

**CHAPTER VII**  
**TEACHING AND LEARNING AIDS IN**  
**THE LESSON STRUCTURE**

P. J. van Zyl

Rand Afrikaans University

**1. INTRODUCTION**

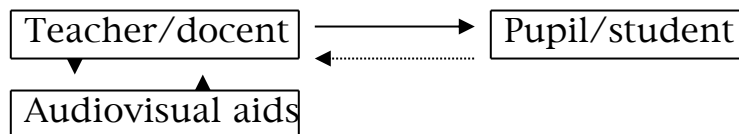
When there is talk of teaching and learning aids in the lesson situation, by no means is there an attempt to plead for their use in teaching. At this stage of teaching, we (ought to) have already advanced far enough so that it no longer is necessary to make a case for the use of media. Research has shown that if used appropriately and in the right place, they contribute to purposeful teaching. A few relevant terms are considered briefly.

**2. TERMS**

**2.1 Audiovisual aids\***

Certainly, the best-known and most used term is "audiovisual aid". This amounts to a teacher or docent using some aids to improve his/her teaching. These aids are directed particularly at the auditory and/or visual senses (separately or together). This is represented as follows:

**Figure 1: The use of audiovisual aids**



(Hinst, 1971, p 43).

---

\* Based on Van Zyl, P. J. (1977). Onderwystegnologie in universitere verband. Publication Series of the Rand Afrikaans University, No. A95.

Various authorities agree that this approach is one-sidedly attuned to apparatuses without considering whether they make a real contribution to improving teaching (Hinst, 1971, p 39; Sekerak and McDonald, 1969, p 47; Grayson, 1976, p 121). Janssen (1969, p 54) even talks of "gadgeteers" when referring to advocates of this approach. Hinst (1971, p 39) summarizes this as follows: "The 'gadget' approach of the last 20 years, which was confined to propagating the technical possibilities of media, catering to a minimum of software, in the last analysis, has failed."

Various reasons can be offered as to why this approach has not made much of a contribution to renewing and improving teaching. The most important are the following:

1. The excessive emphasis on apparatus has restrained the meaningful development of programming (Among others, see Oettinger, 1969, pp 157-158).
2. The great stress on apparatus has led to a continual swing of the pendulum from the use of an apparatus (e.g., 16 mm moving picture projector) to what has followed (e.g., television). Each new apparatus developed is then presented as the best aid (See among others Sekerak and McDonald, 1969, p 47).
3. The mentioned emphasis on apparatus evoked a negative reaction from very right-thinking teachers and docents because a lot of money was spent on apparatuses which went unused. This negative reaction was stimulated further because proper provision was not made for planning and producing programs.
4. Little resulted directly from a meaningful integration of media into teaching.
5. Research on the use of aids in teaching continually resulted in no differences between teaching with and without aids (Among others, see Campeau, 1974, p 31; Solomon, 1976, p 25).

An analysis of the situation in South Africa indicates that we are still largely in the stage of using audio-visual aids. A first breakthrough to something **more** than audio-visual aids began to be noticed (See among others Conradie, 1977; Meyer, 1974; Strydom, 1976). The ground breaker of this development was certainly the South African Army's College of Educational Technology.

## 2.2 Teaching aids

Van der Stoep et al. (1973, pp 130-131) use the term "teaching aid" to summarize instructional and learning aids. Instructional aids are what a teacher uses in presenting a lesson, while learning aids are used by the pupils. This is a very fine distinction, and it often happens that, in one period, the same teaching aid can be used both as an instructional and a learning aid (e.g., a chalkboard).

## 2.3 Media\*

There is a wide diversity of standpoints about what is meant by media in teaching. De Cecco (1968, p 527) represents the approach concerning audio-visual aids which agrees with the above pronouncements as follows: "The electro-mechanical devices which act as middle conditions between the student and what he is to learn." Here the emphasis is largely on apparatus.

Gerlach and Ely (1971, p 282) define a medium as any person, material or event which creates circumstances which enable the pupils to acquire knowledge, skills, and dispositions. De Corte et al. (1974, p 189) go further and state that a medium is any means used or presented by a teacher to function in the teaching situation in connection with reaching a teaching aim. Thus, here there is mention of an integration of the medium into teaching, and in such a way that it is attuned to attaining aims.

