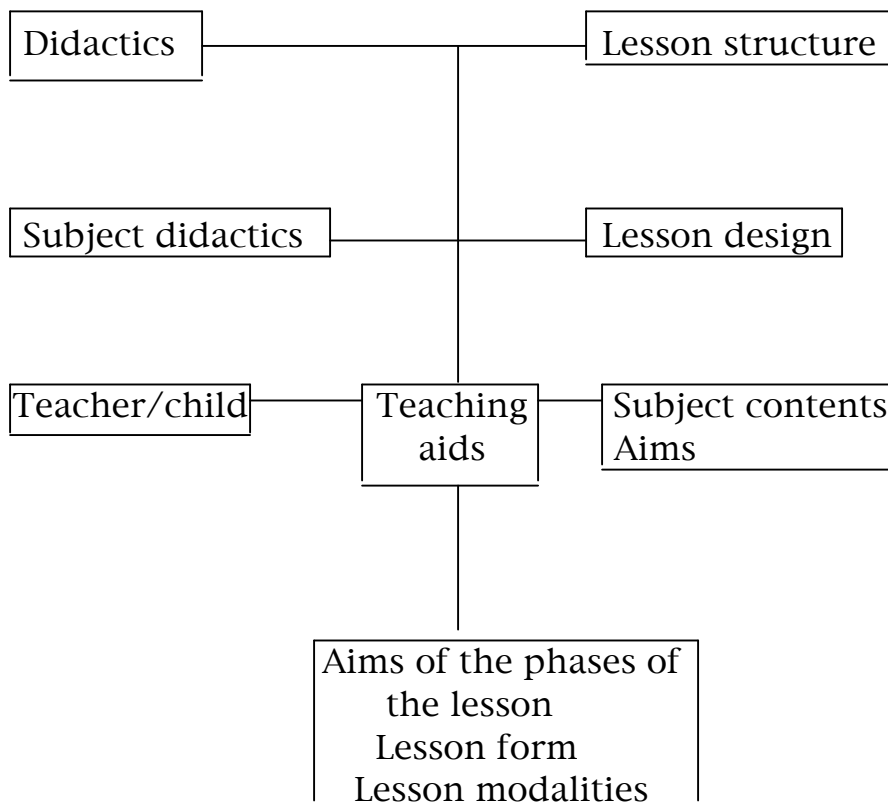The few aspects that are going to be indicated are mainly those referred to in the lesson structure and general subject didactic theory and that were treated in the previous chapters. It is these aspects that the student has to keep in mind when he designs a lesson.

According to Van der Stoep and Van Dyk (1977), the task and terrain of subject didactics is the explanation and coherence of teaching a **particular** subject by a **particular** teacher to **particular** children in a **particular** situation, namely, the formal school situation. The conspicuously repeated use of the word **particular** and the deduction that can be made from this is that teaching aids also have to be placed in this **particular** perspective.

The following representation gives a synoptic view of the aspects that are going to be indicated.

Aspects of the lesson design and teaching aids

Didactics		Lesson structure

Subject didactics		Lesson design

Teacher/child	Teaching aids	Subject contents Aims

Aims of the phases of the lesson
Lesson form
Lesson modalities

3. TEACHING AIDS AND THE PARTICULAR TEACHER

Each teacher is a unique person who in instructing manifests his own typically personal style. Van der Stoep and Van Dyk (1977: 273) describe this so: "In so far as there is mention of a teaching style, this means that a teacher turns himself to his practice in a particular way and form".

If the student thinks back on his own school career, he will remember well how particular teachers taught. Further, particular teachers, each with a unique style, make use of teaching aids in a particular manner. One is an outstanding storyteller and another isn't. Consequently, the one who isn't might use a teaching aid such as a tape recording of a good narrative. The one with a particular talent in language might give a magnificent description of something and the other might rather show a (microscopic) slide of it.

