CHAPTER III

PHASES OF A LESSON

P. J. van der Merwe

Gold City (Johannesburg) Teachers College

1. INTRODUCTORY COMMENTS REGARDING THE COURSE OF LESSONS

Sonnekus (1975, pp 55-56) says "the practice of giving a lesson is accomplished on the one hand by the course of instructing and on the other by the course of learning. By course of instructing is meant the teacher's guidance by means of instructing or unlocking reality. By course of learning is meant the child's self-actualization of his learning initiative as learning potentiality or also opening himself to the content." Related to this is the comment by Oosthuizen (1971, p 28) that in order to acquire more certainty (also purposefulness) in instructing, it is important that the teacher be able to give didactically accountable reasons for constructing each phase of the lesson. Van der Stoep (1972, p 130) says that the course of a lesson is a matter of the form of a lesson situation. Swart (1977, p 2) says that instructing is a matter of a relationship where a particular way of relating (by teacher and pupil) is indicated by the course of the lesson.

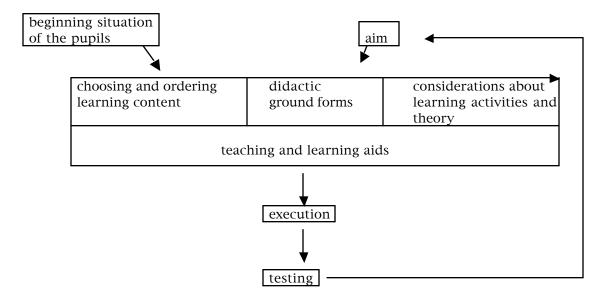
In summary, a lesson takes its course within a teaching-learning-relationship in terms of a lesson plan designed in accordance with the unique style of the teacher and within a theoretically particularized fundamental (ground) structure or lesson structure.

2. THE PHASES OF THE COURSE OF LESSONS

On close examination, the apparently different opinions about the phases of the course of lessons show certain commonalities. For example, Van Jaarsveld and Rademeyer (1973, pp 154, 160) declare that a History lesson has three phases, namely, an introduction, presentation, and finally an application or assimilation. Brunnhuber and Czinczoll (1974, pp 49-50) view the course of a lesson as the disclosure of a "here and now problem in its experiential richness", then from that "a problem for investigation is formulated", after

which they say, "the child employs the inquiry method and problem solving" related in parallel with the classical methods of the social sciences." From the investigation the child arrives at "generalizations and their own applications". Finally, the skills are evaluated and applied to new problems.

Schematically, Van Gelder's didactic model can be represented as follows:



With reference to the above scheme, Van Gelder et al. (1971) formulated the following lesson sequence:

I Aims

II Beginning situation: level of knowledge; experiential world

III Teaching-learning situation: (a) learning content: choosing and ordering; (b) didactic work forms: learning and teaching aids

IV Procedures for carrying out the lesson

V Determine the results

Van der Stoep and Van Dyk (1977, pp 175-259) distinguish a beginning, a middle and an end phase. They explain further that each phase has its own aims as well as modes of teaching and learning by which the course of the lesson is carried out. Of equal importance is the comment by Swart (1977, pp 1-9) that each phase revolves around the relationship by which it is actualized and is known. With these statements by Van Dyk and Van der Stoep as well as by Swart as a point of departure, a closer look is taken of the phases using the following classification:

- (a) The beginning phase
 - (i) Lesson greeting
 - (ii) Actualizing foreknowledge
 - (iii) Stating the problem
- (b) The middle phase
 - (i) Briefly orienting pupils to the context of the subject
 - (ii) Exposing the contents
 - (iii) Controlling insights
- (c) The functionalizing (end) phase
 - (i) Practicing
 - (ii) Applying
 - (iii) Evaluating

3. THE BEGINNING PHASE

3.1 The relationships among the beginning phase and the other lesson phases

The beginning phase has its inception in the teacher's preparation when he plans and designs **all** of the phases of the course of the lesson. The beginning phase is a preparatory phase necessary to meaningfully expose the new content in the middle phase and it provides a particular base of knowledge and factual background for

the new contents. It also is important to note that stating the problem indicates what the learning aim is. In addition, stating the problem shows what from the lesson theme is relevant and what ought to be evaluated as contents as well as what can be included in the functionalizing phase.