From the literature, the use of the term "media" has consequences for the use of the term "audio-visual aids" (See among others Hinst, 1971, p 43). However, some authors such as De Cecco still use the term "media" as a synonym for "audio-visual aids", while De Corte et al., go much further. The views of the latter are entirely acceptable because they mention programs and apparatuses which do not function only as aids, but which are integrated into the teaching. The term "media" and "teaching media" will be used in this chapter with this meaning.

## 2.4 Teaching technology\*

As noted, the traditional approach to audio-visual aids has not led to a meaningful renewal of teaching. However, it is possible that the problem can be approached scientifically and, thus, can lead to a

systematic integration of media into instruction. Teaching technology possibly offers a solution.

Since the late 1960's, various overseas authors and commissions have attempted to describe the use of teaching technologies (Among others see Bjerstedt, 1969 p 48; Chapman and Unwin, 1969 p 9; Ely, 1972, p 36; Ericksson, 1969, pp 62-63; Filep, 1975, p 14; Gilbert, 1969, p 57; Hawkins, Hitchens and Wallington, 1974, p 85; Hinst, 1971, p 40; Oguri, 1969, p 36; Olson, 1974, p 78; Prigge, 1974, p 18; Silber, 1970, p 24). Since it is not possible to make a complete analysis of all the different approaches to teaching technologies within the space of this chapter, only a few influential works are considered.

As a point of departure, Janssen's (1969, p 56) view of Teaching technology is closely looked at. He defines Teaching technology as technical-scientific applications to teaching with a view to the aim and structure of teaching. This application arises through the mutual attunement of the scientific rules and conclusions about teaching (the didactic), and of the technical lawfulness of the apparatus to the desired aim and structure of teaching.

According to this definition, there is a technology because it has two components, i.e., a science and a technique. However, it is not merely a **technology**, but a **teaching technology** because the technical-scientific applications are directed to teaching and, indeed, are attuned to its aim and structure. If there is only a focus on the application of a technique to teaching, while the scientific (i.e., didactic) component is missing, this will agree with the view of the so-called "gadgeteers" who are "possessed" by the idea of using different types of apparatuses in teaching.

## 2.5 Summary

It is possible to talk past each other if we use different terms with various meanings. Whatever terms we use, our ideal is the complete integration of media into teaching and, thus, into each lesson. In the following section a closer look is taken of integrating media into teaching.