Many examples can be mentioned where a teacher does or doesn't implement teaching aids on the basis of personal abilities and limitations. Such choices are codetermined by the teacher's own person and style. Even so, it is important that he always take into account his pupils' potentialities so the teaching aids provide them with the best support for achieving the learning aim. Each student teacher needs to become clear about this for himself because this also will influence how he is going to implement his teaching aids in his own particular manner of teaching.
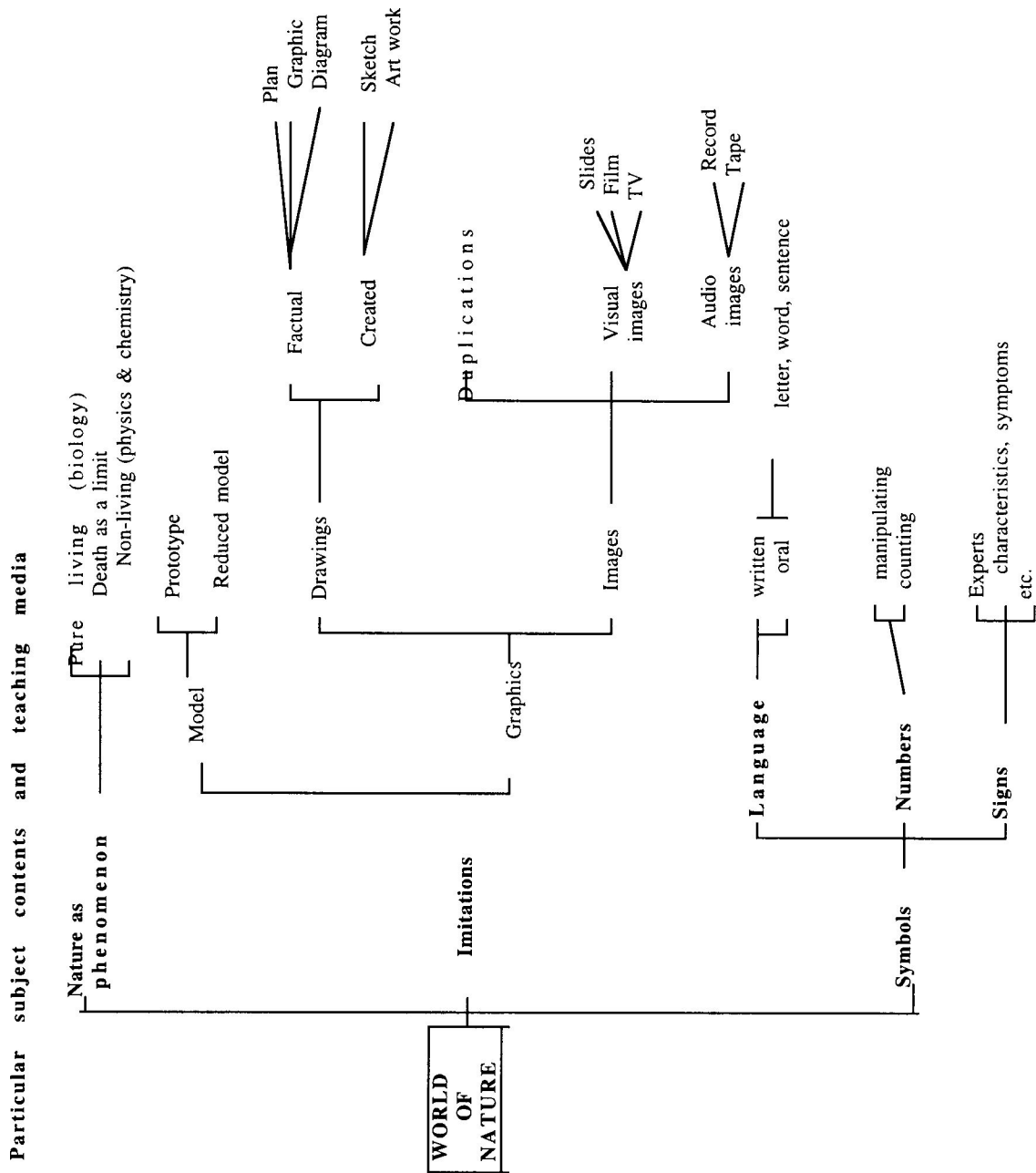
4. TEACHING AIDS AND THE PARTICULAR CHILD

Just as the teacher in the teaching situation has particular preferences, attitudes, manners of acting, etc., so do the pupils. In designing a lesson, in general, and teaching aids, in particular, the teacher plans for a particular class of particular pupils. Consequently, in light of the particular learning aim that he wants to achieve, the teacher also has to take into consideration the pupils' abilities and limitations. For example, one aspect is the `age` (grade) of the pupils. Certain teaching media are preferably used with younger pupils and others with older ones. Certain teaching aids

should be used differently with younger than with older pupils. Also, the particular learning aim that pupils have to achieve necessarily will influence the choice of a particular learning aid. From these few examples it is clear that in choosing teaching aids, the teacher needs to keep in mind the particular child/class for whom this choice is made.

