CHAPTER 5

PREPARING A LESSON

INTRODUCTION

One is often inclined to forget that in many occupations the real basis of the work is in the preparation. A minister's actions and guidance from the pulpit represent days of hard work in his study. Defending an accused in court by a lawyer is only the tip of the iceberg of his work; the days and weeks of preparation are not conspicuous but are essential for his practice. In this sense, a teacher is a prime example of one who prepares for professional work. All teachers have to be prepared. Stated more broadly, anyone who in any way is involved in teaching has to be prepared. This includes pre-primary teachers, teachers in the senior secondary school and instructors at the university.

A teacher's preparation essentially is planning a lesson to be implemented in the future. A teacher needs to plan each aspect of the lesson he is going to present because it should not proceed haphazardly and because, as a professional educator, he has to be able to account for what he brings about in the classroom. The fact that a teacher plans a specific lesson beforehand makes it difficult to predict the outcome of his didactic reflections simply because persons, and also the school child, are not completely predictable. A teacher can never say with certainty that the children in his class are going to learn the new material in particular ways or that his plan will achieve the desired learning effect. However, the unpredictability of the classroom situation is no excuse for not planning his lessons. On the contrary, in his planning, a teacher needs to thoroughly take into account the unpredictable because he has to be able to professionally account for his classroom practice.

In the previous chapters it was repeatedly mentioned that the teacher has to strive continually for **harmony between form and content** in his classroom practice. The art of preparing lessons, thus, is nothing less than the teacher's academically and professionally polished initiative to create a **ground plan** (lesson plan) for creating a harmony between form and content. This lesson plan includes elements that reflect the demands of the subject content and the child's situation. Also, unforeseen elements

need to be meaningfully built into the general lesson plan. The teacher's lesson plan thus has to be flexible but it has to reflect didactic pedagogic and subject didactic essentials.

A teacher's lesson plan is observable in the lesson write-up and in the classroom implementation of the lesson that he planned beforehand. In this regard, a teacher's lesson preparation is his professional responsibility. This amounts to the fact that he can be didactic-pedagogically accountable regarding the **form** of the lesson he has planned, and he must be able to account for the subject matter and subject didactic meaning of the **content** he is going to present or unlock for the child. In addition, his preparation represents the justification of his choice(s) to synthesize in didactically harmonious ways the form and content of the lesson.

Although the expression "practice makes perfect" is applicable to the teacher's classroom practice, this does not mean that the student teacher is abandoned to his own inadequate teaching experiences. Indeed, an "experienced" teacher who does not continually keep himself abreast of the developments in teaching theory and the subject matter he teaches stagnates in the experience of one year. Such a teacher with ten years of experience really has repeated that one year ten times.

The fact is, a student teacher does not enter the classroom for the first time unequipped. On the one hand, his subject matter background is one beacon for his ability to create a meaningful classroom practice. After all, the student teacher has the benefit of a subject matter background that at least is up to date with respect to the content. Regarding the study of his teaching subject, the student teacher has mastery of the subject area in that he understands the essential order (sequence) at the basis for constructing the subject and thus he knows what is superfluous and what is non-essential.

The student teacher's subject mastery offers him the possibility of penetrating to the essentials of a particular theme (which is going to form the core of his presentation or unlocking) and accordingly to structure the course of the lesson he is going to offer. The implication is that the student teacher knows what the child needs to know of the theme so that his evaluation of his own unlocking at least can satisfy the demands of the subject.

However, subject knowledge alone is not sufficient to guarantee the meaningfulness of the teacher's unlocking (teaching) the content for the child. Today it still is a deep-rooted misunderstanding that subject knowledge insures teaching success, especially at the university level as well as for other tertiary teaching. Everyone who has had to find his way through the school and university is acquainted with the brilliant subject expert who could not explain his subject at all. Each also has had to endure the meaninglessness of his instruction. Subject knowledge in no respect implies the ability to meaningfully unlock the essentials of the subject for the child.

The teacher's didactic-pedagogic and professional training provide him with the other beacon for being able to scientifically account for his practice. In his scientific study of the teaching event (didactics) for the child (pedagogics) he is provided with the basis for pedagogically-didactically interpreting his subject knowledge. The fact is that the teacher does not solely teach the subject to the child for the sake of the subject itself. He teaches the subject (as an aspect of the total surrounding reality) so that the child can acquire a better understanding and manipulation of reality in order to eventually be able to relate to it in more responsible (more adult) ways. Thus, the teacher's preparation involves the scientifically accountable pedagogic-didactic interpretation of his subject knowledge in order to create a harmony between the form and content and thus insure the meaningfulness of the lesson he is going to present. The lesson write-up, thus, merely makes explicit the teacher's reflections on how to bring about a harmony between form and content for specific children in specific teaching situations.

IN PREPARING A LESSON, WHAT FACTORS MUST A TEACHER CONSIDER THAT ULTIMATELY HAVE TO BE EVIDENT IN A LESSON WRITE-UP?

In the first chapter it was explained how didactic theory has to culminate in a specific lesson structure. The culmination of a theory in a lesson structure really is a logical necessity and if this doesn't happen, this means that the theory is empty speculation and on its basis the lesson cannot be structured. The analysis and description of the essentials of the lesson structure appearing in the previous chapters also are directed to clarifying the relationship between theory and practice. In these chapters, the fundamental things that a teacher has to take into consideration to create a

meaningful lesson were discussed. From these chapters it also is clear that the teacher's preparation and planning are at the center of his professional activity. A teacher's preparation and planning are, in the narrow sense of the word, the "ground plan" of his didactic activities. The deduction made from this is that everything the teacher's professional activities affect or can influence in the classroom have to be taken into consideration in his preparation and have to be clearly evident in his lesson write-up.

The problem that the teacher has to solve in his lesson preparation is to justify his **interpretation** of both his academic subject knowledge and his pedagogic-didactic knowledge **in light of the requirements** (i.e., the didactic criteria) **that the practice of teaching** directs to him. This means that at the end of his lesson he should be able to declare in a straightforward way that his lesson has fulfilled all of the didactic requirements because the child for whom the essentials of the content are unlocked has properly appropriated them. The question that the teacher has to be able to answer in his preparation is: How can I meaningfully interpret my theoretical (academic) subject knowledge in terms of:

(i) the life of the child in his present existence and at the same time as meaningful for his life as a future adult? and,
(ii) the social, cultural, scientific, technological, and other requirements of the specific didactic situation in order to insure that the child is going to be meaningfully involved in the teaching situation?

Essentially, the problem of preparation is a problem of **meaningful interpretation**. Meaningful interpretation necessarily concerns and includes a whole variety of factors relevant to the practical teaching situation. Here one thinks of the child's foreknowledge in light of which the teacher should be able to answer the following question. How can I introduce this new learning material in such a way that, in light of the child's knowledge and experience, he can lived-experience the theme as meaningfully related to his possessed knowledge but also, at the same time, lived-experience that his knowledge is deficient, which then can serve as a motivation for him to want to learn?

Other factors that can influence the course of a lesson are the time available, the composition of the class (homogeneous or

heterogeneous), the content that is to follow the presentation of this theme, etc.

The **result** of the teacher's interpretation of the didactic theory in a specific lesson situation is a specific **lesson structure** in which he gives evidence of the mutual and reciprocal relationship between theory and practice and the way in which both are relevant to the situation he is planning. At this stage it is necessary to indicate what the different facets of the lesson situation are that he has to interpret to be able to accountably prepare a lesson structure. The lesson structure that he creates is a result of his interpretation of:

1. Pedagogic-didactic categories and criteria. This means that, in light of his knowledge of what the didactic situation **is** (categories) and how he can **evaluate** (criteria) if the structure he has created reflects the essentials of the didactic, the teacher can justify the specific lesson situation he creates.

2. The child. This especially involves an insight into the level of the child's possessed knowledge. For example: What does the child know about this theme? What has he already experienced about this matter? Is his coordination of such a nature that he can carry out this activity? With respect to the child, it is logical that the teacher cannot unlock specific learning material that he cannot understand.

3. The nature and structure of the subject itself from which the teacher is going to unlock (present) a theme or topic for the child. Certain subjects lend themselves to an inductive methodological principle; again, others lend themselves to a deductive approach or a combination of the two.

4. The method(s) the teacher is going to choose to unlock the essentials of the theme for the child. By the nature of the matter, the choice of teaching method has to be relevant to the didactic ground forms, the developmental level of the child and the particular nature of the learning material. The method used is meaningful to the degree that it is integrated with the other demands of the course of teaching. For this reason, no method exists as "the" method but any method has the right of existence to the degree that a teacher can justify his choice of it.

A teacher's originality and creativity are not diminished by the pedagogic-didactic requirements. The contrary actually is true: for example, the didactic categories offer the teacher the mandate and the possibilities within which his originality and creativity can flourish. Because children essentially differ, originality and creativity are imperative for a teacher. Thus, he has to continually search for ways in which he can recognize the individual differences of the children in his class and accordingly modify his unlocking of reality in such ways that each child can be meaningfully involved in the lesson. To succeed at this he has to continually reflect and reflect again which directs an appeal to his originality and creativity.

For his unlocking to be at all meaningful to the child, a teacher has to **know** him. He has to know him not only as a person, but also with respect to his level of attainment and his readiness to understand new knowledge and integrate it into his horizon of knowledge. The implication is that the teacher's pedagogic-didactic knowledge of the child has to be integrated with the requirements demanded by the learning material.

