

CHAPTER 2

THEORETICAL PENETRATION OF THE CONCEPT “REDUCTION OF LEARNING MATERIAL”

2.1 INTRODUCTION

In this chapter there is an attempt to theoretically penetrate the concept “reduction of learning material”. To try to disclose the essence of the concept “reduction of learning material” first “learning material” and “reduction” will be dealt with separately and then together. As a supplement the concept “learning material” and the choice of appropriate “learning content” are briefly broached. There also is a search for an answer to the question: What is reduction?

In order to arrive at the fundamental meaning of the word reduction the phenomenological method and findings of Husserl and of others must be enlisted. However, since a theoretical pronouncement can never be complete, attention also is given to the sense and meaning of the concept “reduction” as a didactic category, as elaborated by Van der Stoep⁶, and its implications for didactic practice.

2.2 WHAT IS LEARNING MATERIAL?

The sense of the activities that are justified by the concept “*didaskhein*”⁷ is that there always is “something” that must be taught. Clearly, this implies an imperative that there are contents that must be presented or exposed. “*Didache*”⁸, the concept derived from the root word “*didaskhein*”, refers directly to these contents. This act of teaching or introducing contents is not limited only to the formal school situation but already begins at home. Before a child goes to school he has already experienced to a greater or lesser degree a variety of cultural contents.

⁶ Van der Stoep, F., *Didaktiese grondvorme*, p. 30.

⁷ Van der Stoep, F. and O. A., *Didaktiese Orientasie*, p. 36c.

⁸ Van der Stoep, F. and O. A., *Didaktiese Orientasie*, p. 37a.

Although this first, spontaneous, natural lived-experiencing and pre-scientific knowing of the child always are going to be unsystematic, vague, inaccurate and incomplete, essentially it serves as the original experience of many of the concepts that later in school he will again become acquainted with. In the school the child “encounters” the learning material as it has been delimited and ordered (organized) in the syllabi of the various subject areas. In place of the spontaneous, naïve and natural confrontation with the learning material such as in the family, in school this is changed into a formalized, systematized and scientific confrontation.

The learning contents presented in the school syllabi, however, still remain the same reality (culture) but now in new cloth.

Bevelander, Fokkema and Nieuwenhuis summarize these ideas as follows: “In all cases it is the ‘material’ that the older generation wants to transfer to the following one for their use: the heritage of experience, culture and religious conviction”.⁹

Because learning material is only a slice of the cultural contents of a particular people it changes from country to country and from time to time. In other words, learning material always is particular. The quantity of contents that must be acquired by a child as cultural contents is continually expanding while their quality is reflected in the results of years of refinement to which the most gifted thinkers in each area of knowledge have contribute. The learning material taken up in the school syllabi represent the choice of the compilers after they have teased them out from the broad field of cultural contents to avoid flooding and, at the same time, on the basis of a reduction of the areas of reality in order to be able to compare the formative quality of the themes. Because the choice and ordering of learning contents in reality is a reflection of the attribution of value by the syllabi compilers, it certainly is necessary to investigate this topic further.

2.3 THE CHOICE OF LEARNING MATERIAL

⁹ Bevelander, C. et al, *Algemene Didactiek*, Part V, p. 1c.

From the above it is clear that the choice of learning material is not arbitrary but occurs in terms of particular principles or criteria. Mommers supports this pronouncement with the following observation: “A well-considered choice of learning material is consciously or unconsciously guided by particular principles.”¹⁰ Although Aarts still distinguished between the material and formal formative value of learning material, he places the didactician under the particular imperative of the category of forming in choosing contents, namely, when he talks of “the universality regarding the material and totality regarding the formative.”¹¹

Therefore, contents must be chosen on the basis of their formative quality. The child’s change, then, is seen in the extent to which his field of vision on reality is increased. The child’s mental grasp and level of readiness in a particular cultural situation also will make demands that influence the delimitation and choice of learning material. Therefore, there always is the danger that the teacher, as the interpreter of the syllabus, does not penetrate to the essence of the learning aim included in the prescribed subject, theme or method with the consequence that he teaches over the heads of the pupils or he descends to such a low level that he bores them.