5. TEACHING AIDS AND THE PARTICULAR SUBJECT CONTENT

In Chapter 1, Section 4.1, the issue of the unique nature of school subject matter content is addressed. It is obvious that each subject has a unique, specific nature. This has significance for the use of teaching aids in a particular subject.

Certain subjects deal especially with subject-object relationships, e.g., the natural sciences, geography and professional-technical subjects. Here, the pupil has to deal with a natural phenomenon, object, etc. In teaching this content, it certainly is obvious that the

Particular subject contents and teaching media

Nature as phenomenon
- Pure
- living (biology)
- Death as a limit
- Non-living (physics & chemistry)

Imitations
- Model
  - Prototype
  - Reduced model
- Graphics
  - Drawings
    - Factual
      - Plan
      - Graphic
      - Diagram
    - Created
      - Sketch
      - Art work
  - Images
    - Duplications
      - Visual images
        - Slides
        - Film
        - TV
      - Audio images
        - Record
        - Tape

Symbols
- Language
  - written
  - oral
  - letter, word, sentence
- Numbers
  - manipulating
  - counting
- Signs
  - Experts
  - characteristics, symptoms
  - etc.

WORLD OF NATURE

teacher will make use of real examples, models, replicas, representations, etc. as teaching aids. Thus, because of the unique nature of the content, it is possible to choose specific teaching aids to effectively present the content. The example on the previous page was selected from the natural sciences (Basson, 1978: 119).
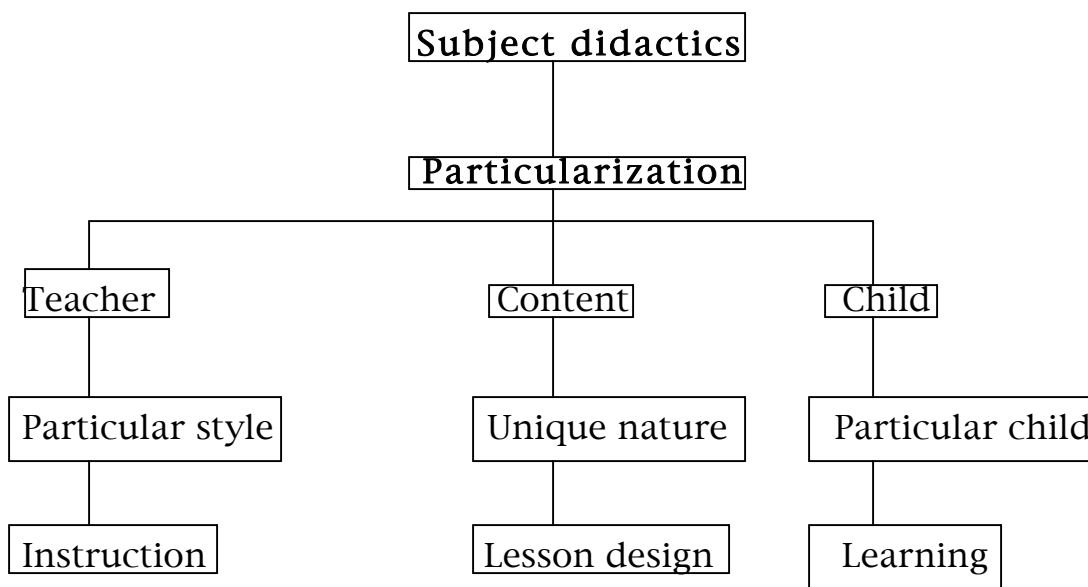
The example shows clearly that on the basis of the nature of the content of the subject and also the particular lesson (lesson design) the teacher makes a choice of the ways in which he, with the help of

a specific teaching aid, is going to present the learning content. The flowchart shows different possibilities. Take the structure of a flower as an example. From the flowchart it is clear that there are various teaching aids that can be chosen to present (unlock) this topic.

A classification of teaching aids also can be constituted in other subject areas to try to indicate the possible choices that exist on the basis of the unique nature of the subject. Briel's (1980) model for the choice of teaching aids is shown on the following page.