The teacher also draws on his pedagogic-didactic insights in order to decide into what didactic ground form(s) he is going to cast his lesson, what methodological principles and methods of presentation he is going to choose, according to what principle(s) he is going to order and systematize the learning material, and which forms of actualizing the didactic principles he is going to select--**all against the background of the child's situatedness and ability to understand the new learning material.** At the risk of repetition, it is important to again indicate that the teacher unlocks reality for the **child** and specifically **in behalf of the child's eventual adulthood.** The choices and decisions the teacher makes have a fundamental place in his preparation and planning and must be evident in his lesson write-up.

The various decisions that a teacher has to make are not only dependent on the child or are not only made to occupy him, even though the teacher does unlock reality for him. The specific nature and character as well as the **complexity of the learning material** also need to be taken into account in his choices and decisions. If the child is the sole consideration in the teacher's decisions, the harmony between form and content is disturbed and such a teaching practice is pedo-centric (child-centered). If the

content (subject content, learning material) is given the greatest weight, then the harmony between form and content also is disturbed and such a teaching practice is subject-centered.

The teacher, especially in the secondary school, is confronted with the task of acquainting the child for the first time with the systematized subject sciences that are presented through the school subjects. For this reason the teacher has to understand the essentials of the subject itself in order to make accountable decisions. Therefore, in his preparation and planning he has to take into account both the child and the structure of the learning material in order to choose a particular methodological principle (inductive, deductive or a combination of the two), and corresponding specific methods (or combination of methods in their essential, logical relation to the didactic ground forms) in terms of which the theme is going to be unlocked for the child.

The above task means for the practical teaching situation that the teacher is going to create he has to be able to justify the **aim** that he will and must achieve with the lesson. He also must be able to account for the ways in which he plans the **course** of the lesson, i.e., how he is going to introduce the new learning material, how it is going to be unlocked and how he is going to determine whether the children have attained the mastery of the learning material that he previously stated in his lesson aim. He must be able to justify the **didactic modalities** he is going to use, i.e., how the didactic principles, the child's modes of learning and the implementation and use of teaching and learning aids are going to appear in his lesson.

At this stage, the reader can ask the meaningful question: How are all of these things related to each other and how should they be put together in a scheme or framework which is observable in a lesson write-up? To properly answer this question it is necessary to briefly and systematically summarize the essential aspects of the lesson structure so that the scheme or framework for the lesson write-up can reflect them.

ASPECTS OF THE LESSON STRUCTURE

1. In each lesson there is an aim. Stating the aim is not designated in itself but really is considered only in light of the essentials of the learning material and the insights the child has to gain. For these

reasons, there is talk of the **teaching aim** as the overarching element of the **lesson aim,** the **learning aim** and **stating the problem.**

The teacher has to formulate the **lesson aim** he wants to attain in exposing the learning material. The theme that he has now elevated to a lesson aim is put in the work scheme. The themes that appear in the work scheme according to weeks, months and in some cases even according to days, proclaim for the teacher the theme he is to cover in a specified time. In their turn, these themes come from the syllabus. The insights, skills, knowledge etc. that appear in the work scheme have to be elaborated and restructured by the teacher into a lesson aim. The theme in the work scheme is merely an announcement. The teacher has to elaborate this announcement into a lesson aim following didactic-pedagogic considerations and subject matter criteria. The lesson aim is what the teacher aims for with the lesson, what he want the children to achieve. Such an aim is not necessarily motivating enough for the child to want to learn. For this reason, the lesson aim needs to be presented in such a way (by means of stating the problem) that the child experiences its meaningfulness and accordingly will want to learn.

The **learning aim** springs from what the teacher expects the child to achieve and what the child will achieve because he experiences the theme as meaningful. The teacher cannot properly formulate the lesson and the learning aims if he has not first **reduced the learning material to its essentials.** For the teacher, the work scheme is the first reduction because already in the choice of themes and their structuring there is a reduction in the sense that by this the essentials of the subject are announced. Against the background of the teacher's subject knowledge, he further reduces the theme to its essentials; he strips the content of everything that is superfluous and unnecessary until only the elementals or essentials remain. The essentials of the theme are what the teacher will require the child to understand.

In his reduction of the content to its essentials, the teacher takes note of the child's foreknowledge of the theme, his readiness to be able to appropriately master the new content, possible bottlenecks that can arise in his exposition of the content and in what ways his insights into the matter can be restructured to serve as a framework for new insight into the learning material. It is evident that the lesson aim, the learning aim and the reduction of the content to its

essentials are very closely related to each other. This means that the teacher has to interpret the particular learning material in a way that is meaningful to the child's existence. In order to interpret the learning material didactically and existentially, he first must reduce the learning material to its essentials because only then can he appreciate and formulate the aim that he foreshadows with the specific lesson aimas well as the learning aim he expects the child to attain as meaningful for him.

Because the child's **learning intention,** and consequently his motivation to achieve is awakened and directed by **problems**, the teacher has to guide him in such a way that he eventually **lived-experiences the problem as his own.** A child cannot accept such a problem as his own if the theme merely is announced--an announcement is not stating a problem. Thus, the teacher is compelled in his lesson introduction to search for ways to allow the child to lived-experience his insights, knowledge, skills, etc. as deficient. Should he lived-experience such a deficiency (his knowledge of the theme is inadequate for him to solve the problem) this serves as a motive to solve the problem, provided the problem is meaningful for him. What the child wants to know in order to solve the problem really is the learning aim.

In this way, stating the lesson and learning aims flow naturally into formulating and solving the problem. The preconditions for eventually arriving at a meaningful statement of the problem lie in reducing the learning material to its essentials and the teacher's knowledge of the child. It is clear that these elements of the teacher's preparation have to be evident in the lesson write-up. Examples of how this should be shown are presented later in the chapter.

2. The teacher has to structure his lesson in such a way that it is didactically refined and pedagogically meaningful. Although the importance of the didactic ground forms, the methodological principles, the principles according to which the learning material is ordered and the didactic modalities were discussed elsewhere at length and briefly are indicated in this chapter, nevertheless, it is important to once again indicate that the teacher has to understand the individual character of each of these separately as well as the reciprocal relationship and mutual interdependence among them. Therefore, a teacher has to bring these factors into a particular relationship with the demands posed to him by the learning

material and the child in order to be able to **account for the specific type of lesson** he creates. Although he has to make room for and actualize the didactic principles and criteria in his lesson structure, this does not mean that he must surrender his practice to so-called didactic "recipes"--his lesson structure is essentially original because the children for whom he unlocks reality always are unique.

The teacher's practical originality is equivalent to his ability to appraise the child in the specific didactic situation and then in accordance with his appraisal to create a didactic structure (grounded in didactic categories and corroborated by didactic criteria) by which he can guarantee that his exposition improves the child's relationship to reality. Although there is no rigid lesson typology, still there are correspondences among different lessons that bestow a particular character on them. In this sense there are types of lessons, e.g., a demonstration lesson can be distinguished from an experimentation lesson, from an appreciation lesson, etc. The type of lesson the teacher states beforehand has to be thought through thoroughly in his planning and be discernible in the lesson write-up.

3. The teacher strives to attain the learning aim in the course of the lesson. This sounds obvious but nevertheless it is fundamental especially since he has to understand the factors underlying this attainment.

The teacher has to **stimulate** the child's **foreknowledge of the theme.** In this sense, foreknowledge not only means merely cognitive (intellectual) mastery, it also implies the child's relevant experiences of the theme. When the teacher stimulates the child's foreknowledge, he is really involved with helping the child consciously re-live his experiences and with placing his foreknowledge in a new framework (the framework of the theme the teacher is going to unlock for him). In this way, the teacher supports him to **lived-experience the new theme as meaningful.** During the course of the lesson, he continually is busy placing the child's foreknowledge in meaningful relationships, but in ways that lead him to **experience the problem inherent to the new theme.** The teacher can accomplish this because he supports and guides him to **seek answers or solutions** to the problem (or question) with which he confronts the child. In this way the teacher **stimulates** the child's foreknowledge in relation to

the new knowledge that he lived-experiences as a problem. The teacher literally mobilizes and directs the child's previous insights, skills and knowledge so that he can solve the problem (answer the question).

The child's foreknowledge placed-in-relation to the new theme is a precondition and thus is necessary if the teacher is to reach a **didactically "fruitful moment"** in his exposition. In its turn, the didactically fruitful moment is a condition for the further unlocking of the new theme for the child. The fruitful moment underlies the possibility of authentic learning occurring because without it the child is unable to eventually properly form concepts, understandings, etc. This means that through the fruitful moment, with the help and guidance of the teacher, the child is able to **generalize and abstract** the unlocked essentials of the theme.

A teacher cannot leave a child to his own devices to acquire insights and concepts. If he does, the chances are good that the child will fail to understand them. The fact that a child shows insight and understanding of a theme does not yet mean that he is **versatile** with that theme--the requirement is that he has to pin down such insights and concepts through practice. However, before the teacher can assure himself that the child has the essential insights of the theme at his disposal, he has to actualize the lesson content by **controlling the essentials** of the theme's structure. Such control of the essentials can be accomplished by arranging the essentials in a logical scheme (schematizing), by supporting the child to use his naturally acquired concepts and insights, which include two forms of practicing (namely, practicing **to** insights, which is especially important in acquiring activity structures and practicing **of** insights), and finally, by **evaluating** his insights into the new knowledge structure.

