

## SUBJECT DIDACTICS\*

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### A. General orientation and historical introduction

The fact that has to be well understood here and that can be of particular significance for the explanations to follow is that in each period of history there are contemporary demands specifiable, but also that there are particularly timely efforts in the development of a faculty (Education).

The constituent disciplines and their structural relations as well as functional interactions as a total framework for teaching and training as they appear today are not haphazard matters. This configuration is the result of the achievements of a number of dedicated academicians within meaningful institutional systems. There are clear signs that peculiar and specialized demands appear to be placed on the Faculty from time to time regarding its purely scientific as well as its training tasks.

Therefore, in order to understand fully the task of Subject didactics in the Faculty, first it has to be related to the other pedagogic perspectives and especially didactic pedagogics within a larger **macro-structure**. Subsequently, an analysis of a number of school subjects and their unique nature is necessary to establish a **micro-structure** for each with the expectation that certain groups of questions can be assembled and classified for a number of neighboring subjects.

What has been argued clearly from the above is that the type of participation of existing departments in certain terrains has become too extensive and so involved that the demands no longer can be met.

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In the early 1960's (1962) the department of Didactics and Historical Pedagogics at that time appointed two lecturers to begin teaching and training student teachers in certain **school subject methods**. Initially one lecturer took care of human science subjects (languages included) and the other a number of natural science subjects. In each school subject method (Mathematics) provisions are made for a number (3) of theoretical lectures, a practicum and a number of prescribed criticism-lessons (controlled critical lessons). The final year, students also had received weekly lesson demonstrations where lecturers and students presented to large groups of students (all languages) well-planned model examples of lesson evaluation, lesson analysis, lesson design and lesson criticism in sequence.

Because at this time there did not yet exist in the faculty a full-fledged pedagogics and especially not a clear didactic pedagogics (grounding, terrain, categorical structure, lesson structure, etc.), the lecturers in subject methods largely were referred to subject science insights (mathematical methods), school experiences and especially a number of principles borrowed from the psychology of learning and thinking. Here concepts such as activity teaching, group and project work, object teaching, differentiation, individualization, principles of creativity, local folklore teaching, etc. are mentioned. In addition, the courses included such themes as curriculum compilation and interpretation, writing down essentials and board schemes, tests and memoranda, the subject teacher, the nature of the subject as well as the readiness and ability of the pupils.

Especially there was attention given to offering critical-lessons (models) in which a distinction is made between general (educational) and particular (subject contents) aims, planning the course of a lesson following a fixed sequence (learning steps) and the use of suitable aids. Because certain principles were preferred above others in particular subject areas, specific **methods** were worked out and repeated. Thus there was a fixed scheme for the natural sciences (the scientific method), narration in history, problem posing methods in mathematics and formal drill lessons in grammar.



embodying in symbols  
and signs.  
graphic representations  
and theoretical models

teaching relevant life forms:

- (i) Didactic ground forms: conversation, play, example, assignment.
- (ii) methodological principles: inductive, deductive, trans-ductive.
- (iii) ordering principles: content directed (linear, etc.) child directed (symbiotic, etc.)
- (iv) actualization principles: individualization, socialization, guided or self-activity, tempo-differentiation, etc.

teaching relevant ways of life (didactic modality):

- (i) teaching modality: ways of teaching and teaching aids
- (ii) learning modality: ways of learning and learning aids

\* Sociopedagogics - the socialization phenomenon

2. A number of functional models that take into account a sequential series of lesson phase aims

**Macro-view**

Phase aim	Content	Form	Modality
Content as aim	elemental fundamental	play (example) conversation	self perceiving guided (language)
	fundamental	(example) assignment	functionalizing (expressive- creative)

**Micro-view**

**Content as aim:** enlivenment of the child (fore-knowledge, problem) unlocking the new (good exemplar, textbook definition)

**Content as means:** practice (open and closed assignments)  
application (productive and reproductive)  
control (tests, examinations)

The view that there is a primary move from the didactic to method (subject didactic) is evident in the course of theory forming in this faculty. During the 1960's a number of pedagogic perspectives, among others didactic pedagogics, successfully generated an accountable theory that satisfied the scientific demands of a meaningfully founded, designatable terrain, with a general categorical and criterial structure as well as operationalizable aims. There was a consistent attempt to start from the primary teaching phenomenon (teaching and learning in the family) and identify basic components, primordial relations and forms of living with the aim of describing them.