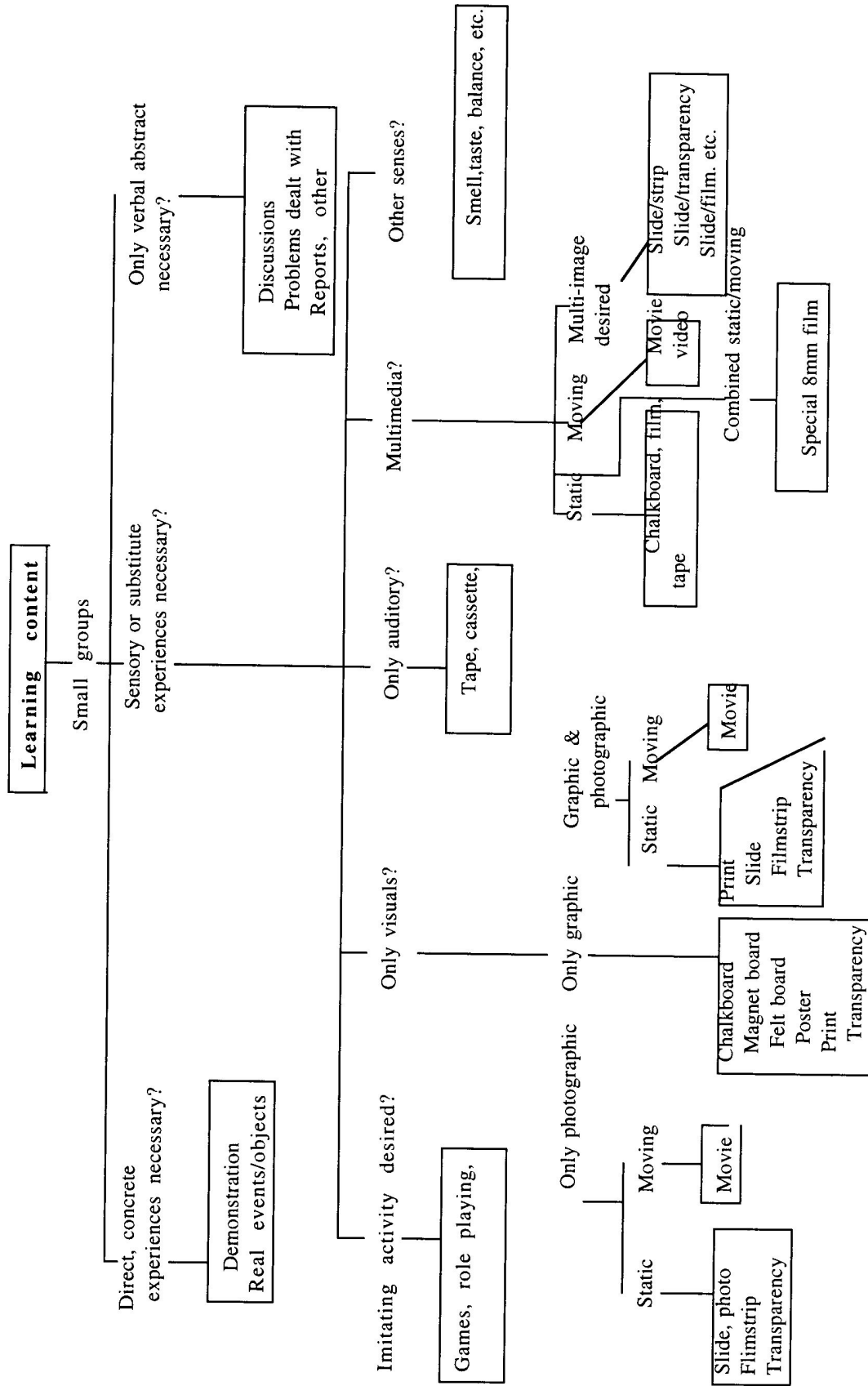From the above, the planning of teaching aids for a lesson is represented in summary as follows:

Particularization and teaching aids

```
                        ┌─────────────────┐
                        │ Subject didactics │
                        └─────────────────┘
                                 │
                        ┌─────────────────┐
                        │ Particularization │
                        └─────────────────┘
         ┌───────────────────────┼───────────────────────┐
   ┌─────────┐              ┌─────────┐              ┌───────┐
   │ Teacher │              │ Content │              │ Child │
   └─────────┘              └─────────┘              └───────┘
        │                        │                        │
 ┌────────────────┐      ┌──────────────┐      ┌─────────────────┐
 │ Particular style │      │ Unique nature │      │ Particular child │
 └────────────────┘      └──────────────┘      └─────────────────┘
        │                        │                        │
 ┌─────────────┐        ┌──────────────┐          ┌──────────┐
 │ Instruction │        │ Lesson design │          │ Learning │
 └─────────────┘        └──────────────┘          └──────────┘
```

Since the aspect now being considered regards the unique nature of the subject (and thus the content), it is necessary briefly to refer again to the reduction of the content and teaching aids.

