DESIGN FACTOR OF VIDEO SEGMENTS IN INTERACTIVE VIDEO PROGRAMMES

*P.W. Verhagen, Department of Education, University of Twente, Enschede, The Netherlands*

## **Abstract**

Video segments may be characterized by formal design features with respect to factors such as complexity of narration, mutual influence of picture and sound, use of super-imposed texts, information load due to technical terms. The presentation suggests ways to operationalize these factors and reports about an experiment in which the influence of these formal features was studied with respect to perceived information load of video segments by learners.

## **Introduction**

Interactive video may be conceived as the combination of the interactive capabilities of the computer and the audiovisual power of video. This combination is generally considered as a powerful medium for delivering instruction, nowadays often incorporated in so-called multi media systems.

An essential property of adding computer control to video programmes is the possibility to stop for questions or exercises, or to give feedback to students about their progression, at any desired moment. A simple but fundamental question is: What is the optimum moment to stop for the purpose of achieving maximum learning? The literature shows some ideas with respect to this question (see for instance Bork, 1987; Laurillard, 1987; Schaffer and Hannafin, 1986). In any case, very short segments may limit typical video design factors to build a discourse to such an extent, that the communication possibilities of video are not used to its full potential. On the other hand very long segments may offer more information than learners can handle. Verhagen carried out a study to gather insight in this matter (Verhagen, 1992).

## **Preferred segment length**

In that study, an experimental videodisc programme about cheesemaking was produced. This programme contains 252 information elements which form a connected discourse of 36 minutes if the programme is played linearly without stopping. An information element is defined as one uninterrupted statement of the narrator about which one factual question can be put. The controlling computer program is in a way, that the video programme can only be started or stopped

between two information elements. This causes video segments of the programme always to consist of whole numbers of information elements.

The programme was used to find out what segment lengths are preferred by learners. In the main condition of the study 117 subjects (university freshmen) participated. Each subject worked individually with the programme. This worked as follows:

The subject started the programme and then watched it until he/she decided - for whatever reason - that it was time to ask for stopping by pushing a mouse button. The programme consequently stopped at the end of the information element in which the stopping was requested. The subject then answered all questions about the segment he/she just saw. Next feedback was given. For any question that was answered wrongly, the related video fragment was repeated followed by a second attempt to answer the question. As soon as feedback was completed, the subject was allowed to continue the programme from the beginning of the information element that followed on the one in which he/she stopped. In this way, the subject divided the video programme into segments by the repetition of watching, stopping, answering questions, getting feedback (with build in repetition of video parts with respect to missed questions) and starting the next segment.

The results showed self-chosen segment lengths of which the means per subject varied from 2.19 to 87.50, with a mean of mean length of 12.70 (standard deviation 11.77).

### Segment length as a function of the position in the programme

Within the programme, the mean segment length appeared to vary as a function of the position in the programme: subjects as a group appeared to prefer shorter segments at one place in the programme than at other places. It could be that some parts of the programme are perceived as being easier than other parts. The presentation will try to analyse this phenomenon. It concerns the following question:

"To what extent influence formal features of video segments the information load of these segments as perceived by the learners?"

The formal features that are studied are:

- complexity of narration (with respect to the propositional structure of narrated sentences);
- the use of short supporting super imposed texts on screen (that were used in about one third of the information elements);
- the occurrence of technical terms in the narration;
- the tuning of the narration to the images (sometimes not entirely correctly described as between channel redundancy).

In the presentation, the way in which these factors are rated and analysed are described and design issues will be discussed.

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