When the disclosures of the other part-disciplines also are considered and their answers to certain groups of questions are analyzed, that which appears to be general, valid and essential, that are related to the nature (structure) and function of particular aims to be reached are described and tied together in a theoretical model. In this case, first a partial model appears for each of the components such as the didactic ground forms, reducing the learning material, forming, didactic modality and the aims of the phases of the lesson. Naturally, only after this and on the basis of a team effort of a number of lecturers, a lesson structure was constituted. This structural model strings together the **three** components of content (what), form (how) and modality (in what way) into a usable and a synoptic first model for planning a purposeful practice (formal lesson in the school).

It was precisely in implementing this structure and its lesson phase procedures in a lesson design that a number of problems surfaced. The first was with planning a lesson modality. This gave rise to further refining and differentiating a teaching modality (the

participation of the teacher) and a learning modality (that which a child has to provide at each period as an expected response).

Because in preparing a lesson design after each aspect of the teaching model had to be viewed anew, a need was felt for a **theory between the didactic pedagogic** (general pronouncements about the primary teaching situation) **and the school** (secondary, formal and planned practice). Hence, the justification for establishing a subject didactic theory with its central task of **particularizing** the lesson structure into a lesson design.

### C. A number of landmarks in forming subject didactic theory

The most important contributions to subject didactic theory can be catalogued under a number of **themes**. There is an attempt to refer briefly to a number of these themes and then to provide a list of publications (research) for further elucidation.

The following themes are briefly described below:

- \* analysis and description of methodological forms.
- \* particularization as subject didactic proficiency.
- \* the relations among structure, function and situation.
- \* the differentiations among skill, proficiency and technique.
- \* general and particular proficiencies.
- \* the bi-polar nature of teaching aims.
- \* specification of learning aims.
- \* a subject didactic model of learning.

#### 2.1 Analysis and classification of methodological forms

Because of the comprehensiveness of the contents and the extensiveness of the literature (everyday popular, scientific, school subject and pedagogic) that a subject didactician has to study, the ability of analysis (in the human science context of convergent thoughts) is a handy prerequisite. By a thorough and selective analysis of the available literature (past and present) as well as of the contemporary practice (school) an inventory of formulated alternatives and relevant accomplishments and the figuring forth of

the particular phenomenon (theme) is compiled. From such a data bank there is an attempt to focus (converge, reduce) on what manifests itself as essential (characteristic) while the details (particularities) are left out. The result of each attempted analysis is thus an authentic insight into what has become explicit as essential. The new conquest then can be formulated precisely in language for others. Because by intensive analysis the subject didactician not only deals with the large number of nuances and alternative meanings of the particular phenomenon but also is in a privileged position (level of informedness and mobility) to try to classify it under a particular formulation. The large number of disconnected and sometimes diffuse nuances are now classified under a larger sort or type of category. Consequently, the theory is more comprehensive and a further ordering or taxonomy is easier.

By analyzing and classifying there not only is a search for a **general** (overarching) formulation of what is conspicuously common but the relevant, particular nuances (modi) are retained for later use in designing a particularized practice. By analyzing the teaching phenomenon, from the resulting inventory of all of the formulations of a teacher's task such as instructing, guiding, presenting, assigning, re-presenting, demonstrating, showing, ordering, etc. are chosen for inclusion in a comprehensive category such as unlocking [reality].

## Summary

Each investigation (analysis) begins by taking an **inventory** of existing formulations (oral and written) as well as of one's own formulation of relevant observations and views (views re ideas and actions).