6. Teaching aids and reducing the learning contents

Briel's model for choosing teaching aids

Learning content

Small groups

Direct, concrete experiences necessary?

Demonstration
Real events/objects

Sensory or substitute experiences necessary?

Only verbal abstract necessary?

Discussions
Problems dealt with
Reports, other

Multimedia?

Other senses?

Smell, taste, balance, etc.

Multi-image desired?

Slide/strip
Slide/transparency
Slide/film. etc.

Moving

Movie
video

Static

Chalkboard, film, tape

Combined static/moving

Special 8mm film

Only auditory?

Tape, cassette,

Only visuals?

Graphic & photographic

Static   Moving

Movie

Print
Slide
Filmstrip
Transparency

Only graphic

Chalkboard
Magnet board
Felt board
Poster
Print
Transparency

Imitating activity desired?

Games, role playing,

Only photographic

Static   Moving

Movie

Slide, photo
Flimstrip
Transparency

When a teacher is busy preparing (reducing) the content in designing his lesson, it is important to remember that at this stage he already has in mind teaching aids that possibly can be effectively used. The aim of reducing the learning content is to reveal what is essential about the particular lesson topic as well as their relationships (structure). See again analyzing and classifying (i.e., reducing) the content (Chapter 2, Section 2).

For each of the aspects, i.e., subject nomenclature, relationships, and skills, the teacher now considers in which ways he can use a teaching aid or aids to unlock or present the particular subject content. Reducing the content leads to formulating the teaching aim.

7. Teaching aids and teaching aims

The use of teaching aids should take into account the aims of teaching the subject and the parts out of which these aims are constructed. Thus, it is necessary that a thorough analysis of these aims be made and then in that light determine how the use of different teaching aids can contribute to attaining the overall and the component aims.

Here attention is limited to the teaching aim of a specific lesson. It is known that there is a distinction between a teaching and a learning aim. Later, the teaching aim, as the role of the teacher, will be considered when reference is made to the lesson form and modalities. But first, there only is reference to the learning aim, as the role of the pupil in attaining the learning effect or outcome after the course of the lesson.

Suppose that after a lesson, a ninth grade language class in Afrikaans has to be able to identify an adjective on the basis of its function and form. In light of this partial learning aim, the teacher ought to plan the ways he is going to implement the teaching aid (aids) to attain the stated learning aim in the most effective ways: is he going to take a piece from a prescribed work in literature and require that the adjectives on a given page be underlined, require that the function be deduced from a number of examples, compare certain differences in form with each other and classify them on the

chalkboard, etc. Thus, it is clear that what is aimed at (learning aim) has to be planned in order to implement the teaching aids (e.g., textbook, chalkboard).

Another striking matter is that there is mention of **sequence** (first the function and then the form of the adjective) as well as a particular **operation** expected of the pupils (identify: recognize and name). This necessarily means that the teacher has to plan how the teaching aids will be implemented successively and also how this is going to help the pupil perform the particular operation (learning aim). Hence, it is important that the teacher keep in mind the instructional and learning aims of the lesson in choosing teaching aids.

Yet another matter of relevance to the aims and the choice of teaching aids that only is referred to is the different aspects of lived experience (affective, cognitive, and normative) as described by Sonnekus (1973) and the cognitive and affective domains as differentiated by Bloom (1956). Conacher (1980; 26) refers to Bloom's domains and provides a synthesis in connection with teaching aids. (See next page).

From this it is concluded that a teacher with a specific aim chooses a particular teaching aid to be implemented in a particular area or combination of areas. Now one chooses a particular topic from the subject area. Next, one determines in which area(s) certain operations have to be carried out and which teaching aids can be used along with them.