From the nature of the matter, all of these elements constitute an important aspect of the teacher's preparation and, therefore, should be discernible in his lesson write-up.

4. The teacher plans a dynamic course in his preparation because, if there is one thing that can be said about it, a lesson situation especially shows itself in its dynamic aspect. It is for this reason that in his planning the teacher needs to think about how he is going to let the dynamic of the lesson take its course and how, by virtue of the pedagogic-didactic requirements, he is going to direct

the lesson. This means that he has to actualize the different **principles of actualization** (activity, differentiation, individualization and tempo variation) in the course of the lesson.

Further, this means that in his preparation he has to be able to justify the principles of actualization to be used **in each phase of the lesson** in order to allow the particular phases to take their course. Therefore, he has to be able to account for the relevant principles of actualization (or their combinations) during the lesson phases of actualizing foreknowledge, stating the problem, exposing the new content, actualizing the new content, functionalizing the content and evaluating insights. The relationships among the principles of actualization and the phases of the lesson remain dependent on authentic learning effects in the sense that the teacher must continually search for the most effective principles of actualization for a specific phase of the lesson in order to guarantee the best learning result. For example, here one involuntarily thinks of the necessity of implementing differentiation as a principle of actualization in an ordinary classroom situation because an individual child will not necessarily open himself to the teacher's presentation in precisely the same way as will a classmate.

One also thinks of the requirement to differentiate in a heterogeneous class (e.g., differentiation of assignments) in order to reach each child. Tempo variation is necessary in each lesson situation--while stimulating foreknowledge the tempo is faster than during the exposition of the new learning material. Activity is obvious in each lesson situation; if the child is not actively involved in the lesson, he simply is not "present" to it.

These are not matters of course, i.e., they do not "just happen". They have to be thoroughly planned for and be worked into the lesson write-up.

5. The ways in which a child goes out to reality are not uniform, e.g., he can perceive it or think about it. The ways in which he enters reality (the ways in which he exists, enters reality out of himself) also are not unitary. A child does not purely perceive; during his perceiving he also lived-experiences reality emotionally. For this reason, we cannot separate his ways of going out to reality; at most we can distinguish them.

By this time the reader knows that learning is one of the most conspicuous characteristics of a child's involvement in reality. It also is the case that his modes (ways) of existence correspond with his ways of learning. Preponderantly he mobilizes particular ways of learning (e.g., thinking, perceiving) in order to enter reality, depending on the appeal that reality directs to him. Didactically, this means that particular learning material will help determine which ways a child best can gain access to that reality. Correspondingly, it is the teacher's responsibility to also take into consideration in his planning the specific **modes of learning** that are going to be stimulated and directed during the different phases of the lesson. This means that in his preparation, a teacher has to anticipate a specific mode of learning (or combination) in each of the phases of the lesson stated above.

Thus, a teacher has to ask himself the question: With respect to the learning material, which modes of learning during the following phases of the lesson are most likely to result in authentic learning effects--during actualizing or stimulating the child's foreknowledge; during the joint reduction of the content to essentials in the lesson exposition; during the unlocking of the lesson content and the integration of the foreknowledge with the new structure of knowledge in order to promote restructuring? etc.

The synchronization of the most effective modes of learning with the phases of the lesson is of particular importance for the teacher because the ultimate aim of the lesson is actualized in the child's learning. Therefore, this element of the lesson structure requires particular preparation and planning and has to be clearly inserted into the lesson write-up.

6. In his involvement with the child in the class, therefore, the teacher's concern is to bring reality to the child. From the nature of the matter, reality in its fullness cannot merely be carried into the classroom. In the face of this problem, the teacher presents reality by means of teaching and learning aids. Teaching aids are materials representative or symbolic of reality that he uses to make reality accessible to the child while learning aids are material in terms of which the child himself can attain insight into reality to the degree that the material makes reality present. Consequently, the teacher handles and uses teaching aids and the child learning aids. Under teaching aids we can mention projectors of various kinds, wall maps, models, the chalkboard, illustrations, etc. and under learning aids

are mentioned the child's textbook, models, examples, microscopes, graphs, etc.

The value of teaching and learning aids is not in the aids themselves; the teacher has to elevate the object (e.g., a model, a map) to a teaching or learning aid. This means he has to decide when and how he is going to insert particular aids into the course of the lesson and for what specific aim he is going to use and allow the aid(s) to be used. In his preparation, he has give this matter undivided attention. In his preparation, he also has to be able to account for his **coordinating and synchronizing the teaching and learning aids** with the child's different modes of learning, the level of his attainments and his ability to integrate, as well as with the specific nature of the learning material which is going to be unlocked. The teacher's use of teaching and learning aids during the different phases of the lesson, where they can be applied, also has to be accountable. The uses and reasons for the teaching and learning aids must be discernible in the lesson write-up.

7. All of the children in the class are not necessarily going to achieve the lesson and learning aims as they should. Correspondingly, during his preparation the teacher must be alert to possible **bottlenecks and problem areas** that can arise in his exposition. The child's insight into the learning material he has unlocked (learning result) and his **control of the child's insight** into the essentials of the learning material indicate to him where the child has stagnated. It is especially when he interprets the learning material didactically-pedagogically that he anticipates possible bottlenecks and his exposition is modified such that these bottlenecks are eliminated or avoided. This act of modification literally is always present in the course of harmonizing the form and content. In the class situation the modification of the exposition occurs in accordance with the immediate learning effect. The teacher repeats, allows practice again, allows doing again, returns to previous work, etc. if he does not see the quality that he demands in the immediate learning effect All of this requires time and thus the teacher also has to take account of this in his preparation. With stagnating and even derailing bottlenecks, he has to provide orthodidactic (remedial) help for which he should also make provision in his preparation.

Preparation essentially involves anticipating a didactic situation where an authentic encounter can occur between the child and the

learning material, i.e., where authentic learning is the dividend of the teacher's unlocking of reality. The child's encounter with the learning material has to culminate in his improved relationship to reality which is discernible in his improved involvement with the learning material. The child also has to transcend (surpass) the immediacy of the learning effect observable in his admirable behavior and life of values. The events in the lesson situation are not mechanistic or a matter of course--the teacher has to thoroughly prepare for them. However, his preparation has to acquire a more concrete form than merely reflecting and, therefore, he has to write on paper the elements of his didactic reflections which have to be discernible in the lesson write-up.

THE LESSON SCHEME

The examples of lesson write-ups presented later in this chapter are meant for both the student teacher and the practicing teacher. For the student teacher, the examples are an introduction to the essentials of the practice of teaching, and for the teacher they can allow him to once again think about the foundations of his practice in order to awaken a critical attitude regarding it. Because each lesson essentially is a model lesson--this holds both for the student teacher and for the practicing teacher (after all, an operation performed by a doctor is a model operation!)--there is no distinction made between the examples of the write-up of a model lesson and of a so-called "everyday bread-and-butter-lesson". The same criteria hold for the student teacher's write-up of a lesson for critique as for the practicing teacher's lesson write-up because both need to provide clear evidence that a harmony between the content (subject knowledge) and the form of the lesson can be realized against the background of pedagogic-didactic knowledge.

The discussion that follows should not in any sense be taken as a **fixed pattern or recipe.** Its aim is to serve only as a **guideline** because from each student teacher and each teacher it is expected that they will display their own **originality and initiative** in their unique teaching situation. Herein lies the possibility that the student's and the teacher's classroom practice will be dynamic and enthusiastic and that the lesson will not be based on a recipe which bestows on it a second-hand and stiff character.

The guideline also is aimed at insuring that the lesson will not have a **haphazard character** because the lesson scheme requires that

the student teacher (and teacher) be **accountable** for each **phase of the course of the lesson.** Also the lesson scheme is arranged in such a way that the teacher continually has to keep in mind the **unique nature of the subject** and the **pupils' readiness** in order to bring about a meaningful harmony between the form and the content of the lesson.

The teacher's choice and implementation of the didactic principles, modes of learning, teaching aids, didactic ground forms, methods, etc. have to make a unique **style of teaching** evident because, after all, it is in the choices and their implementation that the teacher's individuality is expressed. It is for this reason that **the observation of a practicing teacher by a student teacher in itself can only have limited value**--slavishly following the example ultimately can only obstruct the student teacher's latent style of teaching.

The scheme for the lesson write-up presented below is mainly a systematized and schematized rendering of the previous expositions of the lesson structure. The scheme is designed in such a way that the teacher's justifications for his choices are synoptically and concisely perceptible. In the discussion of the scheme for the lesson write-up there will be mention of what belongs under each heading and how the content under each ought to be stated.

A scheme for a lesson write-up (lesson plan)

Localizing information

Grade level: It is necessary to know precisely the level of the children who are going to be taught. This information will greatly influence the teacher's didactic-pedagogic reflections and planning. Here the grade level is simply indicated; e.g., grade 4, grade 6.

Subject: Here the subject to be taught is mentioned along with its sub-divisions; e.g., Geography (geo-morphology), History (European), Mathematics (quadratic equations), English (literature).

Time: Under this heading, the duration of the lesson is stated; e.g., 35 minutes, 40 minutes.

The teacher has to know precisely how much time he has to unlock (present) particular essentials of the learning material. The greatest mistake of many student teachers in this connection is that they want to deal with too much material in a period. The source of this mistake is two-fold. First, the student teacher has not reduced the theme to its real essentials; second, his experience of the children's learning tempo is not yet refined.