To make the large number of nuances more manageable (synoptic), a functional **classification** (taxonomy) then is worked out. Even though the details of such **processing** are ordered under general (types) categories, the particularities (nuances) have to be retained for later, effective selection for a particular practice (lesson structure).

## 2.2 Particularizing as a proficiency in the subject didactic design of a lesson

In the previous section there was reference to the fact that the basic pedagogic disciplines (fundamental, didactic, psycho-, etc.) primarily direct themselves to arriving at **general formulations** or principles about what is disclosed as common, universal and thus essential to the teaching phenomenon in the family as primordial situation. Hence, for example, three general components have been established, namely, contents, form and modality and are included in a teaching model (lesson structure).

However, if the place and function of subject didactics is looked for where it takes a position between the pedagogic (theory) and practice, it is clear that it fulfills a particularization function. As the name **subject didactics** indicates, it no longer has to do with a general view of **contents** but with particular subject contents with a unique nature and structure. It does not have to do with a child (pupil) in general but with a specific child (group, class, school phase) with particular potentialities and on a particular level of readiness. A certain teacher teaches with a unique personality, style and tact.

In the subject didactician's preparation of a particular lesson design (history theme for grade 8) he cannot merely implement the lesson structure unchanged. Each time he designs a particular lesson he has to search for the most suitable (fruitful) nuance for each component of the lesson structure. To effectively compile such a **particularized** lesson design it is necessary that within the general aims there is a search for operational aims and that the unique nature of the subject (theme) as well as the potentialities and expectations of the particular pupil (group, class) be taken into account. Where junior secondary pupils have to only be able to **name** and understand (interpret) the theme, senior secondary pupils have to be able to analyze it or even generate a unique achievement (synthesis).

## 2.3 The relations among structure, function and situation

For the aim of Subject didactic theory forming the point of departure is the view that each phenomenon (concrete or operative) essentially is comprised of a number of components that can be identified as a unity (structure, system). On the basis of the particular relationship (interaction) among the constituents such a unity has its own form (nature) and/or course. Thus, e.g., the phenomenon "plant" has two basic components, namely, **roots** and **stem** that are connected with each other in a particular way (plant form) and thus acquire a particular function.

The nature of the phenomenon thus remains inseparably dependent on these components and their original relationship gives them a primary function. By analysis and refined formulation a theoretical **structural** model for each phenomenon or system then is simulated.

Now it can happen that the original ordering and interaction among the constituents has to be changed to attain a specific aim (function). Here we have to do with a planned (artificial) structure (system) that only can be functionally-correctly interpreted within a particular context. To facilitate interpreting such a secondary or intended system (structure) use then is made of **internalized** signs (symbols)

For example:  $\_ + \_ = \_$  (the functional model of the addition operation)

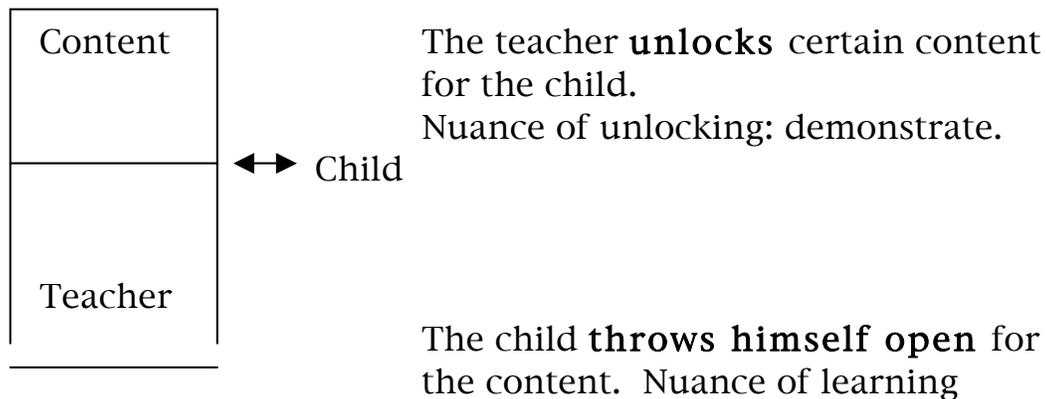
Thus, it is possible to show a **whole function** as well as a **planned** or **part-function** within a system.