When foreknowledge is actualized in the beginning phase, the child comes to realize that he does not yet fully know reality. The teacher allows his foreknowledge to be actualized out of his own **fundamentals** (conceptualizations of reality--see Chapter V re elementals and fundamentals), and this is done in a way that the child will have a desire to participate in this reality. Actualizing foreknowledge together with formulating a lesson problem are at the foundation for a fruitful moment when a progression can be made from the beginning phase to exposing the new contents. **Motivating** the child, as a primary aspect of the total aim of the beginning phase lies in the foreknowledge, the stated problem and the fruitful moment. With these, the possibility is created that the child will **unlock himself** for the new contents. In addition, the effect of the exposition phase (also the middle phase) is determined by the degree to which the new contents are linked up with the actualized foreknowledge and the relevance of the lesson problem. Thus, the beginning of the lesson provides the conditions for the successful course of the exposition phase.

Although the functionalizing phase is farther removed from the beginning of the lesson, within the total course of the lesson, there is no less interchange between these two phases than there is between the beginning of the lesson and the exposition phase. The tension that begins to increase with the lesson greeting is eased when the teacher lays out the lesson problem. Yet, in light of the problem for the entire theme, as stated in the beginning phase of the lesson, there will be a number of particular questions that have remained unanswered during the exposition in previous lessons. Further, a linking up of the functionalizing task with the stated problem will be influenced by what has occurred in the beginning of the lesson. The following is a representation of the relationships among the beginning, exposing and functionalizing phases of a lesson:

BEGINNING OF LESSON	EXPOSING	FUNCTIONALIZING
1. Lesson greeting	Initiating and establishing relationship	
2. Control	Out of the functionalizing and content of the previous lesson (learning aim)	
3. Review	Of the previous lesson regarding the theme	
4. Clarifying concepts	Understand and clarify both phases	
5. Foreknowledge	Understand and clarify both phases	
6. Problem	Concern for an increasing tension that remains until functionalizing	
Fruitful moment	Gives dynamics to exposing the new	
CHILD UNLOCKS SELF (SEN	SES) NEW CONTEN	NT UNLOCKED NEW CONTENT AS MEANS

3.2 Aspects of the beginning of the lesson

Three distinguishable aspects figure in the beginning phase, namely, the lesson greeting, actualizing foreknowledge and stating the problem. These distinctions, especially between foreknowledge and stating the problem, are made to facilitate the explication of this phase. In practice, they move hand-in-hand and there is continual interaction and "cross-fertilization" among them.

3.2.1 The lesson greeting

The lesson greeting expresses a form of human etiquette and is primarily aimed at establishing a relationship (pathic-affective) and awakening an attunement to the lesson situation. At the foundation of the lesson greeting is a language-dialogue relationship, and it refers to a mutual agreement and consent to establish a relationship. The lesson greeting also is important with respect to an early attribution of meaning in the beginning phase because the greeting is an expression of a readiness for human contact and community between teacher and pupil such that the pupil can throw himself open here.

3.2.2 Actualizing foreknowledge

In the beginning phase of a History lesson, e.g., the **control** (evaluation) of the content of a previous lesson or lessons plays an important role. This is because the teacher controls (evaluates) selected contents (e.g., concepts, terms, insights into time periods, biographical particulars) with a view to accommodating the pupils' level of entry into the new lesson. How the teacher exercises this control is important because if it is too subject oriented and if ready knowledge is over-emphasized, the readiness for contact and the community expressed by the lesson greeting can be thwarted.

Control can occur in a **relationship of language-dialogue** in one of the following ways [all addressed to the pupils recalling what they already know]:

- (i) the teacher narrates;
- (ii) the pupils narrate to each other;
- (iii) the teacher questions and the pupils answer orally or in writing;
- (iv) one pupil questions and the other pupils answer.