The amount of time available for a particular lesson forces the teacher to plan a time division among the different phases of the lesson; e.g., 10 minutes for stimulating foreknowledge and for stating and formulating the problem; 20 minutes for presenting the new content; 10 minutes for controlling (checking) and evaluating the quality of the insights into the new knowledge structure. If the teacher does not bear in mind the time factor, it often happens that he doesn't control or evaluate the outcome. Such a lesson tends not to have a firm didactic structure and is loose and disconnected.

Grouping

It is important for the teacher to know if the children in the class are grouped homogeneously or heterogeneously. From the nature of the matter, the grouping of the class will influence his entire didactic performance. The teacher also has to know the criteria used to form the homogeneous class groups; e.g., is the grouping formed according to age, intellectual potentialities, choice of subject, interest? This knowledge is clearly important when it is kept in mind that the unlocking of reality (presentation of the lesson content) has to occur in terms of the needs of the individual child. The implication is that the teacher has to provide more differentiation in his preparation if the class is a heterogeneous or complex one.

Under this heading, the groupings are merely named: e.g., homogeneously grouped according to intellectual potentialities; homogeneous according to choice of subject but heterogeneous according to intellectual potentialities; homogeneously grouped according to age but heterogeneous with respect to intellectual potentialities and gender. The various possibilities for grouping children in the class are great and is a factor that has to be taken into account for a thorough lesson preparation.

The teaching aim

*The lesson aim

Under this heading **what the teacher aims at with the specific lesson** is explained. In formulating the lesson aim, a teacher cannot merely transcribe the theme as it appears in the work scheme. The specific theme of the lesson is an aspect of the total subject and has to be integrated into the lessons that follow. The teacher knows how the pupils have progressed with the themes in a series of lessons and he also knows what successive insights are going to be required by his teaching. At the same time, he also knows how the specific lesson theme fits into the whole.

It is the teacher's task to interpret the particular lesson themes such that they are integrated with the pupils' foreknowledge of the theme and with the succeeding work. For example, a syllabus for 11th grade History presents "The Industrial Revolution". This theme fits into the Napoleonic Wars and the colonization movement in Australia and Africa. It makes no sense to the child to announce "The Industrial Revolution" as a lesson aim. Since it is impossible to present or unlock the entire Industrial Revolution in a class period, this theme has to be differentiated into themes for a number of lessons that form a series; for example, inventions that preceded the Industrial Revolution, the social structure of England during the Industrial Revolution, the consequences of the Industrial Revolution.

Each of these themes, as aspects of the whole, now can be used by the teacher as lesson aims. He will require that the pupils gain insight into the essential structure of the specific themes because without this insight, a child cannot progress with the theme as a whole. A precise description of the lesson aim also has the advantage that the teacher knows exactly what he is going to look for in evaluating the acquired insights and how his unlocking has to be structured in order to make evident for the learner the essentials of the learning material and their necessary relationships.

The careful formulation of the lesson aim is really one of the most important steps in reducing the learning material to its essentials. Because the teacher first decides on a lesson aim, which implies that he first has to delimit and refine the theme, he is in a position to look for examples by which he can achieve the lesson aim (this also holds for the learning aim). Each choice of an example by him once

again forces him to reduce the learning material and to look at the extent to which this example is appropriate for the specific situation, for the specific structure and complexity of the learning material and for the level of readiness of the specific children. The reduction of the learning material will be treated later, but with the formulation of the lesson aim, it already is necessary to refer to the act of reduction that is peculiar to teaching.

The lesson aim has to be concisely and accurately formulated, e.g., the meaning illustrated by the poem, "The Road Not Taken," by Robert Frost; constructing with geometrical tools (compass and straight edge). In these two examples, the exposition is thus directed to **the meaning illustrated** in the first case and to **geometric construction** in the second.

*The learning aim

The lesson theme in the syllabus can no more serve as the lesson aim than can the lesson aim serve as the learning aim for the child. In the ordinary, everyday practice of teaching, the careful formulation of the learning aim is shamefully neglected. The usual practice is for a teacher to announce to the class, "Today we are going to read the poem, 'The Road Not Taken,' by Robert Frost," or "Today we are going to consider the inventions that lead to the Industrial Revolution," or "Today we are going to study the regional climate of the High Veld."

Simply announcing the lesson aim in no way implies that the pupil is stimulated or motivated to achieve it. That is, it does not imply that he is going to exert himself to master the lesson theme. By learning aim is understood **what the child is to achieve.** The learning aim involves insights into the concepts that allow the essentials of the theme to be meaningful to the pupil. The implication is that the teacher has to make a choice of one or more examples which can reflect the delimited essentials (as summarized in the lesson aim) for the pupil.

In a Geography syllabus for grade 9, the pupils are expected to acquire insight into the different climatic regions of the world. The climatic regions are named, e.g., the equatorial, savannah, warm desert, Mediterranean, etc. Each of these climatic regions is a specific lesson theme and can be formulated as a lesson aim. If the teacher handles the Grass Veld regions and **assumes without**

question that the learners have an insight into the coherence of factors (such as the geomorphology, the location, the prevailing winds, etc. and the ways in which these are related and function together--all acquired through the unlocking of the concept "Grass Veld regions"), the outcome or dividend of his teaching will be very disappointing. He is compelled to choose, e.g., the High Veld region as an example and to unlock and explicate the essentials of this climatic region, In this case, the learning aim might be "the factors that cause or underlie the climate of the High Veld region" because he will insist that the learner have an insight into "the factors that cause" so that the pupil can deal with the concept "Grass Veld region" with insight.

The teacher has to ask himself, "What precisely are the concepts (ideas) that the pupils need to possess to be able to understand the theme? The answer to this question is the learning aim. The learning aim also has to be concisely formulated, e.g., "the factors that underlie the climate of the High Veld region."

*Stating the problem

**Formulating the problem*

Formulating the problem: Just as announcing the lesson aim will not motivate the pupils' to achieve the learning aim, announcing the learning aim will not create a problem for them. It is true that the pupils' motivation is stimulated and directed by a problem. Thus, the teacher is compelled, by meaningfully connecting with the pupils' foreknowledge, to lead them to a personal formulation of the problem. This aspect of the lesson structure is explained in detail later. Nonetheless, it is necessary to point out that only when the child lived-experiences specific shortcomings in his own structure of knowledge, in light of his lived-experience of the lesson problem, will he assume responsibility for solving the problem. The teacher's guidance of the child to formulate and recognize the problem for himself amounts to the teacher indicating that his foreknowledge is inadequate to solve the specific problem. Thus, for the child, solving the problem is aimed at overcoming his own deficiencies in knowledge, insights, actions, etc. A child's wanting to eliminate his deficiencies in knowing, etc. is his motivation to eventually attain the learning aim.

The problem might appear on the chalkboard. The pupils continually have to be aware of the precise direction the lesson is taking. To stay with our example, it will be of little use to write on the chalkboard the learning aim, "The factors underlying or causing the climate of the High Veld region". In this case, the teacher has to guide the pupils to an awareness that their knowledge of the relationships among climatological factors is deficient by requiring them to meaningfully answer the question, "what are the relationships among climatological factors underlying the High Veld region?' In this way, the teacher guides the pupils to question themselves by linking up with their foreknowledge of temperature, temperature change, prevailing winds, precipitation, humidity, air pressure, etc.

Under this heading, the lesson problem is formulated; for example, "What are the relationships among the underlying climatological factors of the High Veld region."

**Solving the problem

By the teacher's exposition, with the help of chosen examples, the essential insights, refined concept forming, coherence of meanings, good solution methods and manipulation schemes become understandable to the child. This step can be planned as a **chalkboard scheme** and it appears in the lesson write-up under the above heading.

In preparing the lesson, the teacher has reduced the learning material to its essentials and systematized it in the lesson write-up. In the actual lesson situation, we allow the pupils to take an effective part because now we, together with the child, reduce the learning material. The pupil has to see the coherence of our reduction; he has to reduce the material himself. The purpose of the reduction that is observable on the chalkboard is to help him reduce the material himself. Without the teacher's reduction, the child is unable to create order out of the chaos; he cannot get a logical view of the essentials; he cannot learn.

Writing down the board scheme in the lesson write-up has a four-fold benefit: first, it insures the teacher that he has included all of the essentials in his exposition; second, it determines whether the relationships among the essentials will be **logical** and **meaningful** to the pupils; third, to shows whether the structure and

relationships of the essentials will gradually and systematically lead to the **solution of the problem**; fourth, it indicates if **possible bottlenecks** and problem areas can arise that have to be intercepted by means of a branching in the exposition. The write-up of the board scheme is of cardinal importance to the teacher because it has to confirm for him that his unlocking can achieve the anticipated learning effect.

The Lesson Structure

With the lesson write-up, the teacher justifies his choices of the **form** he gives the lesson, the **didactic modalities** that put his lesson plan into motion, and the **course** of the lesson in which the order of the structure of the plan appears.

Form of the lesson

Choice of didactic ground form(s): Here the teacher writes down one or a combination of the didactic ground forms into which he is going to cast his lesson in light of the level of the pupils' readiness and the nature and complexity of the learning material in order to most effectively achieve the lesson aim. He selects his ground form(s) from **play, discussion, assignment and example.**

Choice of methodological principle(s)

The **inductive** or **deductive** methodological principle, or a combination of the two, also is chosen in light of the pupils' level of readiness as well as the nature and complexity of the learning material and is indicated under this heading.