Because it is not possible for the subject didactician (person) to acquire a total perceptual image (totality- or gestalt-view) of an operation (activity, course) as in the case of a concrete- visual object, he is compelled to implement an "aid" (aid for thinking). To divide the course (operation, event) into a number of **points of attention** during which the central part-functions become optimally discernible and the function of each component of such a fixation point to identify (formulate) separately he can try, by congealing the event at such a high point, to simulate (visualize) an image of it. In such a situation analysis all of the relevant

constituents in particular positions are related to each other. It then is possible for another to see the positions of the participants and with the help of certain signs and symbols to interpret the functions of each component within the particular structure (system).

After viewing such a functional model, a co-subject or researcher can deduce the necessary information.

For example: Teaching situation (demonstration)



## 2.4 Distinctions among skillfulness, proficiency and technique

In each phase of a lesson there is a distinction between what has to be unlocked for a child that is new (unknown)--content as aim and the further functionalizing and evaluating practiced regarding the new acquisitions--content as means. In each case there is mention of new concepts and relationships that have to be mastered and implemented but also of the **level of ability** on which the content has to be dealt with. For a more refined aim and function analysis, it is necessary to distinguish among three types of ability, namely skills, proficiencies and techniques.

**Skills** all of the primary, naive **receiving impressions** from the external world (sensory) as well as the transfer of basic, spontaneous motor movements.  
 sensory: look, hear, grasp, taste, etc.  
 motor: scribble, grasp, turn, speak, etc.

**Proficiencies** where the transfer of a skill is guided or steered by knowledge.

In terms of the **knowledge** to push through to a refined, more precise **can do**.

listen (proficiency) embracing concept (interpretation)+ hear (skill)

say (proficiency) embracing concept (proposition) + speak (skill)

analyze (proficiency) embracing knowledge + converging interpretation.

**Techniques** where there is a joining together of a skill and/or proficiency also now an extension of the human body and mind (thinking) such as using an instrument, apparatus or machine (invention).

write (technique) embracing speaking (skill) + saying (proficiency) + handwriting (grasp pen in a particular way with the aim of forming a symbol)

optical perception technique: where a microscope is used as an extension.

## 2.5 General and subject-specific proficiencies

By a further differentiation of the constituent "proficiency" as a type of **subject content** it is extremely important for establishing a practice to further **classify** it. The division into **general** and **subject-specific proficiencies** is dealt with here.

General proficiencies--abilities that have relevance for mastering each school subject.

Examples: writing, speaking, naming, interpreting, ordering, reducing, etc.

Subject-specific proficiencies--abilities that are particularly relevant to a specific school subject.

Examples:	School subject	Proficiencies
	Mathematics	verifying solutions
	Biology	dissecting
	Afrikaans	scanning

Accounting  
Bible Study

bookkeeping  
preaching

A more complete description has already been accomplished in a number of pieces of research in the school subjects of Mathematics, Afrikaans, History, Biology and Business Economics.

## 2.6 The bi-polar nature of teaching aims

The refined formulation of the aim with categorical forming as explained in the function of **double unlocking**, refers to a polarity between the **unlocking activities** of the teacher and the child (learner). On the basis of the bi-polar nature of this teaching aim it is necessary to distinguish between a **lesson** and a **learning aim**.

	lesson aim
teaching aim	learning aim

### Learning aims

Within each subject (school) curriculum with its cultural aims school syllabi have been compiled in which certain themes are taken up and which is related to a specific "intention" and has to be interpreted as such. Each syllabus theme, if reduced correctly, leads to a refined formulation of the learning aim.