Within the **relationship of searching** [for relevant foreknowledge] the pupils can compete with each other on a quiz and the search can be controlled by the teacher through their playing roles in a play. The general insights considered to be relevant to the new contents can be made available to the pupils again by means of one or more examples (**relationship of demonstration**).

From the class **discussion**, it may be necessary for the teacher to re-plan his strategies, eliminate parts of the previous lesson or to **revise** the lesson entirely to give the pupil a better understanding of the content. It is especially within the language dialogue relationship that he narrates and asks questions. To link up with the pupils' **experiences** and knowledge of the contents of previous lessons, sometimes it is necessary that the teacher first **clarify** certain new but relevant **concepts** in order to form a **knowledge base** on which the new lesson can be built.

It is important to note that lived-experiencing **meaning** depends on effectively actualizing foreknowledge. Therefore, attributing meaning in a particular subject context is a **condition** for motivating the pupils such that they will open themselves up to the

new contents. This is the first step in fulfilling the aim of double unlocking, namely motivating the pupil.

3.2.3 Stating the problem

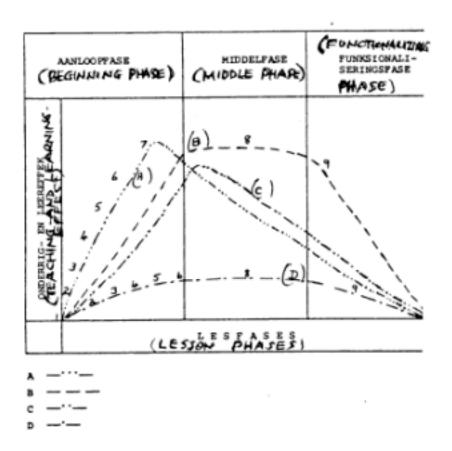
As a primary aim in their lesson model, Brunhuber and Czinczoll (1974, p 49) state: "Children discover a here-and-now problem in its experiential richness" and "out of that they formulate a researchable problem..." Hence, there seems to be two-phases where first a problem has to be sought in the pupils' experiential world which then has to be changed into a research or lesson problem.

On the one hand, the increase in motivation has to be maintained and strengthened and, on the other hand, the new concepts, skills and proficiencies have to be lived-experienced by the pupils. Although differing from lesson to lesson, it is particularly promising to search for a lesson problem from the pupils' current (everyday) events. For example, History refers to what happened to people in the past. The child asks about what the future holds for him. From this questioning attitude (problem awareness) that arises regarding the future, an opportunity arises for the pupils to inquire about the present in terms of knowledge and insights from the past. The following example from the Cold War speaks for itself: "When the build-up of military power in Germany (1933-1939) plunged the world into a destructive war, what did the military build-up in Russia forecast for us?"

The apex of the increase in motivation is reached when the questioning attitude creates for the pupil a **fruitful moment** of problem awareness resulting from an emergent lesson problem and an awareness of incomplete knowledge to which it leads. In this way, the pupil becomes **motivated** and **opens** himself to the new contents that are presented and, if learned, relieve him of the tension of not knowing.

SCHEMATIC REPRESENTATION OF THE INFLUENCE OF THE BEGINNING PHASE ON THE TOTAL COURSE OF THE LESSON

Key: (1) lesson greeting; (2) controlling previous lessons; (3) reviewing; (4) clarifying concepts; (5) actualizing foreknowledge; (6) stating the problem; (7) fruitful moment; (8) exposing [presenting]; and (9) functionalizing.



Graph A (--...-)

This is a representation of a lesson in which all aspects of the beginning phase are indicated; however, an untimely (early) high point is reached and a meaningful linking up of the known with the new cannot occur. A defective unlocking or presenting of the content is expressed by the sharply descending line that shows a small degree of functionalizing.

Graph B (---)

This shows a successful beginning phase where there is a meaningful linking up of the known with the new and an effective presentation occurs followed by meaningful functionalizing.

Graph C (-..-)

An equally successful beginning phase is depicted; however, the fruitful moment goes unused because the teacher was not thoroughly prepared and had not planed the presentation of the new contents. Exposing and functionalizing show a sharply declining line of tension (motivation).