Thus it is the task of the teacher to try to isolate or re-disclose the formative quality of the particular matter by reducing the learning material (reduction of the prescribed curriculum themes) for a particular group of pupils. However, to unlock this content for the pupils he must try to acquire one or more suitable examples that inherently include the essence of the matter as disclosed in his reduction and that is uncovered by his teaching. Because the concept “reduction of learning material” does not only figure prominently in choosing and ordering cultural contents but really in every phase of the course of the lesson, it is meaningful to try to describe the meaning of “reduction” as a concept.

2.4 WHAT IS REDUCTION?

¹⁰ Mommers, C., *De plaats en de betekenis van het exemplarisch onderwijs in die didactiek*, p. 141c.

¹¹ Aarts, J., *Beknopte leerboek der algemene didactiek*. P. 102a.

Reduction is derived from the Latin word *reducere* that means to lead back or be traceable to. *Reducere* is derived from *ducere* that means to lead or transport. *Reductio* (Latin), *reduction* (French) and *reduccion* (Middle English) are cognate words that mean: leading back or to recover.

In the various facets of everyday life such as business, arithmetic, music, the textile industry, biological sciences, psychology and philology the word reduction is used in a large number of variations of its original meaning. However, most of these perspectives preserve a constant meaning of content that refers to a leading back or tracing to something within a particular relationship. For example, in arithmetic reduction refers to simplifying ratios. In chemistry there is mention of reduction (refining, purifying) when a *pure* metal is extracted from its ore or tracing the pure metal from its compounds.

Because the concept reduction refers to a particular event where there is a leading back from a particular situation, condition or compilation to an earlier state or elementary component(s), in each case this amounts to a particular form being maintained or that a particular way must be followed.

Leading back and reducing are important concepts for the scientist because through the reduction he comes closer to the original, first or *primordial*, i.e., to placing the essence of the matter in the spotlight. This immediately brings us to the universally known phenomenological method.

2.5 THE PHENOMENOLOGICAL METHOD

The phenomenological method aims at the honest description of the *essential characteristics* of the phenomenon as it appears in reality. Its point of departure is the “subject-object relationship or the person-world relationship”.¹²

¹² Landman, W. A., and Gous, S. J., *Inleiding tot die fundamentele Pedagogiek*, p. 28b.

It is the way that is followed to express the essential characteristics of a particular phenomenon as it really is. Landman and Gous¹³ say: “Phenomenological description means a thinking, intuitive viewing and describing of the essential characteristics, the disclosing of what remains the same, unchangeable and always valid for a particular phenomenon.” The phenomenological method is an attempt to return to the thing itself; there is a search for the essences, what remains the same, the invariant, valid characteristics of the phenomenon. The phenomenon “triangle” is taken as an example to clarify these always valid, unchanging characteristics. The essence of this particular geometric figure is that it always is a closed, two-dimensional figure with three sides. Other characteristics such as its size, length of its sides and magnitude of the angles all are non-essential or accidental characteristics. The essence refers to the general *form* of the triangle and the non-essentials refer to the characteristics of the contents of a particular triangle. Thus, the general form is universal while the contents are particular.

In order to see essences the phenomenologist seeks the constants, universals or forms while he provisionally brackets the contents, particulars and what varies. The essential characteristics only can be critically and accountably described after they are disclosed. On the one hand, these essential characteristics always are tested against reality by applying the method of free variation. The question posed is: Can the phenomenon still exist if these particular essential characteristics are thought away? On the other hand, the phenomenon must be viewed from a variety of standpoints and perspectives in order to see the communalities and invariants.

Edmund Husserl (1859-1938) is viewed as the central figure in the development of the phenomenological method. His pronouncements about his eidetic, phenomenological and transcendental reductions, given the nature of the matter, cannot be ignored here. They have clear relevance for each attempt to reduce learning contents. Similarly, the views of Martin Heidegger (1889-1976), and especially his findings with the hermeneutic (disclosing) method of the “concealment” of the essences of phenomena necessarily are relevant.

¹³ Landman, W. A. and Gous, S. J., *Inleiding tot die fundamentele Pedagogiek*, p. 25b.

2.6 HUSSERL AND THE CONCEPT “REDUCTION”

Reduction, as Husserl sees it, remains directed to arriving at a complete, clear presence to one’s *experiences*. Indeed, it is the case that the meaning a person tries to give to the things he perceives and speculates about really embraces more than what he originally was confronted with. Each perceiving is the point of origin of a large series of implicit hypotheses that he is not always aware of. What he is later going to describe as “reality” rests on these hypotheses. Thus, if he wants to attempt only to see what there really is to see he first must place between brackets each opinion.