In this connection, it is important to distinguish three aspects of a pupil's learning:

*an external impression that makes a particular sensory impression on the perceiving person;
*the inner "elaboration" of this impression into a unique representation of the matter in relation to the pupil's existing possessed experience;
*the expressions or creations by the person in language, art, formulations, designs, etc.

CLASSES OF LEARNING OBJECTIVES

	COGNITIVE	AFFECTIVE	PSYCHOMOTOR

1 — AUDIO AIDS
- RADIO
- GRAMAPHONE
- TAPE RECORDER

2 — PICTORIAL AIDS
- LINE DRAWINGS
- STILL PICTURES
- OVERHEAD TRANSPARENCIES

3 — MODELS
- MODELS
- LARGE 3-DIMENSIONAL MODELS

4 — FILMS
- FILMS
- TELEVISION
- LOOP FILMS

5 — SIMULATION
- SIMULATION
- AUDIO-VISUAL LABORATORIES

6 — PRACTICAL WORK
- FIELD TRIPS
- PRACTICAL WORK

Adapted from I. K. Davies, *The management of learning*, p. 27.

For a complete discussion, see Van Dyk (1980: 229). Teaching aids that are used effectively and purposefully can elevate tremendously the quality of the external impression.

## 8. Teaching aids and the aims of the phases of the lesson

It is by now known that the lesson has a particular sequence or course. Each of the phases in the sequence is directed to attaining particular aims (See Chapter 2).

Teaching aids can make a special contribution if the teacher implements them in light of these aims of the phases of the lesson. As an example, take the phase **functionalizing.** After the phases dealing with content as aim (i.e., as elemental), one proceeds to the further application and practice of the newly acquired content (content as means, i.e., as fundamental)). Functions such as practicing, applying, creating, and testing enter the foreground. Subject specific knowledge, skills and techniques now have to be practiced. Here it also can happen that these particular functions need to be carried out with the help of a teaching aid; for example, computing with the use of a hand calculator, interpreting a text with reference to a commentary on it; determining direction with a compass; sketching, e.g., with water colors.

Thus, each aim during the course of the lesson can be taken up and the teacher can plan how the teaching aid can contribute to effectively attaining each specific aim.

Previously reference was made to the roles of both the teacher and the child (See once again Chapter 3, Section 2.3). It is necessary that in his design the teacher determine in what ways a teaching aid will support him in his instructional function (guided-actualization) and the pupil in his learning function (self-actualization) or during joint-actualization.