In most cases there are one or more new **concepts** that have to be mastered with insight independently and/or in relationships. Depending on the unique nature of the subject and the readiness of the class (group, child) then a **level of ability** is posed--a level of proficiency-- that has to be reached by each pupil. By delimiting a learning aim around a specific **syllabus theme** there usually is a search for relevant new concepts, relations and proficiencies. What proficiencies (general or subject specific) are going to be pursued and to what level of ability (competence) are matters where philosophy of life as well as subject-scientific considerations have to be balanced.

## Lesson aims

Only when the teacher has a clear image (formulation) of the learning aims (especially the hierarchy of operational learning aims) can he proceed to look for a particularized teaching aim for a lesson. On the one hand, he has to visualize a fruitful form by which he intends to disclose (optimally unlock) new **learning contents** for a child. On the other hand, it is necessary that an effective **sequence** or successive **operational procedures** (aims of the phases of a lesson) be formulated by which he intends to guide a child.

Thus, a lesson aim embraces two **part-aims**, namely, designing the **form** (basic form, methodological and teaching principles, certain teaching activities, etc.) as well as **lesson phase procedures** (foreknowledge, presenting, functionalizing, etc.). Thus, a lesson aim ensures a planned form and sequence of a lesson and avoids haphazard or coincidental guidance and learning.

## Consequences of lesson planning

- A. Learning aim: self-discovery of an **elemental**  
Lesson aim: play as basic form (experiment).
- B. Learning aim: re-presenting a **fundamental**  
Lesson aim: conversation as basic form (narrate).

## 2.7 Reducing a syllabus theme and specifying the learning aims

A first reduction already occurs when from the open, total reality particular **teaching contents** are formulated and ordered for a school curriculum on the basis of socio-cultural demands, anthropological-existential preconditions, democratic-ideological ideas, stabilized-lasting meanings, structural and general proficiencies as well as from among relevant alternatives and nuances.

Second, in compliance with the unique nature of a particular school subject and the preparation and abilities of a particular class, group

of pupils of a particular school phase (primary, secondary), a particular school curriculum is compiled existing of a number of syllabi in which a series of **syllabus themes** are taken up, each with a particularly formulated aim (elemental meaning).

When a teacher's prepares a particular lesson there is a last reduction when he proceeds from an implicit or explicit aim to attribute essential meanings to the contents to then selecting and ordering in a unique way the particular facts, terms, principles, data, etc. to be unlocked as well as in what relations (visual, logical, causal, etc.) and on what level of ability (proficiency) he intends the class to assimilate them. An inventory of such subject elementals and teaching aims allows a teacher to formulate, within a particular syllabus theme (learning aim), a hierarchy of **operational** learning aims. Beginning with a particular initial situation and the pupils' level of entry, a specific hierarchy is selected regarding which relevant foreknowledge has to be actualized beforehand and then actualized in a series of procedures (operations) within each aim [of the phases of a lesson].

### **A hierarchy of learning aims**

Because by nature the aim always is a theoretical view of a matter (phenomenon) it mostly is general, comprehensive, vague and has a number of alternatives.

For example, an aim in geography: The **climate** of the Cape. In order to try to attain this in designing a lesson (make practical) it is necessary to reduce (re-formulate) it further and formulate a number of concrete, observable and/or operationalizable aims (refined aims) that have to serve as **constituents**. For the above, the following **aims** can be formulated:

- a number of characteristics of the climate
- a number of typical phenomena of climate
- a number of subject-particular proficiencies

In addition the following guidelines are important in formulating an aim:

\* in the formulation a particular operation (verb) should refer to the expected activities. The more simple and outwardly **observable** the activity the easier it is to control (evaluate). For example: write down, name, solve, recognize, compute, draw, order.

\* for each operation (doing and/or thinking activity) a **level of ability** (proficiency, technique) has to be indicated and selected to be in agreement with the level of the pupils.

**name** the characteristics ...

**explain** the climate phenomenon

**read** a map/table/graph:

\* for each operation a **minimum** level of mastery has to be indicated so that a criterion can be defined for the quality of the learning effect.

name **four** characteristics

explain **one** phenomenon

Example in mathematics: the area of a geometric figure is computed (with/without a formula)

\* also, to be able to interpret the **functional** relation between the aims (a progression, a generalization, cumulatives, etc.) it is necessary now that the aims are formulated to inventory and classify them and also place them in a particular order (hierarchy, taxonomy) by which additional attributions of meaning arise.