In his daily experiences he always is involved in *understanding* things in reality. Where many cannot free themselves from this Husserl says of them that they cannot arrive at “hygienic” thinking. Thus, there are psychologists who will convert human emotions into neuro-physiological states.

With his concept of reduction Husserl makes an effort to free himself from everyday opinions and assumed attitudes and by intuiting a matter to arrive at original (first-hand) evidence. As the first form of reduction Husserl distinguishes the so-called eidetic reduction.

a) *Eidetic reduction*

This is the operation or event where *insight* is acquired into the essence when one proceeds from particular examples. To disclose the essential characteristics and relations there must be a free involvement with varied examples.

From the total image of earlier experiences with and foreknowledge of the matter, direct perceptions as well as what is added speculatively there must be an attempt to draw out what is constant, permanent and common to the phenomenon as essential and not able to be thought away. With the method of *free variation*¹⁴ the unchangeable commonalities come to the fore. The invariants, as it

¹⁴ Kockelmans, A., *Edmund Husserl*, p. 62c.

were, are passively discernible because the objects of the various presentations shift in front of each other and cover each other partially. Thus it is an abstraction from particular facts to general essences. Spiegelberg¹⁵ summarizes Husserl's eidetic reduction thus: "Obviously the main point is to drop all reference to the individual and particular."

Hence, to arrive at an intuiting of essences of reality, when one proceeds from particular examples, there must be a free involvement with varied examples. Perhaps this can be made more understandable with the following example. If a person visits a city only on Sundays he never really arrives at an insight of the essential characteristics of how a city appears broadly. What is seen is true but it is one-sided and gives insight only into partial aspects of the general concept "city". Thus, to be able to acquire an intuition of the essences of the concept "city" his experiences must be built up from more varied situations and from that the constants and commonalities are delimited.

In his following form of reduction Husserl distinguishes the so-called phenomenological reduction.

b) *Phenomenological reduction*

With this concept there is an attempt to strip and divest perceptions, viewings and opinions about a phenomenon of all "trans-phenomenal" aspects or realized meanings. Spiegelberg¹⁶ summarizes this so: "Its main function is to free the phenomena from all trans-phenomenal elements, notably from all beliefs in trans-phenomenal existence, thus leaving us with what is indubitably or 'absolutely' given". There must be an attempt to "suspend" the essence or to place in brackets (*einklammern*) each belief about the object. That is, in a preliminary way we must not accept and must question anew what we already know about a matter or what we ascribe to it from our experience and even our speculations about it.

¹⁵ Spiegelberg, H., *The Phenomenological Movement*, p. 134a.

¹⁶ Spiegelberg, H., *The Phenomenological Movement*, p. 134c.

Spiegelberg¹⁸ says: “The first and basic instruction for this operation is simple enough: inhibit or suspend (put out of action, “turn off”) all belief of existence that accompanies our everyday life and even our scientific thinking. Instead, concentrate on the concrete phenomenon in all its aspects and varieties, intuit its essence (*Sosein*) analyze and describe it without any consideration of its reality.”

The second reduction step in this operation is to analyze and describe the phenomenon in its *Sosein* (as it is). This is the only way to arrive at an honest attitude toward and naming of experience. The phenomenologist is busy continually dismantling the phenomenon with the aim of obtaining a residue that offers resistance to all further reduction and that will show invariance.

Husserl distinguished a further form of reduction, namely, the so-called transcendental reduction.

c) *Transcendental reduction*

To go *back to the matter itself*¹⁹ there must be a return from the cultural world to the original life world (*Lebenswelt*)²⁰, to the surrounding world of immediate experience. Access to the *Lebenswelt* is acquired by a supplementary method of reduction, namely, the transcendental. Here there is a giving up of all that culture, civilization and science have taught us about the world. The matter itself, and nothing more than this, must be brought to expression. This has to do with how the things have originally shown themselves and are formed by consciousness.

By the transcendental reduction the subject is released from all objective attribution of meaning with respect to the phenomenon. In his reduction he directs himself to what is imminent. Thus, the subject remains stimulated after this and his directedness enables him now to *leave out* existing pronouncements and beliefs and to constitute reality anew.

¹⁸ Spiegelberg, H., *The Phenomenological Movement*, p. 134c.

¹⁹ Kockelmans, A., *Edmund Husserl*, p. 64a.