Teaching aids and the teaching activity

```
                        ┌─────────────────┐
                        │  Teaching aids  │
                        └─────────────────┘
        ┌─────────┐                          ┌───────┐
        │ Teacher │                          │ Child │
        └─────────┘                          └───────┘
    ┌─────────────┐   ┌──────────────────┐   ┌──────────┐
    │ Instruction │───│ Teaching activity │───│ Learning │
    └─────────────┘   └──────────────────┘   └──────────┘
    ┌─────────────┐                          ┌──────────┐
    │ Aid/aids    │                          │ Aid/aids │
    │ support     │                          │ support  │
    └─────────────┘                          └──────────┘
  ┌───────────────┐  ┌───────────────┐  ┌───────────────┐
  │ Guided-       │──│ Joint-        │──│ Self-         │
  │ actualization │  │ actualization │  │ actualization │
  └───────────────┘  └───────────────┘  └───────────────┘
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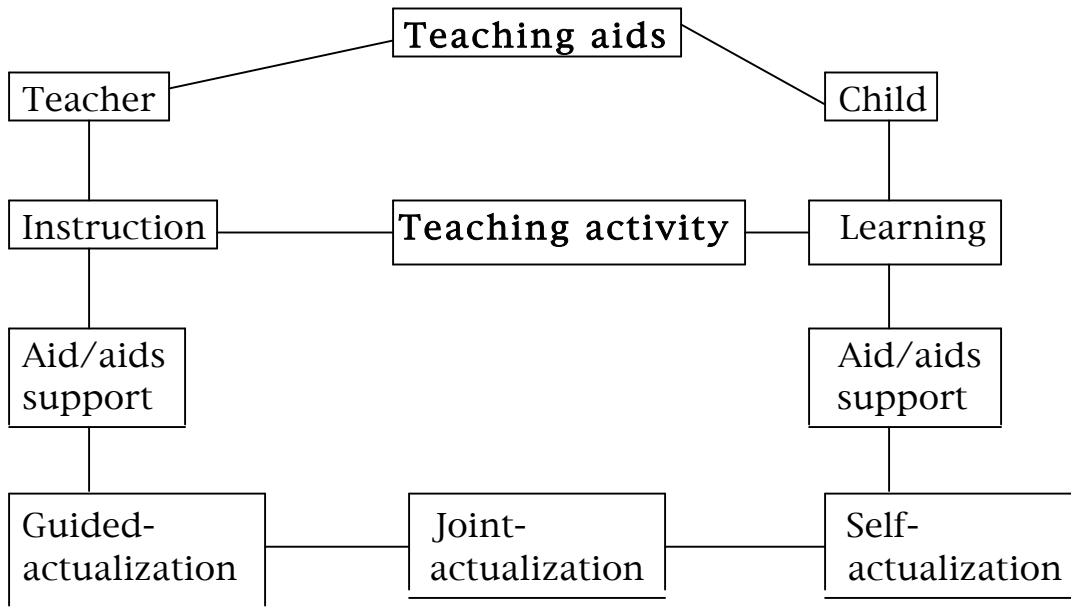
Examples of the support of instructional activities are:

> *clarification with the help of a model;
> *demonstration with the help of an experiment.

Examples where teaching aids support the learning activity:

> *calculate with the aid of a hand calculator;
> *perceive with the help of a microscope.

With the concept **task division** (functional division), Van Dyk (1976: 25) makes an additionally important distinction that makes it possible to facilitate the instructional and learning activities of the teacher and pupil, respectively, or even to take them over (in part or entirely). For example, the teacher can record information and use a tape-recording. Then, the aid takes over his instructional activity. Also, consider the above example of the hand calculator. The aid takes over the learning activity of the pupil, i.e., computing

(e.g., multiplication). One thinks here especially of the use of a calculator to support and direct arithmetic teaching.

Basson (1980: 46) indicates clear relationships among aims, functions and choices of teaching aids in the following scheme.

Summarized classification of principles for choosing teaching aids for a lesson

Learning aim (achievement aim)

1. Pupils must revise certain concepts with which they are familiar.
2. Acquire insight into two specific concepts.
3. Acquire insight into a specific concept.

Instructional aim

1. Orient the pupils, direct their insights into concepts.
2. Unlock (present) the new concepts.
3. Unlock (present) the new concept.

Function of instructor

1. He must initiate, motivate through purposeful questions.
2. By himself systematically and purposefully clarifying (dominant-subjective).
3. To clarify with the help of a teaching aid (dominant-objective).

Function of pupil

1. Active participation in the class or group discussion.
2. Is dependent on instructor and must observe accurately.
3. Is dependent on the instructor's interpretation as well as the content reflect in the teaching aid.

Choice of teaching aids

1. Systematize and order concepts on chalkboard or overhead projector or a number of appropriate slides.
2. The teacher still must interpret, clarify media that in themselves do not reflect the concepts; e.g., slides, prints, models, chalkboard.
3. Real examples, models, audio-visual aids, etc. The media must show (reflect) certain concepts or relationships that the pupil himself can observe.

Consequently, it is the responsibility of the teacher in his design to execute purposeful choices with the aim of attaining the optimal effect via his and his pupils' particular activities.
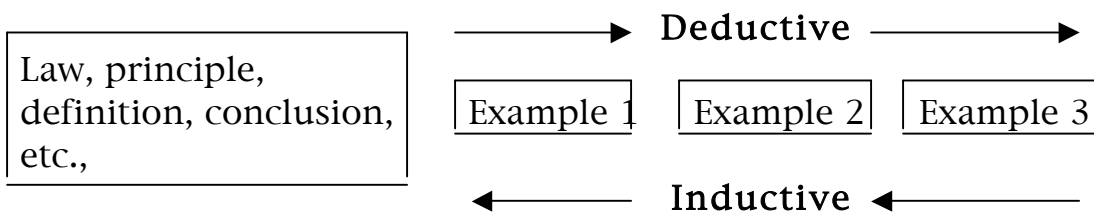
9. Teaching aids and the forms of a lesson

With respect to the lesson form, reference is made here only to the methodological principles (inductive and deductive) and to the principles of ordering the content. Then, in Section **10**, the ground forms and the methods are treated because they are closely related to the lesson modalities and especially to the modes of learning.

9.1 Inductive and deductive approaches

A summary overview of the approaches follows:

Methodological principles