## 3. INTEGRATING MEDIA AND TEACHING

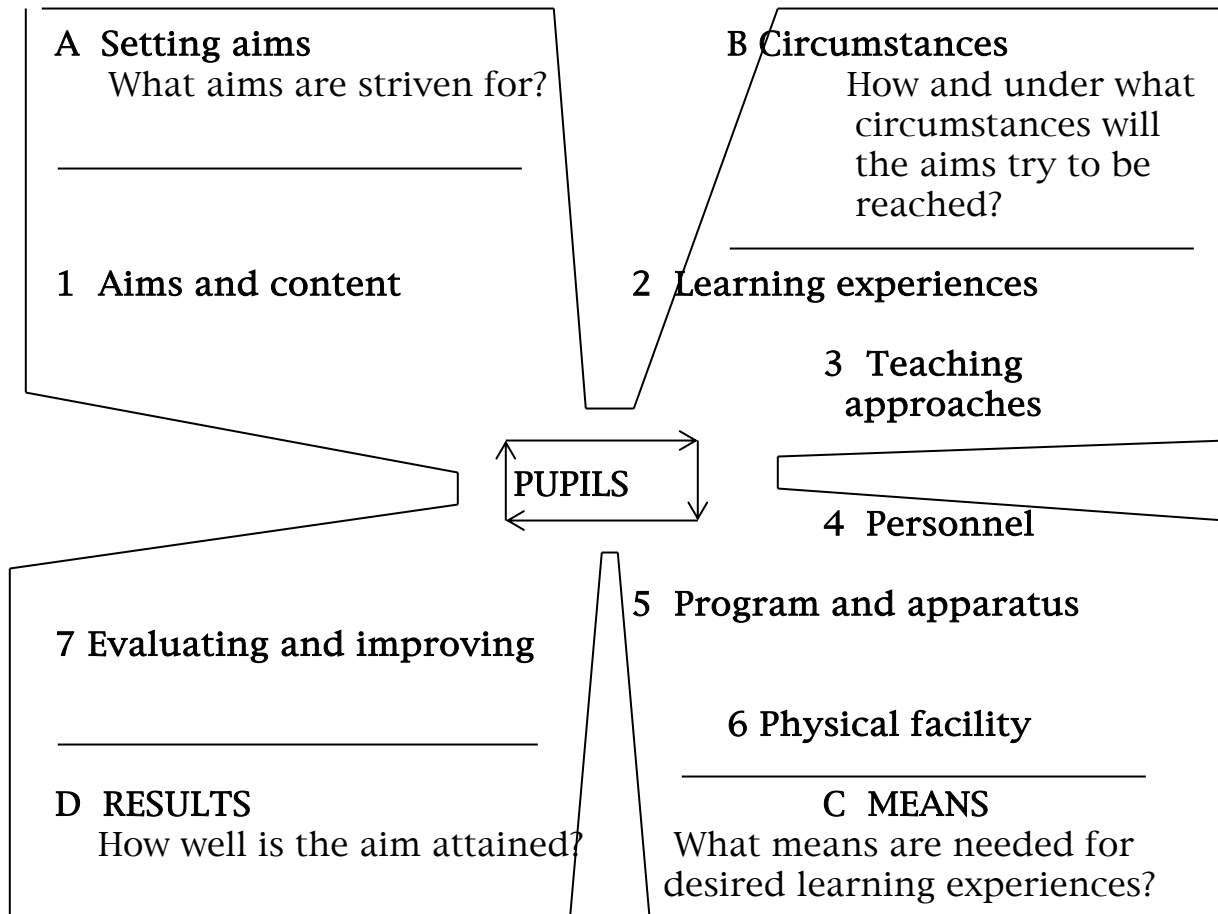
### 3.1 Introduction

The truly meaningful integration of media into instructing occurs with a whole complex set of theories, which cannot be dealt with here. In addition, several practical considerations (see section 5), and knowledge of media selection (see section 4) hold.

One of the most general theoretical points of departure is that choice of Teaching technology amounts to a systems approach to teaching (See among others Chapman and Unwin, 1969, p 9; Filep, 1975, p 14; Grayson, 1975, p 131; Hinst, 1971, p 39; Hitchens, 1973, p 3). Grayson (1976, p 121) briefly sums this up as follows: "Educational technology, therefore, is currently viewed as a total systems approach to education, incorporating hardware, course materials, and instructional and management techniques." A few approaches to integrating media with instructing follow.

### 3.2 Systems approach in Teaching technology according to Brown, Lewis and Harclroad (1977, p 5)

Figure 2



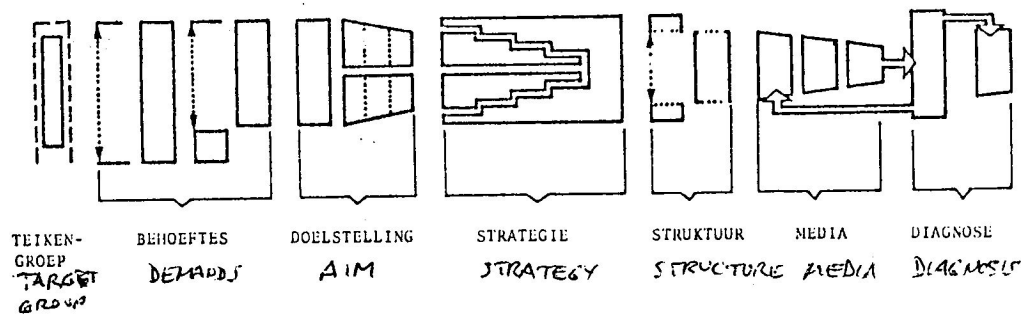
### 3.3 Systems approach in Teaching technology according to Cavert (1974, pp 8-9)