Example: (a) First the two unconnected concepts **ocean currents** and **mountains** and then the **related** factors of rain fall.

(b) First the **causes** and **effects** of the Great Trek separately and then the **causal** relations between them.

In Bloom's taxonomy of proficiencies (aims) in the cognitive domain there also is an ordering according to an increasing line of difficulty (abstractness), namely, knowing, comprehending, implementing, analyzing, synthesizing and

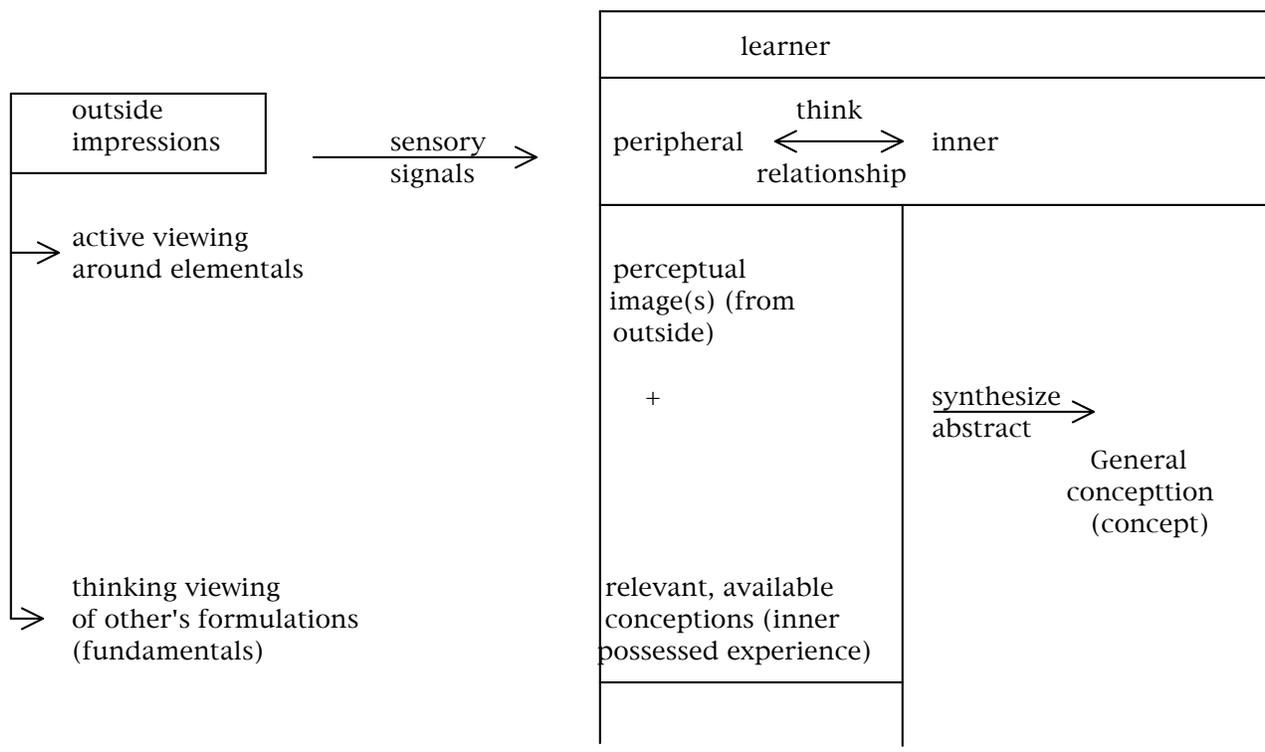
evaluating. "Complete" cognitive forming, therefore, requires that all of the components be mastered and in a particular sequence.