Graph D (-.-)

This can be described as a failed lesson where there is no knowledge base built into the beginning phase and no fruitful moment can be created. It can be said that the "foundation of this lesson has been abandoned".

3.3 Aspects of the middle phase

3.3.1 Orientation and the fruitful moment

As soon as the relevant foreknowledge is actualized and the child is aware of his incomplete knowledge, the new reality is questioningly entered under the teacher's guidance. Then a brief introductory orientation to the subject content can be given that establishes for the child a bridge between the known and still unknown. By meaningfully using the fruitful moment, the child is guided to open himself to the new reality.

3.3.2 Exposing the new contents

The teaching activity is carried out according to a pre-planned strategy. The teaching and learning events are actualized within language-dialogue, demonstration and/or searching relationships.

3.3.3 Controlling and actualizing

In planning a lesson, the teacher has already built in certain control points that qualify his guidance such that he first makes certain that he is not talking over the children's heads, that the contents being presented make sense to them and that they have acquired a grasp of this new reality.

3.4 The functionalizing phase

3.4.1 Practicing

New concepts, skills, knowledge and techniques have to be practiced. This can occur with the guidance of the teacher, by the cooperative guidance of other pupils or by the pupil's own efforts.

3.4.2 Applying

After they are practiced, the new concepts, skills, knowledge and techniques also have to be applied to a transferable context (a new but related context) in order to broaden the pupil's grasp of reality in terms of these insights.

3.4.3 Evaluating

Even though not all learning outcomes are measurable, the teacher still is obligated to ascertain whether his seemingly effective teaching is evident in the pupils' learning. Furthermore, qualitative as well as quantitative techniques can be used to indicate where the pupils stand with respect to the new reality (contents) presented. Here, evaluating also means the pupils' eventual self-evaluation and, by implication, guiding and presenting again if the teaching and learning event has failed in the classroom situation.

3.5 Lesson phases and lesson aspects

Beginning phase

Aspect:	Aim:
Lesson greeting	Establish relationships; early motivation.
Control and review of knowledge	Control already mastered categories of reality and the determining the degree of independence and focus with which this is controlled with the aim of motivation.
Concept clarification	Motivation is a condition for

creating a fruitful foundation.

New foreknowledge concerning

entry level

Firm up knowledge base, intensify focus, disclose relationships. Introduce via

narrating, showing,

searching.

Stating problem Awaken a questioning

attitude and problem

awareness.

Create a fruitful moment.

Middle phase

Fruitful moment Search for solutions and

answers.

Exposition Lesson content unlocked

(presented) by the teacher

narrating, showing,

searching. Learner opens himself by listening, saying, looking, himself showing and himself searching.

Control Teacher controls new

concepts.

Actualizing (spans both the middle and functionalizing

phases)

New knowledge and skills

firmed up.

Functionalizing phase

Practice New concepts and

knowledge are practiced and new skills are exercised.

Application New concepts, knowledge

and skills are applied.

4. THE LESSON PHASES AND THE TEACHING AIMS

4.1 Categorical forming as an ultimate aim

The ultimate teaching aim is for the child to acquire new categories of reality. With these categories as aids (learning aids are aids for living), the child becomes more independent and free to make responsible choices regarding reality. Acquiring categories is not the same as factual knowledge but also refers to a modified relationship that means a particular level of proficiency regarding human relationships has to be attained.

To be able to acquire new categories of reality, first the child has to be **motivated** in such a way that he opens himself to the reality (contents) being presented. Categorical forming can only occur if a double unlocking occurs in the middle phase of the lesson where the teacher unlocks (presents) contents and the child unlocks (opens) himself to them and the contents are accepted by him as categories of reality.

A pupil throwing himself open to the new contents is not automatic but **first** requires that he be motivated to do so in terms of actualizing foreknowledge and stating the problem. This can be achieved by first giving meaning to the contents by linking it up with the known and **second** by evoking a problem awareness that jointly contribute to creating a fruitful moment as a foundation for unlocking (presenting) the contents in the middle phase.