Figure 3

### 3.3 Systems approach in Teaching technology according to Cavert (1974, pp 8-9)

Figure 3

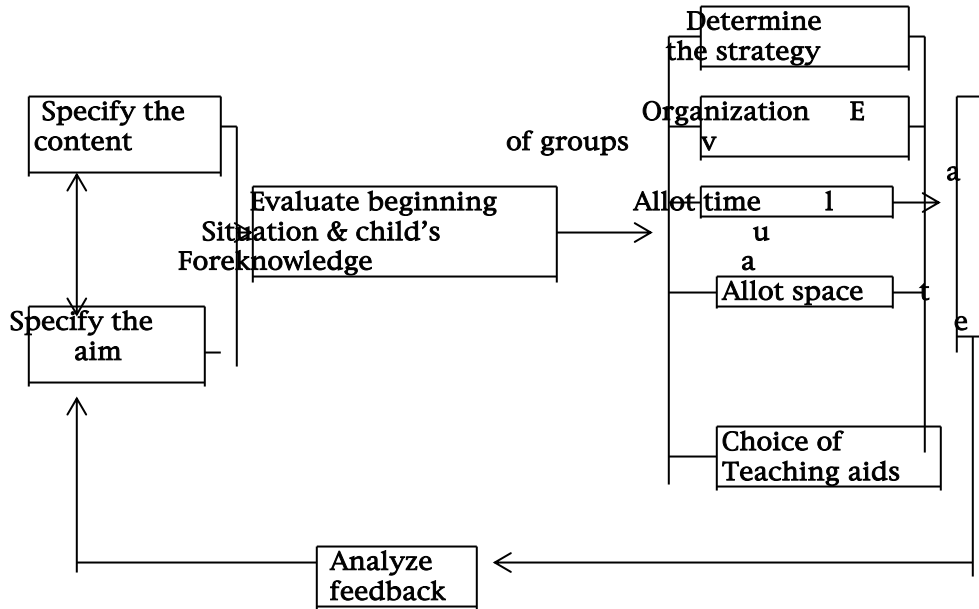
Figuur 3: SISTEMATIESE BENADERING IN ONDERWYSTEKNOLOGIE VOLGENS CAVERT (1974: 8, 9)  
 SYSTEMATIC APPROACH IN TEACHING TECHNOLOGY ACCORDING TO CAVERT



### 3.4 The elements of a systematic course of teaching according to Gerlach and Ely (1971, p 29)

Figure 4

### THE ELEMENTS OF A SYSTEMATIC COURSE OF TEACHING



### 3.5 Summary

In all three of the mentioned cases, media are only one of the components of a total system. They do not function merely as aids but are integrated into the lesson structure. The media which are going to be used in a lesson will be determined by the aims, the teaching strategies, etc. Thus, media can only be integrated into a lesson if that lesson is systematically planned according to the three mentioned systems or other similar ones.

Now, however, the problem is if all the above is noted, how does one select the most suitable media for a specific aim?

### 4. SELECTING MEDIA

Authors such as Fourie (1975), Anderson (1976) and Romiszowski (1974) have contributed greatly to our knowledge of selecting media. Since the entire problem of media selection is so

comprehensive, only a few guidelines from Romiszowski are discussed. The aim of this overview is mainly to indicate how media selection ought also to be a component of the lesson structure.

According to Romiszowski (1974, pp 56-58) the following factors influence the selection of media for a lesson:

1. Learning content;
2. type of learning task;
3. teaching strategies;
4. student/pupil characteristics;
5. practical limitations;
6. preferences of the docent/teacher.

The following two types of media characteristics must be considered in media selection:

1. **Essential media characteristics.** It is these characteristics which will improve the **clarity** of the presentation;
2. **Optional media characteristics.** It is these characteristics which will improve the **quality** of the presentation.

The docent/teach should first reflect on what **essential media characteristics** should be brought up in a lesson, and then give attention to the **optimal media characteristics** (See Romiszowski, 1974, pp 63-64).

Then, a list of appropriate media should be compiled in terms of the essential media characteristics. Now, eliminate the media which are impractical, unavailable or can't be used in the limited space. Romiszowski (1974, pp 71-76) gives a whole series of schemes for selecting different media such as visual, verbal, auditory media.

Then, there must be a choice of the final combination of media for each phase of a lesson.

The meaningful integration of media into instructing implies an accountable selection of media and not merely a haphazard choice.



## 5. SOME PRECONDITIONS FOR INTEGRATING MEDIA AND INSTRUCTING

The following are only a few preconditions which arise when reflecting on integrating media and teaching.

**5.1 The docent/teacher** should have a positive attitude about the use of media in teaching.

**5.2 Media** are only one component of the lesson planning which now must be interwoven with the other components.

**5.3 The docent/teacher** must have knowledge of the possibilities and limitations of the various media.

**5.4 The docent/teacher** must be skilled in using the media.

**5.5 Teaching** locations/classrooms must be equipped for media use.

**5.6 Apparatuses** and programs must be available.

**5.7 A support service** which, among other things, provides for apparatuses and programs, their repair and the production of programs is indispensable.

## 6. REFERENCES

Anderson, R. H. (1976). **Selecting and developing media for instruction**. New York: Van Nostrand.