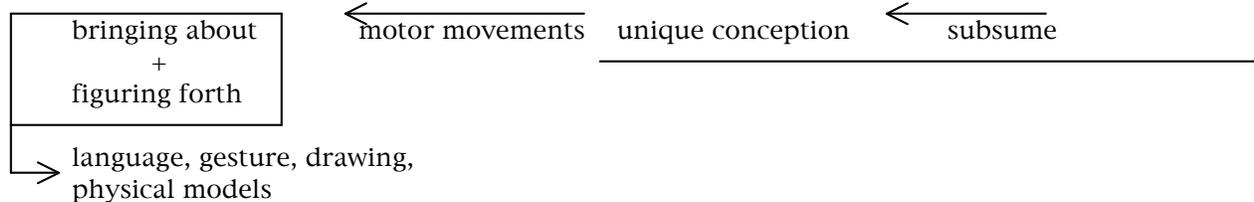
## 2.8 A subject didactic model of learning

To be in a position to prepare a teaching plan it certainly is necessary that there be clarity about everything that is included in the concept "learning", in general, and "concept formation", in particular. Thus, it has to do with all of the operations from **receiving an external impression** to and with an **abstract concept** about a phenomenon or idea.

The line that has to be followed, then, is from a sensory **impression**, a first **perceptual image** and a final **concept**, with particular **reciprocal** interactions by which the quality of the conceptualization is influenced by factors such as attitude (disposition), affective lived experiences, earlier cognitive experiences and even creative (ideological) synthesizing (representations)

To illustrate this the following **theoretical model** is presented.





## D. SUBJECT DIDACTIC RESEARCH

1965 M. Ed. Van Dyk, C. J. **Aspekte van die besondere didaktiek vir die onderrig van Skeikunde op die middelbare skool** [Aspects of particular didactics for teaching Chemistry in the secondary school]

1969 M. Ed. Swart, A. **'n Pedagogiese evaluering van spanorganisasie ("Team Teaching") met besondere verwysing na individualiseringsmoontlikheid** [A pedagogic evaluation of "Team Teaching" with special reference to individualizing possibilities]

1969 D. Ed. Van Dyk, C. J. **Vanaf vorming (Bildung) tot eksemplariese onderrig en leer: 'n didakties-pedagogiese strukturering (Pedagogiekstudies No. 73)** [From forming to exemplary teaching and learning]

1971 M. Ed. Basson, N. J. S. **Leerstofordening in die lessituasie: 'n studie in Fisika-onderrig (Lesstofordeing in die lessituasie McGraw-Hill)** [Ordering learning material in a lesson situation: A study in Physics teaching]

1972 M. Ed. Oosthuizen, W. L. **Die plek en betekenis van leerstofreduksie in die ontwerp van die Wiskundeles (Leerstofreduksie in die Wiskundeles McGraw-Hill)** [The role and significance of reducing learning material in designing a Mathematics lesson]

1973 M. Ed. Thomas, A. M. L. **Enkele vakdidaktiese uitsprake by die onderrig van Elementere Natuurwetenskap** [Some subject didactic findings about teaching Elementary Natural Science]

1973 M. Ed. Calitz, L. P. **Enkele didaktiese kategoriee en hulle segwaarde by die beplanning van 'n vakdidaktiek: Biologie** [Some didactic categories and their relevance for planning subject matter teaching: Biology]

1975 M. Ed. Human, P. G. **'n Histories- Vergelykende perspektief op Wiskunde-onderrig, met besondere verwysing na doelstellings. (Doelstellings met Wiskunde-onderrig: 'n Histories-vergelykende perspektief Pedagogiekstudies No. 83)** [An historical-comparative perspective on teaching Mathematics with particular reference to aims]

1976 D. Ed. Swart, A. **Betekenisontsluiting in die onderrig van die geesteswetenskappe** [The significance of unlocking in teaching the human sciences]

1977 D. Ed. Erasmus, M. M. **Die posisie van die leerling in die junior primere lessituasie** [The position of the pupil in the junior primary lesson situation]