Choice of principles for ordering (arranging) the learning material

The way(s) in which the teacher is going to order the learning material is indicated under this heading. The teacher selects one or a combination of the principles of ordering the learning material from **the symbiotic, the linear, the divergent, the spiral, etc.** that will most effectively reveal the essentials of the learning material to the pupil in his particular situation.

Planning the form of a lesson usually takes place in the above sequence of choices but, at the same time, the lesson and learning aims, the nature and structure of the subject and the pupils' readiness have to be taken into account. These three factors need to be considered each time in deciding on the form the lesson will take.

Method(s) of presenting (unlocking) the content

Under this heading a brief explanation is given of the anticipated method(s) of presentation that are expected to crystallize out of the previous decisions. It is understandable that the choices of basic didactic forms and logical methodological possibilities will guide the teacher in his choice of particular methods of presentation as will the methodological principles and the principles of ordering the learning material be of equal importance in this choice.

It also is important for the teacher to remember that the methods of presentation change in accordance with the course of the lesson. Usually a variety of methods are used during the different phases of a lesson. For example, during actualizing foreknowledge, the **question-and-answer** method can be used; during stating the problem, a combination of question-and-answer and **lecturing** can be used; during exposing the new content a combination of lecturing and **demonstrating** can be used, etc.

The course of the lesson and the didactic modalities: the phases of the lesson

The didactic modalities put the teacher's planning into motion. The motion that in this way is actualized is expressed in the course of the lesson. In its turn, the course of the lesson differentiates into various phases. Thus, it is necessary to plan anew the didactic modalities for each phase of the course of the lesson. For this reason, the course of the lesson, as didactic modalities, is viewed as a unity in the write-up of the lesson. In the usual course of a lesson, six essential phases can be differentiated: **actualizing foreknowledge; stating the problem; exposing the new content; actualizing (controlling) the lesson content; functionalizing (i.e., applying, transferring) and testing (evaluating).**

The didactic modalities, which give a dynamic to the planning, are differentiated into **didactic principles, modes of learning** and

teaching and learning aids. The choice of a didactic principle (activity, differentiation, individualization, socialization and tempo-variation) is a determinant of the teaching effect aimed for. To try to provide more certainty to the learning event, there has to be an additional effort to delimit one or more planned modes of learning within the didactic principle(s). If necessary, the teaching effect can be promoted through the responsible use of aids such as various real objects, models, slide projectors, tape recorders, films, etc.

It is important to remember that the nature and complexity of the learning material and the pupils' readiness can lead to a great variety of choices of didactic principles, modes of learning as well as teaching and learning aids.

The following remarks about the phases of a lesson are merely possibilities and not invariable certainties:

Actualizing foreknowledge

During this phase of the lesson, the pupils' foreknowledge regarding the matter under consideration is called to awareness. There is a search for relationships between the foreknowledge and the new knowledge to ensure the attribution of meaning--the pupil has to experience the new theme as meaningful. Here in his lesson write-up, the teacher has to explain how he is going to call up the pupils' foreknowledge, e.g., by asking questions about already acquired insights, by leading a class discussion of the work already dealt with, by letting the pupils talk about their own experiences.

Didactic principles:

Under this heading, the teacher has to explain which of the didactic principles (i.e., activity, individualization, socialization and tempo variation) are going to be more prominent in this phase of the lesson. Each pupil has to be actively involved in recalling and implementing his foreknowledge but because this involves familiar insights, the tempo can be considerably faster than when exposing the new knowledge, for example. Thus, under this heading, the teacher writes: **activity** and **quick tempo.**

Modes of learning:

The mode of learning which is most prominent during this phase of the lesson is remembering. Thus, here the teacher writes down **remembering.**

Teaching and learning aids:

Since this phase of the lesson is brought into motion in terms of already acquired insights, the teacher often will make use of a board scheme, a print or illustration, etc. so that such insights can be quickly and adequately recalled. Thus, here the teacher simply writes **chalkboard, print of...**, etc.

Stating the problem

During this phase of the lesson the acquired insights (foreknowledge) are recounted and placed in a new relationship that contains a problem for the pupil. Under this heading the teacher explains how he is going to lead the pupils out of what they know in order to notice the problem in the new content because he leads them to lived-experience the inadequacy of their insights. This phase especially requires careful planning because the lesson progresses or falls flat depending on the extent to which the pupils are motivated by the problem to attain the learning aim.

Didactic principles:

The active stake of each pupil in grasping the lesson problem is essential during this phase of the lesson. In this phase the teacher also has to keep in mind the pupils' individual differences; hence, individualization also is important. Usually, during this phase, the lesson tempo decreases because the teacher has to be sure that each pupil appreciates the lesson problem. Accordingly, under this heading of the lesson write-up, the teacher indicates the following: **activity, individualization** and **slower lesson tempo.**

Modes of learning:

Because the problem places the acquired insights in a new relationship or structure, thinking as a mode of learning will be of particular importance here. In this stage of the lesson, the pupils' perceiving is not yet differentiated but his sensing is stimulated. Accordingly, under this heading the teacher writes down **thinking, sensing.**

Teaching and learning aids:

Because stating the problem really involves stimulating foreknowledge and the questioning of it in a new structure, aids (e.g., slide projectors, films, prints, diagrams, graphics, tables, schemes) are chosen here that, as representations of it, call forth the previous knowledge again. These aids usually are especially effective because they represent to the pupils once again their foreknowledge. These teaching and learning aids even can be the point of departure for the lesson. By using aids that stimulate the pupil's sensing (e.g., teaching aids that represent the structure, form and order of the **matter** as a total or global image), the pupil comes to question his own knowledge. Here one thinks of a print, a representation, a moving or colored model.

In writing up the lesson, the teacher simply names the different teaching and learning aids (and their sequence of use) that are going to be implemented in this phase of the lesson; e.g., **graphics** and **tables** and then a **print.**

Exposing the new content

Under this heading of the lesson write-up, the teacher gives an explanation of the course of the exposition. Here he has to clarify how he is going to make the essentials of the learning material evident, how he is going to place them in a logical relationship, how these essentials (e.g., as they appear as a scheme on the chalkboard) gradually make a solution to the problem evident.

It is in the nature of the exposition that the teacher continually reaches back to the pupil's foreknowledge in order to make his exposition more meaningful to them. During this phase of the course of the lesson, e.g., often the question-and-answer, the class discussion, learning/study discussion methods are used. He continually directs his pupil's perceiving to the essentials of the learning material. During this phase, their active involvement is necessary and it gives this phase its particular dynamic character.

During the exposition of the new content, concept formation is primarily what occurs. Under this heading of the lesson write-up, the teacher should write down the concepts to which the lesson is directed. The order and relationship of concepts are just as

important and for this reason they should also be written down. The explanation provided under this heading differs from the board scheme in that the latter indicates the sequential (i.e., chronological) and essential (i.e., structural) aspects of the theme in question while the concepts in the exposition of the new content are the content of the lesson aim.

As previously mentioned, the didactic modalities have to be worked out for each phase of the lesson.

Didactic principles:

From the nature of exposing the new content, it will be necessary for each child to be actively involved in the lesson, otherwise the insights to which it is directed cannot be guaranteed for each individual child. Besides activity as a principle, during this phase the lesson tempo will be slightly slower because really the pupil, **together** with the teacher, has to reduce the learning material to its essentials and understand the relationships among these essentials. During this phase, with respect to tempo, the teacher allows himself to be lead by the quality of the immediate learning result. To influence the quality of the learning result, he will individualize, especially be means of individually directed questions and by eliciting commentary from the pupils.

Under this heading the teacher writes, e.g., **activity, slower tempo** and **individualization.**

Modes of learning:

Because this phase primarily involves insights into the concepts central to the new content, the teacher will (depending on the type of lesson) stimulate and direct those modes of learning most appropriate for and applicable to gaining insight into the concepts. For example, in an explanatory lesson, thinking and perceiving will be central; perceiving to establish a point of focus and thinking to order the point of focus into a profile or relief (i.e., distinctions by contrast). In this case, he writes down **perceiving** and **thinking.**

Teaching and learning aids:

As in each other phase of the lesson, teaching and learning aids are chosen by virtue of the nature of the learning material (e.g., is it

meaningful to try to present specific concepts visually?), the level of the pupil's readiness (e.g., will this pupil understand an abstract scheme of a course of action?) and the modes of learning (e.g., which teaching and learning aids can direct perceiving and actualize thinking with respect to the essentials of the learning material?).

During this phase of the lesson, the teaching and learning aids ought to give the pupil the opportunity to use them according to his own needs and tempo (e.g., a real object, a model, an apparatus). Because thinking during this phase is implemented more on a reproductive level, aids should be used which link up with representations of already acquired knowledge (e.g., slide projectors, film, diagrams, graphics, tables, schemes).

Under this heading of the lesson plan, the teacher writes, e.g., **model of...**, **experimental apparatus for a ... experiment, prints** (specified)**, graphs of...**, **tables of... .**

Actualizing (controlling) the lesson content

During this phase of the lesson the concern is with the pupil's control of their insight into the essentials. Under this heading, the teacher explains how he is going to decide whether the pupils understand the essentials of the learning material, e.g., by intermittent questions while exposing the new content, by gradually completing a prepared part of a whole. During this phase, the pupil should be given the opportunity to handle and use his new insights himself.