Bjerstadt, A. (1969). Educational technology in Sweden. Systematic approaches to learning. **Educational Technology**, IX (11), 48-51.

Brown, J. W., Lewis, R. B. and Harclerod, F. F. (1977). **AV instruction: technology, media, and methods**. New York: McGraw-Hill.

Campeau, P. L. (1974) Selective review of the results of research on the use of audiovisual media to teach adults. **AVCR** 22 (1), 5-40.

Cavert, C. E. (1974). **An approach to the design of mediated instruction**. Washington: Association for educational communications and technology.

Chapman, A. S. and Unwin, D. (1969). Educational technology at large. Different emphases, different directions in different countries. **Educational Technology**, IX (11), 7-9.

Conradie, P. J. (1977). **Van onderrighulpmiddel tot sisteemonderrig: 'n inleiding tot die onderwystegnologie**. Durban: Butterworths.

De Cecco, J. P. (1968). **The psychology of learning and instruction: educational psychology**. Englewood Cliffs: Prentice-Hall.

De Corte, E. et al. (1974). **Beknopte didaxologie**. Groningen: Willink.

Ely, D. P. (1972). The field of educational technology: a statement of definition. **Audiovisual Instruction**, 17 (8), 36-43.

Eriksson, B. (1969). A systems approach to educational technology (with special reference to Swedish conditions). **Educational Technology**, IX (6), 62-69.

Filep, R. T. (1975). Learning, technology, and the potential increase of productivity in higher education. In Harrison, S. A. and Stolurow, L. M. eds. **Improving instructional productivity in higher education**. Englewood Cliffs: Educational Technology Publications, pp 14-19.

Fourie, H. P. (1975). **Communication by objectives**. Johannesburg: McGraw-Hill.

Gerlach, V. S. and Ely, D. P. (1971). **Teaching and media: a systematic approach**. Englewood Cliffs: Prentice-Hall.

Gilbert, L. A. (1969). Educational technology in the United Kingdom. A centralized impetus. **Educational Technology**, IX (11), 56-60.

Grayson, L. P. (1976). Instructional technology: on diversity in education. **AVCR**, 24 (2), 117-134.

Hawkins, S., Hitchens, H. and Wallington, J. (1974). Measuring educational technology: the first step. **Audiovisual Instruction**, XIX (6), 84-86.

Hinst, K. (1971). Educational technology - its scope and impact: consequences for educational policies and the organization of the teaching-learning process. **Educational Technology**, XI (7), 39-44.

Hitchens, H. B. (1973). The status of educational technology. In Brown, J. W. ed. **Educational media yearbook**. New York: Bowker, pp 3-8.

Janssen, W. P. (1969). **Onderwijstechnologie, een inleiding**. Purmerend: Meulenhoff.

Meyer, J. H. F. (1974). **The application of educational technology in selected areas and disciplines in university teaching**. Unpublished D. Phil. Dissertation). Johannesburg: University of the Witwatersrand.

Oettinger, A. G. (1969). **Run, computer run. The mythology of educational innovation**. Cambridge: Harvard University Press.

Oguri, M. (1969). Educational technology in Japan. Attention to "technology". **Educational Technology**, IX (11), 36-37.

Olson, D. R. ed. (1974). Media and symbols: the forms of expression, communication and education. **NSSE Yearbook**. Chicago: University of Chicago Press.

Prigge, W. C. (1974). Accreditation and certification: a frame of reference. **Audiovisual Instruction**, XIX (10), 12-18.

Romiszwowski, A. J. (1974). **The selection and use of instructional media**. New York: Wiley.

Salomon, G. (1974). What is learned and how it is taught: the interaction between media, message, task and learner. In Olson, D. R. ed. Media and symbols: the forms of expression, communication and education. **NSSE Yearbook**. Chicago: University of Chicago Press. pp 383-406.

Salomon, G. (1976). A cognitive approach to media. **Educational Technology**, 16, 25-28.

Sekerak, R. and McDonald, B. A. (1969). Two views of educational technology. **Educational Technology**, IX (8), 47-49.

Silber, K. H. (1970). What field are we in, anyhow? **Audiovisual Instruction**, XV (5), 21-24.

Strydom, A. H. (1969). Die onderwystegnologie. **Die unie**, 72 (9), 373-380.

Van der Stoep, F. ed. (1973). **Die lesstruktuur**. Johannesburg: McGraw-Hill.