1977 M. Ed. Van Dyk, J. J. **Inhoudsanalise en onderrigsbeplanning in 'n Biologieles van die sekondere-skoolfase** [Content analysis and planning teaching a Biology lesson at the secondary school level]

1978 M. Ed. Van der Merwe, P. J. **Vakdidaktiese beplanning rondom die aanvangsituasie van 'n geskiedenisles** [Subject didactic planning regarding the beginning situation of a History lesson]

1978 M. Ed. Lancaster, M. M. **Die onderrig van Afrikaans (Moedertaal) in die aanvangsklas** [Teaching Afrikaans (First language) in a beginning class]

1979 D. Ed. Basson, N. J. S. **Ontwerp van lesmodaliteite in die Natuurwetenskappe** [Designing lesson modalities in the Natural Sciences]

1979 D. Ed. Oosthuizen, W. L. **Die verantwoordelikheid van die vakdidaktiese teorie (Wiskunde) teenoor die praktyk** [The accountability of subject didactic theory (Mathematics) in practice]

1979 M. Ed. Moller, A. K. **Vormingsaspekte van Aardrykskunde-onderrig** [Formative aspects of teaching Geography]

1979 M. Ed. Schwalb, E. B. **Enkele kundighede, vaardighede en tegnieke in die onderwys van Natuur- en Skeikunde (SeniorSekondere fase)** [Some proficiencies, skills and techniques in teaching Physics and Chemistry (High school level)]

1980 M. Ed. Van Wyk, L. T. **Tekene as daarstellingsvorm in die onderwys van bedryskennis, houtwerk en metaalwerk** [Diagrams as a form of teaching wood work and metal work skills]

1980 M. Ed. du Toit Olivier, C. **'n Analise en klassifikasie van enkele leeroperasies in die onderwys van Biologie in die senior sekondere fase: 'n vakdidaktiese studie** [An analysis and classification of some learning operations in teaching Biology in high school: a subject didactic study]

1980 M. Ed. Stuart, F. **Die relasie tussen die eie aard van die skoolvak geskiedenis as geesteswetenskap en die presisering van leerdoelstellings** [The relationship between the unique nature of the school subject History as a human science and the specification of learning aims]

1980 M. Ed. Van Zyl Burger, I. **'n Terreinverkenning en funksieanalise rondom bestuur met die oog op 'n sinvolle interpretasie van veiligheid opleidingsmodelle** [An exploration and functional analysis of the terrain of administration aimed at a meaningful interpretation of a training model for security]

1980 ----- Van Dyk, C. J. **Navorsingsvooruitgang en die teoretiese model** [Research progress and the theoretical model]

### Research Reports

1978 Botha, L. **Ondersoek aangaande sekere kundighede in die onderrig van wiskunde in die sekondere skool** [Research regarding certain proficiencies in teaching mathematics in the secondary school]

1978 **Ondersoek aangaande die doeltreffendheid en verantwoordelikheid van formuleringe binne geskiedenis matrikulasie eksamenvraestelle** [Investigation of the effectiveness and accountability of formulations in history matriculation examination questions]

1979 Becker, L. C. **Ondersoek aangaande skere kundighede, vaardighede en tegnieke in die onderrig van bedryfsekonomie in die sekondere skool** [Research regarding certain proficiencies, skill and techniques in teaching business economics in the secondary school]

1979 Schoeman, J. L. **Ondersoek aangaande sekere kundighede in die onderrig van Biologie in die sekondere skool** [Research regarding certain proficiencies in teaching Biology in the secondary school]

1979 Van Rensburg, B. A. J. **Analise en klassifikasie van die primere vaardighed, kundigheded en tegnieke in die onderwys van die skoolvlak Afrikaans (Moedertaal)** [Analysis and classification of the primary skills, proficiencies and techniques for teaching Afrikaans (First language)]

1980 Leschinsky, C. C. J. (Mrs.) **Ondersoek aangaande formuleringe in die poesie min die onderrig van Aftikaans in die sekondere skool** [Research regarding formulations in poetry in teaching Afrikaans in the secondary school]