The essential concepts and activity structures of certain learning material (e.g., mathematics, arithmetic, natural science) only can be broken through to real insight to the extent that the pupil practices the essentials until that insight is attained. In this case, the teacher has to demonstrate the different practice examples in terms of which the insight can break through.

During this phase of the lesson, the pupil has to be able to schematize the insights, i.e., place them in a synoptic scheme with his foreknowledge. The scheme needs to include the essentials of the learning material as well as the relationships among them. Naming the new insights also is of particular importance here--the unambiguous description, articulation, etc. expressed in language requires the pupil to engage in productive thinking (in contrast to

reproductive thinking). This entire phase really is focused on stimulating and directing productive thinking. The schemes and names to which the entire exposition has lead have to be explained here.

Didactic principles:

Because this phase really is attuned to individual insight into the learning material, individualization is an important didactic principle. In this phase, tempo occurs by virtue of each pupil's own pace and not by following the teacher's lead. For this reason there is little sense in planning a faster or slower tempo. In each lesson phase, activity is evident but this is especially so while actualizing (controlling) the content. This is because the pupil actually has to place the essentials of the learning material within his horizon of knowledge and this requires whole-hearted activity. During this phase, differentiation of the content is not yet very prominent because all of the pupils have to understand the same essentials.

Under this heading the teacher writes **individualization** and **activity.**

Modes of learning:

Since the concern here is to firm up the insights in the sense that each pupil has to realize the insights himself, thinking (especially productive thinking) is particularly important. The pupils usually are allowed to wrestle with the problem on their own and thus discover shortcomings in their own field of experience. However, the teacher does not abandon them to their own fate but helps each individual pupil by providing supplementary knowledge and skills. He continually demands that the pupils themselves search again and again for better insight. The aids only provide direction for finding possible ways to solve the problem. They give impetus to thinking or, when the pupil has gone astray, they again correct the direction of thinking and, in this way, serve as controlling aids.

Teaching and learning aids:

General aids are not used here. Rather, aids are chosen and used that correspond to each pupil's needs and difficulties. Even so, the teacher has to anticipate these difficulties and make sure that he has

enough suitable aids on hand. Such aids are listed under this heading.

Functionalizing

This phase of the lesson is directed to firming up and making functional [using] the insights the pupils have acquired during the lesson phase exposition of the new content. This means they must be able to use the insights in similar problem areas with understanding. In this phase, practicing the insights often is called for. This can be seen most clearly where the sequence of work is firmed up in selected practices, e.g., in mathematics and arithmetic. Such practices are explained under this heading.

To be able to use the new insights (to bring them into function; to functionalize them), they have to be integrated with the foreknowledge. Integrating the new with existing knowledge requires particular preparation and reflection. This is true for all learning material but because of the multiplicity of the so-called human sciences (language, history, etc.), the problem of integrating the new is more difficult; e.g., in exposing or presenting the reasons for the settlers of 1820 coming to the Cape of Good Hope, the teacher and the pupils ultimately have to integrate this historical event with the Napoleonic Wars and the Industrial Revolution. At the same time, the cultural and especially the constitutional history of the Cape after 1820 are suggested and put in perspective. The integration the new insights with existing insights is explained under this heading.

Functionalizing really implies applying. The pupil has to be able to apply the new insights. The form in which the application can be observed has to be carefully planned and considered and then explained under this heading; for example, application exercises of similar problems, working out one or more related examples, firming up the concept in the pupil's own composition or poem, etc.

Didactic principles:

Once again, activity is central here because each pupil has to actively exercise, integrate and ultimately apply his insights. Here there especially is a differentiation of the learning material because the teacher changes the forms of exercise and application according to each pupil's potentialities. At the same time there is

individualization. Once again, the tempo cannot be planned beforehand because each pupil will exercise, integrate and apply his insights according to his own tempo. Here the teacher usually writes **activity, differentiation** and **individualization.**

Modes of learning:

Given the nature of the matter, productive thinking and remembering will be particularly important in this phase of the lesson. The pupil has to restructure his already acquired insights in order to integrate and use them, and in addition he has to rely on his memory to apply them (behave with insight). At the risk of repetition, it is necessary once again to indicate that the particular nature of the learning material, the pupils' level of readiness and the type of lesson will determine which modes of learning have to be stimulated and directed during this phase of the lesson. In a general explicatory lesson, **productive thinking** and **remembering** will be written here.

Teaching and learning aids:

In addition to direction-giving aids, that encourage thinking, in this phase it is important that they also be used to determine whether the pupils' insights into the new knowledge are at the level expected. To ascertain this, a diagram or scheme (without words) can be used for a quick and easy review. In this regard, a film, a tape recorder or a program also are useful.

The pupils need to be given the opportunity to practice and apply the new. For this, a chalkboard, unrolled sheets of paper, textbooks, an overhead projector, etc. can be used. Because insight into the concept has already been attained, the aids will only be directed to practicing the insight in new situations. As many new problems and possibilities of application as are feasible have to be pointed out such as field trips, exhibits, films, etc.

The teaching and learning aids involved are written out.

Testing (evaluating)

After the end of a lesson or a series of lessons, a teacher has to test the proficiency of the pupils' insight into the essentials of the new learning material or evaluate his thinking, creative, activities about

the matter. Testing and evaluating are always necessary and therefore the teacher has to make provision for them in preparing his lesson. Testing and evaluating really are orienting activities for both the teacher and the pupil. By testing and evaluating the pupils' insight into the essentials of the learning material, the teacher determines their readiness to progress further in the subject. At the same time, he informs himself of the quality of his presenting (unlocking) the learning material (in the sense of effective or authentic learning results by the pupils). By testing and evaluating, he also can ascertain which pupils have a need for remedial help and he can set up a remedial program to overcome the difficulty. For the child, testing and evaluating are orienting in the sense that the teacher affirms to him that his knowledge is satisfactory or unsatisfactory, that he has or hasn't attained the expected level of achievement, that he is unable to deal with the essentials of the learning material, problematic areas are pointed out to him, etc.

It is self-evident that a teacher has to prepare the form and content of the testing and evaluating with particular thoroughness. In the first place, he has to know precisely what he is going to test and evaluate. The test has to be structured in such a way that he can be sure that it reflects the quality of the pupils' insight into and handling of the essentials of the learning material. The form in which the test is going to be cast also deserves special attention. For example, is he going to test by having the pupils fill in or complete a list of questions, by an essay, by a dictation exercise, by a systematic exposition of content, by a qualitative analysis of the pupil's own constructed object?

Under this heading, the teacher provides a complete explanation of both the form and content of his testing and evaluating insights.

Didactic principles:

During this phase of the lesson, there especially are self-activity, differentiation and tempo variation. From the nature of the matter, the pupil himself has to be given responsibility for his insights into the essentials of the new learning material. Responsibility is nothing other than self-activity; the pupil sets his insights into motion, he mobilizes and directs them to solve related problems. Assignment is at the foundation of testing and evaluating in the sense that the teacher assigns the pupils to solve particular problems by means of

their insights, to make particular applications, to search for specific relationships, to draw particular conclusions, etc.

By virtue of his knowledge of the individual pupils' potentialities, the teacher differentiates the assignments; for example, he gives simpler assignments to the slower or weaker pupils but gives them more opportunity to exercise insights; for the stronger pupils, he gives more varied assignments with respect to depth and breadth. In this way, there is differentiation and individualization.

The nature of the learning material and the form of testing and evaluating determine whether the teacher sets a minimum time limit and whether the pupils follow their own tempo in carrying out the assignments.

Under this heading the teacher writes, e.g., **self-activity, differentiation** and **fixed tempo.**

Modes of learning:

Because of the nature of testing and evaluating, a special appeal is directed to the pupils' memory and productive thinking. During this phase of the lesson, the pupil has to recall his insights into the essentials of the learning material and relate them to a problem area, order, integrate and find relationships to be able to properly carry out the assignment. This requires productive thinking which, didactically speaking, is the means for attaining the didactic-pedagogic aim through unlocking reality, i.e., independence and responsibility.

Under this heading, the teacher writes, e.g., **remembering** and **productive thinking.**

Teaching and learning aids:

Because the concern during this phase is with evaluating and testing the pupils' insights, skills, knowledge, etc., teaching aids will be used that correspond to the unique nature of the subject, e.g., tasks, projects, completing or filling in lists of questions. Here the teacher simply writes, e.g., **task, project,** etc.

SUMMARY: THE LESSON SCHEME

In summarizing the above, the lesson scheme is represented as follows:

Localizing information:

Grade:
Subject:
Time:

Grouping:

The teaching aim:

The lesson aim:
The learning aim:
Stating the problem:
    Formulating the problem:
    Problem solution:

The lesson structure:

Form of the lesson:

    Choice of ground form(s):
    Choice of methodological principle(s):
    Choice of principle(s) of ordering the learning material:
    Method(s) of solution:

The course of the lesson and didactic modalities:

Actualizing foreknowledge:

    Didactic principles:
    Modes of learning:
    Teaching and learning aids:

Stating the problem:

    Didactic principles:
    Modes of learning:
    Teaching and learning aids:

Exposing the new content:

Didactic principles:
Modes of learning
Teaching and learning aids:

Actualizing the lesson content:

Didactic principles:
Modes of learning:
Teaching and learning aids:

Functionalizing:

Didactic principles:
Modes of learning
Teaching and learning aids:

Testing (Evaluating):

Didactic principles:
Modes of learning:
Teaching and learning aids:

SOME EXAMPLES OF LESSON WRITE-UPS

The aim of these examples is not to present a "model" to be slavishly followed. Indeed, the examples are not the only ways the themes can be unlocked or presented. The fact is, each teacher, in unlocking reality reveals his own teaching style in his teaching activities.