```
                                    ──────────▶  Deductive  ──────────▶
┌────────────────────────┐
│ Law, principle,        │        ┌───────────┐ ┌───────────┐ ┌───────────┐
│ definition, conclusion,│        │ Example 1 │ │ Example 2 │ │ Example 3 │
│ etc.,                  │        └───────────┘ └───────────┘ └───────────┘
└────────────────────────┘
                                    ◀──────────  Inductive  ◀──────────
```

The deductive approach departs from a generalization (law, rule, etc.) and applies this to tests, illustrations, etc. in terms of particular **examples.** The inductive is the opposite: from a number of **examples**, the generalization (characteristic, principle, etc.) is inferred or discovered. In his design, the teacher plans how he is going to present his **examples:**

(a) **Real phenomena.** The phenomena of some subject areas can themselves be shown in class, e.g., samples of material, kinds of wood;

(b) **Three-dimensional imitations of phenomena.** This includes all models: enlarged, reduced, moving, static, etc.

(c) **Copies of the reality.** Visual: print, poster, slide, etc. Audio: record, tape recording, etc. Audio-visual: sound film, video film.

(d) **Language-symbolic production.** This includes all letters, words, signs, symbols, etc. that represent reality.

From the above, the teacher chooses the teaching aids that, according to his view, are the best **examples** to use for attaining the best effect.

9.2 Principles of ordering

The principles for ordering the content are the symbiotic, linear, chronological, etc.

As a variant of ordered content, reference usually is made to the **chalkboard organization** (**scheme**). This immediately brings up the teaching aid (i.e., the chalkboard). Here a variety of teaching aids can be used, e.g., transparencies, flash cards. However, these need not only be linguistic presentations even though they generally prevail. What is of importance is that the essentials of the phenomenon as well as its structure be reflected in the aid(s).

10. Teaching aids, form of the lesson (continued) and lesson modalities

The grouping of these aspects certainly indicates that there is a mutual relationship between the form of the lesson and the lesson modalities of any lesson. (See Chapters 3 and 4).

Swart (1977: 132) refers to the particular correlations between modes of instructing and learning. For each ground form, with its nuances, the correlated modes of learning are indicated. Basson (1978: 86) also indicates their reciprocity.

Modes of instructing	Modes of learning
Talk	hear
Say (meaningful talk--semantic)	listen (meaningful hearing)
Read-talk-say (symbolic-phonetic-semantic)	hear listen
Write	look see
Draw (indicate)	look see
Point out	look see
Fixate	look see hear listen

However, he goes further and indicates their relationships with teaching aids.

Modes of teaching	Teaching/learning aids	Modes of learning
Narrates	microphone	hear listen
Explains	chalkboard	hear listen look see
Communicates	prints	hear listen look see
Dictates	sound recording	hear listen
Reads	textbook	hear listen look see
Demonstrates	apparatus	hear listen look see touch feel sniff smell
Presents	model	hear listen look see touch feel
Shows	real example	hear listen look see touch feel sniff smell
Constructs	chalkboard	hear listen look see

On the basis of **repetition** of the correlated teaching and learning activities, supported by instructional and learning media, **patterns** or forms become discernible. Once again, this shows the close connection among lesson modalities, lesson form, and the use of teaching aids.

What is of particular importance, however, is that the modes of learning also have particular relevance for choosing teaching aids. If the teacher has knowledge of the modes of learning, he can plan for specific teaching aids. (For a description of the modes of learning see Sonnekus (1973: 67).

Example: perceiving

"Perception is the ordered, actual, factual, objective perceiving of the perceivable. Perceiving can occur across the entire range of the senses (vision, hearing, taste, touch, smell)." This means that many teaching aids can be used for one or more of the senses with which we perceive. (See once again the classification in Section **5** of this chapter).

Van Dyk (1973: 134) provides a detailed exposition of other modes of learning and particular teaching aids. He emphasizes that each particular mode of learning provides a good guideline for what the teacher has to keep in mind and that can help him in choosing teaching aids.

11. Conclusion

In the foregoing, teaching aids were put in the perspective of designing a lesson. A synopsis was provided of the aspects that are of particular concern for designing a lesson and for choosing teaching aids, e.g., the teacher, the child, the content, the forms of the lesson, the lesson modalities, and the aims of the course of the lesson. All of these aspects of planning a lesson have relevance for choosing teaching aids and the teacher has to take them into account in his design.