4.2 The aims in the beginning phase

4.2.1 The lesson greeting as aim

Teaching is a matter of relationship. With the lesson greeting, the teacher takes the **initiative** to establish a **relationship** and this takes the form of an invitation or request. The pupils' response points to an act of mutual agreement to create a relationship and to show a disposition that refers back to the earlier **motivation** of the pupils.

The lesson greeting is known for its simple form of speech and sometimes linguistically incomplete sentences. The most general form is a **greeting** such as Good morning; Good day; Hello, Yes, Hm, etc.--such as in "Good morning class/boys/girls". The **order** also is a general form of its appearance such as give, sit, stand, move, quiet, etc. For example, "Turn in your completed assignments", or "Sit down and get your book out". The latter is closely related to the **wish** as a lesson greeting such as quickly, please, etc. as in ""Let us quickly see what you remember". The **predicate** is another form of greeting, such as beautiful, weak, excellent, for shame as in "Beautiful, this is nice to look at". The **question** often is incomplete and inexact, "Why now?" The **warning** is encountered as a greeting in the form of no, don't, stop, mind as in "No, stop talking".

The lesson greeting is actualized in a talking relationship but, as seen from the above examples, it is not an authentic language dialogue but rather a language monologue relationship.

4.2.2 Actualizing foreknowledge as aim

By gauging (controlling) the level, skills and knowledge from previous lessons, the teacher and pupils purposefully look back (from the learning aim) to the unlocked reality and inquire about the pupils' new categories and independence. On the other hand, this gauging (controlling) also aims at intensifying and deepening the already established relationship and **motivating** the pupils by linking up with what they **know**. From this gauging, it may become necessary for the teacher once again to reconsider the pupils' understanding because it can be difficult to motivate them if there are certain obscurities stemming from previous lessons.

By the teacher reducing the content and from his revised plan for the class, the **entry level** is entered and particular foreknowledge established previously can be available for introducing the new contents. A change of strategy, however, might result in certain foreknowledge being omitted or others added in order to link up with the results of the control and review.

Although actualizing foreknowledge can occur **simultaneously** with unlocking the new contents, with an appeal by the contents themselves, usually actualizing foreknowledge occurs within one of the following relationships:

- (i) an introductory **conversational** relationship where the teacher narrates (characteristic of the beginning of a lesson);
- (ii) a **demonstration** relationship where an example is used to actualize foreknowledge (the intention to learn); and
- (iii) a searching relationship where, in **playful** ways, the teacher guides the pupils in actualizing their foreknowledge (characteristic of the beginning of a lesson).

A first aim within these relationships is a cognitive attunement and readiness (learning intention) and a second is a search for meaningful connections between the known and the new contents so the new theme is lived-experienced and accepted as meaningful. The pupils can be motivated regarding the new reality (content) within a fruitful knowledge foundation which is actualized for the content.

4.2.2.1 Actualizing forms of teaching and modes of learning within a language-dialogue (CONVERSATION) relationship

By means of the **question-and-answer** mode, the pupils' already existing foreknowledge can be gauged (controlled) and reviewed. The teacher **talks** --> **questions** and the pupils **hear** --> **listen** --> **think** --> **remember** --> **talk** --> **say-write**. For example, during the presentation of a lesson on the work done by Jan van Riebeeck on the Cape, the orders to Van Riebeeck from the Lords XVII dealt with in a previous lesson(s) will be important foreknowledge. Teacher: "What does Jan van Riebeeck have to do on the Cape?" Pupils: "He has to build a fort and establish a refreshment (refueling) station".

Should it now become clear from the pupils' answers that the meaning of the concepts **fort**, **refreshment station**, **Southern point**, etc. are not effectively controlled, the teacher ought to clarify these concepts by giving them meaning in terms of what the pupils already should know. Teacher: "Why is a fort built?" Pupil: "To take shelter during danger." Teacher: "Who has seen a fort?" "Where?" "What was van Riebeeck's fort like?" etc. Learning aids can have a significant effect on actualizing foreknowledge. With the above example, the following learning aids are suggested: a map of

the Cape Peninsula, a model of van Riebeeck's fort, prints and photos of other forts, scenes of the Cape during the early years, etc.