A teaching model only makes sense if a teacher can gauge its basis and boundary, i.e., if he can interpret it in accordance with the didactic-pedagogic context underlying the structure of the model. In a didactic sense, this claim holds for all so-called "models" (models, teaching models, learning models, etc.) because if the "model" does not contain the didactic essentials, it is not really a model of teaching.

What are offered are merely examples of how individual teachers plan to unlock specific content in order to attain a specific teaching aim.

First example:

Localizing information:

Grade level: 8th grade.
Subject: Geography (introduction to map work).
Time: 35 minutes.

Grouping:

Homogeneous with respect to age and intellectual potentialities but heterogeneous regarding gender.

The teaching aim:

The lesson aim: To unlock or present the concept "direction" and to firm up its description.

The learning aim: To provide an answer to the question, "What is direction and how can one describe it?"

Stating the problem:

Problem formulation: The learners are led via the lesson phases actualizing foreknowledge and stating the problem to pose to themselves the problem, "What is direction and how can one name or describe it?" This problem is written on the left side of the chalkboard.

Problem solution: During the lesson phase of exposing the new content, the following board scheme is presented gradually:

1. (a) The sun rises in the EAST.
   (b) The sun sets in the WEST.
2. Direction is determined by the sun.
3. NORTH is where the sun is at 12:00 (noon) in the Southern Hemisphere.
4. SOUTH is where the sun is at 12:00 (noon) in the Northern Hemisphere.
5. South is in the opposite direction from NORTH.
6. At night, direction is determined by the stars.
   (a) Southern Cross in the Southern Hemisphere.

(b) Polar star in the Northern Hemisphere.

7. Direction also is determined by a MAGNETIC COMPASS.
8. Direction is described by N, S, E and W.
9. Between two directions, there also is a direction
   N and E: NE
   N and W: NW
   S and E: SE
   S and W: SW
10. Direction is a description of the position of one place with respect to another place on the earth's surface.
11. Direction is described by a compass card as N, S, E and W and points between.

The lesson structure:

Form of the lesson:

Choice of ground form(s): discussion, example and assignment.
Choice of methodological principle: inductive.
Choice of principles for ordering the learning material:
symbiotic and progressive.
Methods of presentation (unlocking): During actualizing foreknowledge, the **question-and-answer method** prevails. During stating the problem, **narrating alternating with question-and-answer** are the prevailing methods. During exposing the content, **narrating alternating with demonstrating** prevail. During actualizing the lesson content, **learning discussion alternating with free activity** prevail. During functionalizing, the primary method is **drill.** During testing, the methods used primarily are **question-and-answer alternating with the textbook.**

The course (phases) of the lesson and didactic modalities:

Actualizing foreknowledge:

The pupils are lead by the following questions to actualize their foreknowledge of direction: Where is your house in relation to the school? Where is the City Hall, church, station, etc. in relation to the

school? What way must you travel to arrive in Durban, Cape Town, Windhook, etc.? (In each case the pupil has to show where the place is, the direction, by pointing).

These questions give the pupils the opportunity to recall their own knowledge of the relationship between one place and another.

Didactic principles: activity, individualization (questions are directed to individual pupils), fast tempo.

Modes of learning: mainly remembering alternating with reproductive thinking and perceiving.

Teaching and learning aids: the actual City Hall and church spire (which are visible from the classroom). A large aerial photo of the city.

Stating the problem:

On the basis of explanation and the question, "You have all shown where your house, etc. is, but what have you really shown?", the pupils are guided to answer the question with the word "direction". The question is now stated in terms of the possibility of accurately showing direction when one cannot do so by gestures, e.g., by means of the following questions:

1. How would you **write to** someone where a place is in relation to where you live?
2. How can a ship in difficulty describe **over the radio** where it is?

Now the pupils are guided to conclude that the names of direction must have a shared meaning. It is now advisable that the lesson problem, "what is direction and how can one name it?" be written on the chalkboard.

Didactic principles: activity, individualization, slower tempo.

Modes of learning: mainly reproductive and productive thinking and remembering.

Teaching and learning aids: none.

Exposing the new content:

By means of questions and narrating, the following facts are established:

1. The sun rises in the EAST.
2. The sun sets in the WEST.
3. Direction is determined by the sun.

Each time, the pupils have to indicate where EAST and WEST are. Maps on the wall with E and W in the correct places are introduced. Also, a map is placed on the floor and an East-West line is drawn through it.

The pupils now are led by the question "Can we also determine the other directions by means of the sun?" to a discussion of methods for determining NORTH with a compass, with a stick in the ground and its shadow, and with a watch. NORTH and SOUTH are indicated and the NORTH-SOUTH line is affixed to the map on the floor as are the letters N and S to the map on the wall.

The pupils are questioned about how they can determine direction at night. The use of the Southern Cross (Southern Hemisphere) and the Polar Star (Northern Hemisphere) are now discussed and explained.

The question "Can we now say where one place is with respect to another?" leads to a discussion of labeling direction. The other points of direction on the compass card are discussed. For example, by the question, "How can we describe the direction of a place between NORTH and EAST?", the pupils are guided to formulate for themselves the label NORTHEAST. The same holds for the other intermediate directions.

The compass card, with intermediate directions filled in, is on the floor and the pupils show with it that the directions on the map are really correct (i.e., really are **on** the earth's surface) when it lies horizontally on the floor, but that we hang the map vertically to more easily work with it. The pupils are guided to deduce that NORTH is always at the top of the map on the wall.

A world globe is now displayed and the following have to be established from questions:

(1) NORTH and SOUTH are the main points and refer to the NORTH POLE and the SOUTH POLE, respectively.
(2) EAST and WEST are not main points but refer to the direction in which the sun rises and sets.

The pupils are guided to deduce that: direction is a description of the location of one place with respect to another by means of N, S, E and W and the intermediate points on a compass card.

Didactic principles: activity, individualization.

Modes of learning: perceiving alternating with thinking.

Teaching and learning aids: maps, globe, magnetic compass and prints of the Southern Cross and the Polar Star.

Actualizing the lesson content:

The pupils are now asked to describe the step by step construction of a compass card. During this task, control of the insights is exercised. The correct labeling of the directions of the wind are especially attended to. The pupils are individually called upon to show and to label the directions of the wind.

Didactic principles: individualization.
Modes of learning: productive thinking and remembering.
Teaching and learning aids: model of a compass card, land maps.

Functionalizing:

The insights into direction in constructing a compass card are implemented by the following assignments:

(i) Draw a compass card.
(ii) Determine the direction of the following places from each other according to the principles of direction and their labels (e.g., N, S, SE). Use a land map.
(a) Cape Town lies to the _____ of Port Elizabeth.
(b) Port Elizabeth lies to the _____ of Cape Town.

(c) Johannesburg lies to the _____ of Cape Town.
(d) Cape Town lies to the _____ of Johannesburg.
(e) Pretoria lies to the _____ of Bloemfontein.
(f) Bloemfontein lies to the _____ of Pretoria.
(g) Kimberley lies to the _____ of Bloemfontein.
(h) Bloemfontein lies to the _____ of Kimberley.
(i) Durban lies to the _____ of Pretoria.
(j) Pretoria lies to the _____ of Durban.

(iii) For the quicker pupils, more difficult ancillary exercises are given.
(iv) Describe briefly the meaning of the concept "direction".

Didactic principles: activity, differentiation and individualization (especially regarding individual tempo and differentiation of exercises).

Modes of learning: productive thinking, remembering, restructuring.

Teaching and learning aids: land map of South Africa.

Testing (Evaluating):

The test completed in the functionalizing phase is evaluated to determine the pupils' insight into the essentials of the learning material. This brief test is collected and corrected after the lesson. For this reason there is no need to make provision here for didactic principles, modes of learning as well as teaching and learning aids.

Second example:

Localizing information:

Grade level: 10th grade
Subject: Mathematics (greatest common divisor and least common multiple of algebraic expressions).
Time: 40 minutes.

Grouping:

Homogeneous with respect to age and intellectual potentialities but heterogeneous with respect to gender.

The teaching aim:

The lesson aim: To synthesize algebraic expressions by factoring and by correctly defining the concepts **greatest common divisor** (GCD) and **least common multiple** (LCM).

The learning aim: To effectively implement the concepts **least common multiple** and **greatest common divisor** in such problems as combining algebraic factors and using these concepts insightfully in additional problem situations.

Stating the problem:

Problem formulation: Via the lesson phases of actualizing foreknowledge and stating the problem, the pupils are made aware of their inability to determine algebraically the least common multiple and the greatest common divisor without an analysis into factors. Correspondingly, they are guided by the question, "How can a least common multiple and greatest common divisor be determined by analogy with arithmetic examples?" The teacher writes the question on the chalkboard.

Problem solution: During the lesson phase of exposing the new content, the following board scheme gradually is shown:

1. $8 = 2 \times 2 \times 2$
   $12 = 2 \times 2 \times 3$
   $18 = 2 \times 3 \times 3$
   GCD = 2.
   LCM = $2 \times 2 \times 2 \times 3 \times 3 = 72$.

2. $18a^2 - 18 = 18(a^2 - 1)$
   $= 18(a + 1)(a - 1)$.
   $18a^2 + 18a + 4 = 2(9a^2 + 9a + 2)$
   $= 2(3a + 1)(3a + 2)$.
   $18a^2 - 15a - 18 = 3(6a^2 - 5a - 6)$
   $= 3(3a + 2)(2a - 3)$.
   GCD = 1.
   LCM = $18(a + 1)(a - 1)(3a + 1)(3a + 2)(2a - 3)$

Note: The similarity between the logical construction of the algebraic and the arithmetic example (which the pupils already know) is stressed.

The lesson structure:

Form of the lesson:

Choice of ground forms: discussion, example and assignment.
Choice of methodological principles: initially deductive and then inductive in order to discover the concepts.
Choice of principles for ordering the learning materials: linear.
Methods of presenting (unlocking): During actualizing foreknowledge: **demonstration.** During stating the problem: primarily **questions-and-answers.** During exposition of the new content: primarily demonstration **intermingled with questions-and-answers.** During actualizing the lesson content: primarily **demonstration intermingled with questions-and-answers.** During functionalizing: mainly the **textbook.** During testing: preponderantly **textbook intermingled with questions-and-answers.**

The course of the lesson and didactic modalities:

Actualizing foreknowledge:

Since the concepts "factor", "greatest common divisor" and "least common multiple" embrace the core of the foreknowledge, these concepts have to be clarified again with appropriate questions. Some computational examples will be used as demonstrations after the concepts "greatest common divisor" and "least common multiple" are first analyzed so the meaning of each part-concept also is clear. Such part-concepts as "common", "multiple", "factor" must first be illustrated by simple examples.

Didactic principles: activity, individualization, tempo variation.
Modes of learning: Thinking, perceiving, sensing.

Teaching and learning aids: chalkboard.

Stating the problem:

On the basis of the relevant foreknowledge which is actualized, the pupils realize that at this stage they can find the greatest common divisor and the least common multiple of arithmetic numbers and simple algebraic monomials. The application of the concepts to algebraic polynomials, however, awakens a feeling of the problematic in the child. By further analyzing the problem, they realize that their already existing concepts need to be generalized and can be applied to algebraic polynomials. Here the relationship between "arithmetic number" and "algebraic expression" has to be clearly expressed.

Didactic principle: Guided activity.
Modes of learning: Sensing and perceiving.
Teaching and learning aid: Chalkboard.

Exposing the new content:

The correspondence between the determination of the greatest common divisor and the least common multiple of arithmetic numbers and algebraic monomials is demonstrated by appropriate examples. The difference in presenting the new lies in the fact that the analysis of algebraic expressions into factors presents an obstacle. The difference and similarity can be illustrated for the pupils by a good example:

First step:
Analyze each expression into factors:

Arithmetic example	Algebraic example
$8 = 2 \times 2 \times 2$	$18a^2 - 18 = 18(a^2 - 1)$
$12 = 2 \times 2 \times 3$	$= 18(a + 1)(a - 1)$
$18 = 2 \times 3 \times 3$	

$18a^2 + 18a + 4 =$
$2(3a + 1)(3a = 2)$

$18a^2 - 15a - 18 =$
$3(3a + 2)(2a - 3).$

Second step:
Look for common factors in all three expressions and numbers. In the arithmetic example, there is only one such factor, namely 2, which is the greatest common divisor. In the algebraic example, there is no common factor and thus the greatest common divisor is 1.

Third step:
Use the arithmetic example to show how the least common multiple of the three numbers is found. Begin by writing down the factors of eight, namely, 2 x 2 x 2. To make this a multiple of 12, the factor 3 is needed (2 x 2 x 3). In considering 18, an additional factor of 3 is needed (2 x 3 x 3) and thus the least common multiple is 2 x 2 x 2 x 3 x 3 which is 72.

Now the algebraic example is used in a similar way to come to the conclusion that the least common multiple is $18(a + 1)(a - 1)(3a + 1)(3a + 2)(2a - 3)$.

This arithmetic example can also be studied with insight by applying concepts from set theory.

Didactic principles: guided activity, guided tempo.
Modes of learning: perceiving and thinking.
Teaching and learning aid: chalkboard.

Actualizing the lesson content:

One or two examples with slight differences are now worked through with the pupils to give them the necessary confidence with respect to the correct explanation and factoring.

Didactic principles: guided and self activity, guided tempo.
Modes of learning: perceiving, thinking, imitating.
Teaching and learning aid: chalkboard.

Functionalizing:

Suitable examples are now sought which the pupils themselves have to do so the newly acquired insights can be exercised. In this assignment, the examples are arranged so that there is a perceptible increase in level of difficulty. A few difficult examples are presented as a challenge for the more discerning pupils.

Didactic principles: self-individualization at one's own tempo.
Mode of learning: thinking.
Teaching and learning aid: textbook.

Testing:

A number of problems that cover the whole range of difficulty (re factoring) can be presented to the pupils to evaluate their level of achievement. It should always be kept in mind that each problem has to test the essentials of what is presented (unlocked).

Didactic principle: self-individualization.
Mode of learning: Thinking.
Teaching and learning aid: copies of the examination.

Third example:

Localizing information:

Grade level: 12th
Subject: Afrikaans (Literature).
Time: 40 minutes.

Grouping:

Homogeneous with respect to age, subject choice, intellectual potentialities and gender (girls).

The teaching aim:

The lesson aim: The striking imagery in the "Ballad of Grayland" by D. J. Opperman.

The learning aim: To sharpen insight into the way a creative poet goes about characterizing persons in their regular day-to-day existence in the city.

Stating the problem:

Problem formulation: Through actualizing foreknowledge and stating the problem, the pupils are guided to state for themselves the problem, namely, "What image(s) are evoked by gray, grayness, gray land?"

Problem solution: Appreciation as well as explication are dealt with in this lesson; therefore, the poem first is read in its entirety by the teacher.

The lesson structure:

Form of the lesson:

Choice of ground forms: conversation, example and assignment.
Choice of methodological principles: initially inductive; later deductive.
Choice of principles for ordering the learning material: Symbiotic and linear.
Methods of presentation (unlocking): During actualizing foreknowledge: **question-and-answer method.** During stating the problem: mainly **narration** intermingled with **question-and-answer** which also are maintained during actualizing the lesson content. During functionalizing: **question-and-answer.** During testing: the **textbook.**

The course (phases) of the lesson and didactic modalities:

Actualizing foreknowledge:

Foreknowledge is stimulated by means of questions about a ballad dealt with previously. After this, questions are asked of the pupils to guide them to the new content.

For example:

What is it like early in the morning in the winter in the center of the city? Can we compare this with Johannesburg? What is the difference? Is the name **Gold City** still appropriate? What image currently is most conspicuous when one thinks of Johannesburg?

Why is the image of grayness considered? What is the composition of the color gray? What is the effect of a gloomy, gray day on a person?

Didactic principles: activity, individualization (questions are directed to individual pupils), quick tempo.
Modes of learning: remembering, reproductive thinking, imagining, sensing and perceiving.
Teaching and learning aid: a large photo of Johannesburg taken early in the morning.

Stating the problem:

In terms of their own experiences, the pupils are guided by the question How does Opperman create a striking image of a person in "Grayland"?

Didactic principles: activity, individualization, slower tempo.
Mode of learning: productive thinking.
Teaching and learning aid: textbook.

Exposing the new content:

The entire poem is read to the class in a moving way.

Didactic principles: activity and individualization.
Modes of learning: sensing, perceiving, productive thinking.
Teaching and learning aid: textbook.

Actualizing the lesson content:

By narrating, part I of the poem is explained further. With several examples, how a young man goes to the city by train, what his impressions are and how he has to perform tiring and irritating work are described. Each stanza is a quick, flashing image of what happens to him. He changes jobs very quickly. He doesn't like the ugly city; he is in continual conflict: a splendid and touching

comparison is when he stacks oil drums on each other and this seems like the cells of a honey-cake but they are empty and not full of **sweetness** like a honey-cake; for him his work is meaningless and sterile. There is a precise correspondence between the quick hands that grasp and fold together paper in a candy factory and the fast movement of hands playing a piano; but one brings pleasure and the other monotonous drudgery.

From the personifications in the sixth stanza of saws that "scream", chisels that "chatter", cars that "nag", we hear the irritations and frustrations of the young man who again has changed jobs. The image allows his growing resistance to become a real experience, especially when he finds himself in trouble.

Didactic principles: individualization, activity, slower tempo.
Mode of learning: productive thinking.
Teaching and learning aid: chalkboard.

Functionalizing:

Exercise of insights occurs by dealing with part II with the pupils, but by the **question-and-answer** method.

Didactic principles: activity, differentiation and individualization.
Modes of learning: productive thinking, restructuring.
Teaching and learning aid: textbook.

Testing (Evaluating):

Part III can be given to the pupils as an assignment to determine their insight into the essentials of the learning material. However, in this case, a composition with the heading, "Me, my brothers and sisters", is given to the class by which they are linked to the generally human confrontation with a world in which they continually have to give an account of themselves.

Didactic principle: self-activity.
Modes of learning: from imagining to productive thinking.
Teaching and learning aids: none.