On this foundation of the pupils' knowledge the teacher can actualize additional foreknowledge with the aim of increasing **motivation** and **attributing meaning** (to the new content) in light of the known foreknowledge. Now the teacher can provide a **historical introduction** by **narrating** (talking-saying) and by the pupils **listening** (hearing-listening). "Imagine what the Cape was like when Jan van Riebeeck set foot on the beach at Table Bay on 6 April 1652 ... etc."

4.2.2.2 Actualizing forms of teaching and modes of learning within a DEMONSTRATION relationship

The teacher uses examples and skills (operations) that give the pupils the opportunity to act together and ultimately to act independently. Operationally, actualizing progresses by the teacher showing --> saying --> demonstrating and by the pupils looking --> seeing --> recognizing --> remembering --> speaking --> saying when the above-mentioned knowledge and experience of the pupils are gauged. A document containing all of the orders from the Lords XVII to Van Riebeeck is used to show the two most important orders, namely, to build a fort and a refreshment post. Then the pupils should be given the opportunity to themselves compile a list of orders, draw them up as an agreement and give a report on carrying them out.

The clarification of concepts such as fort and refreshment post can occur by means of multiple-choice items where the pupils have to **identify** and **indicate** the correct meaning by **saying** or **writing** the answer. For example, "A fort means: (1) a carriage; (2) a storeroom for supplies; (3) a place of safety and protection".

In the demonstration relationship, the teacher **introduces examples** in **planned** ways such as a model of the fort Van Riebeeck had built, by reconstructing and **displaying** a representation of the Supply Company used by Van Riebeeck to build the fort, etc.

4.2.2.3 Actualizing within a searching (PLAY) relationship

Controlling (gauging) and reviewing the pupils' experiences and knowledge are done **playfully** in a searching relationship. The teacher can **initiate a competition** among the pupils in the form of a **quiz** about Van Riebeeck's arrival and the orders given him about the fort, the remains of his almond fence, etc. Clarifying concepts can occur in the same way and especially by using **observable objects** (festive dances, drama, pictures, etc.), the searching relationship can have a significant effect on actualizing foreknowledge.

A short film on the Cape in Van Riebeeck's time should provide a lot of material that can be enacted by the pupils with **casting** by the teacher. For example, one pupil is Jan van Riebeeck, another is Maria and a third is the gardener who picked the first fruit from the Company garden and gave it to Maria. Similarly, research on the fort can be introduced and points of focus can be sought.

4.2.3 Stating the problem as aim

Hehlman (1967, p 178) says that the fruitful moment is that point in a lesson when the pupil is ready (open) to learn and thus is interested, and this offers the best possibilities for actualizing content of an inner formative nature.

The deepening relationship with the problem, that has its origin in the lesson greeting, reaches its high point in the fruitful moment when an awareness of a problem arises. Paralleling this is the course of the pupil's motivation, as indicated in the above statement by Hehlman. The intensification of the pupil's motivation is seen in his willingness to learn in the fruitful moment when the teacher and pupil together want to solve the lesson problem in accordance with the new content, while the teacher unlocks the new content and the pupil opens himself to it and lived-experiences it as a new category of reality. Usually a third aspect is paired with this, namely, the independent discovery of categories in the functionalizing phase of the lesson.

4.2.3.1 Making the pupil aware of and eventually personally formulating the problem within a discussion (language-dialogue relationship--conversation)

In a language-dialogue relationship, foreknowledge is actualized by the variations of conversation (dialogue) such as a class discussions, questions-and-answers, narrations. By meaningfully linking up with the actualized foreknowledge, the pupil gradually becomes aware of his deficiencies regarding certain aspects of the theme. This awareness of a lack, in light of the awareness of the lesson problem, has the effect that the pupil will open himself up and begin to ask about events and obscurities. As already mentioned, the aim of stating the problem is to bring the problem to awareness which then gives rise to stating it as a question (statement of the problem) and provides the teacher with the opportunity, in the form of a **fruitful moment**, to unlock the content.

An example of how a lesson problem can be formulated follows: "How would you go about executing the orders from the Lords XVII if you were Van Riebeeck?" And the pupil asks himself, "Where should I begin?" "What should I use?", etc.

4.2.3.2 Making aware of and eventually personally formulating the problem within a demonstration relationship (Example)

The teacher plans formulating and demonstrating a lesson problem by using particular examples contained within the **theme**. In this connection, reference can be made to the theme "**movements of settlement and colonization**". It is expected that the pupil will put Van Riebeeck's arrival on the Cape in 1652 in the context of this theme by giving meaning to it from everyday life.

4.2.3.3 Making aware of and eventually personally formulating the problem within a searching relationship (play)

The teacher enters a searching relationship as an organizer and initiator of a **search**. The pupils participate in this lesson relationship by **searching**. If **competing** is emphasized, as a rule the problem lies within the competition itself. In the case of **adventuring** (e.g., a field trip), hopefully the problem is in the **perception** and **recognition** of focal points that can disclose the unknown. During **dramatizing** or improvising, the casting (by the teacher) and performing roles (by the pupils) amount to presenting the problem for which the pupils have to **search** for solutions.

4.3 The new contents as aim: the middle and functionalizing phases

Weniger (1960 p 63) says that teaching does not have to do with a lesson to learn but with a life to live. Thus, it is not primarily concerned with mastering lesson content but rather with mastering **formative** content. Hence, content from historical reality is selected by the teacher precisely because it is fundamental to him and relevant to the child.

In the beginning phase, foreknowledge is given meaning within the child's unique frame of reference such that the new lesson content is lived-experienced as meaningful and is elevated to formative content by the aim of categorical forming. In categorical forming, which occurs within the operation of double unlocking (of the content by the teacher and by the pupil himself), the implication is that subject content (e.g., History), is accepted by him as life content in terms of the teacher's representation which appeals to him as meaningfully relevant and to which he answers by opening himself to this content as life content.

In summary, first there is a particular subject or content aim to be attained. Second, changed relationships are striven for that not only refer to the subject matter but especially point to personality changes regarding the pupil's horizontal and vertical relationships. Third, forming is actualized as an elevation in level regarding the pupil's involvement with reality (abilities, proficiencies, skills and techniques).

5. REFERENCES

Brunnhuber, P., Czinczoll, B. (1974). Lernen durch entdecken. Donauworth: Ludwig Aner.

Hehlman, W. (1967). **Worterbuch der paedegogik.** Stuttgart: Kroner Verlag.

Oosthuizen, W. L. (1971). Die plek en betekenis van leerstofreduksie in die ontwerp van die wiskundeles. Unpublished M. Ed. thesis, University of Pretoria.

Sonnekus, M. C. H. (1975). **Onderwyser, les en kind.** Stellenbosch: University Publishers and Booksellers.

Swart, A. (1977). **Die plek van die onderrigswyses.** Lecture given before the Work Community for the Advancement of Pedagogy as a Science. University of Pretoria, June.

Van der Stoep, F. (1972). **Didaskein.** Johannesburg: McGraw-Hill.

Van der Stoep, F. and Van Dyk, C. J. (1977). **Inleiding tot die vakdidaktieke.** Johannesburg: Perskor.

Van Gelder, L., Peters, J. J., Oudkerk Pool, Th., Sexma, J. (1971). **Didactische analyse.** Reader 1 (Second edition). Groningen: Wolters-Noordhoff.

Van Gelder, L., Van der Velde, I. (1968). **Kind-School-Samenleving.** Groningen: Wolters-Noordhoff.

Van Jaarsveld, F. A., Rademeyer, J. I. (1973). **Teorie en metodiek vir Geskiedenisonderrig.** Third edition. Johannesburg: Perskor.

Weniger, E. (1960). Didaktik als Bildungslehre, Teil I. in **Theorie** der Bildungsinhalte und des Lehrplans. Weinheim: Julius Betz.