²⁰ Kockelmans, A., *Edmund Husserl*, p. 64a.

2.7 SUMMARY OF HUSSERL'S PRONOUNCEMENTS

The essence of a matter is observable by applying free variation and by provisionally disengaging all theoretical aspects and traditions. Only what is given must be put into words by surpassing everything that has been said about the matter and by being objectively directed to it. In communicating with the world by experiencing, perceiving, remembering, thinking, judging and valuing the invariants become observable because the objects of the various examples shift in front of each other and cover each other partially. The intersection of this is the general essence(s) of the particular facts. For Husserl reduction means a leading back to the origin of our knowing that we have lost sight of in our hurried everyday thinking.

At this stage it also is desirable to look briefly at some of the views of Heidegger.

2.8 PRONOUNCEMENTS OF MARTIN HEIDEGGER

Heidegger does not take accepted scientific findings holus bolus as a point of departure. However, he will search behind the things—also the person who is in relationship with them—for their meaning. Thus, his search is a search for the *Sein des Seienden (being of what is)*.²¹ In terms of the hermeneutic method Heidegger goes further than giving a mere description of what is manifested. By anticipating designs he tries to disclose concealed meanings.

For him the phenomenon is not the appearance as it comes *directly* to us or as it is perceived by the senses. Thus, Heidegger does not begin with the pronouncements of the sciences but he “searches” the matter itself. He searches for the meaning of the matter behind the things and persons that are in relationship. According to Heidegger the essence of the phenomenon mostly is concealed. For him the appearance is “*that which does not show itself*”.²² Its meaning, therefore, initially is indistinct, since a person only can perceive what he in his searching is intentionally directed to.

²¹ Spiegelberg, H., *The Phenomenological Movement*, p. 280b.

²² Heidegger, M., *Sein und Zeit*, p. 29b.

Although each appearance can make certain claims to a greater or lesser degree of sense, according to Heidegger for the perceiving person its meaning remains mostly indistinct and concealed. According to him this blurring, concealing or obscuring of the essences must be attributed to three factors, namely:

a) *An intrinsic, inner concealment*

Intrinsic concealment means that the essences, e.g., of a text from the beginning already are obscure or difficult to understand. The essentials are difficult to disclose.

b) *A covered concealment*

This is where the essentials are covered up or obscured by “something” else. On the basis of one’s own erroneous interpretation or inaccurate representation by someone else, what initially was clear now becomes obscure.

c) *A deliberately altered concealment*

This is when a deliberate alteration has occurred. The essence itself would not be so difficult to be noticed if it were not deliberately altered. For example, here we think of examples that generally are found in cryptography, forgery and in some (mathematics) problems. Such deliberate alterations first must be broken open before the essence can be disclosed.

Where Heidegger thus searches for the sense of a matter or the being of its being, this implies that what initially was concealed now becomes unlocked or disclosed. The matter first acquires sense when the learning person has brought to light the being of its being. Giving meaning is parallel to that of self-actualizing. In other words, to arrive at the sense of a matter implies the existence of an intentional directedness to a specific “something”. To experience this “something” as meaningful means that it already must evoke a degree of “acquaintance”. To be able to interpret a particular slice of reality presumes an understanding of it. In general, an interpretation or representation of a matter only is possible on the basis of lived-experiences and insights connected with earlier experiences. Thus, giving meaning always is an activity of *Dasein* and thus is a unique constituting. Each person thus can follow his

own way and this is equally as accidental as two persons interpreting their experiences.

Insight into and understanding of a particular human situation or phenomenon of nature partially implies a design. To be able to understand something requires that the person himself must have given structure to it. Consequently, persons' entering reality show varied attributions of meaning.

2.9 SUMMARY

The mentioned pronouncements of Heidegger have significance for unlocking (contents) by the mathematics teacher. In his preparation and planning of a lesson situation the teacher subsequently must strive to try to make sure that the sense and meaning that the pupils connect to a particular concept are in agreement with his representation of the essential as disclosed by the act of reduction. Heidegger's pronouncements about the concealment of the essence of a phenomenon has direct value in designing a Mathematics lesson in the sense that in Mathematics there are many problems that are deliberately obscured.

Now to try to acquire an additional perspective, the steps of reduction as proposed by Spiegelberg are dealt with.

2.10 THE STEPS OF REDUCTION AS PROPOSED BY SPIEGELBERG

He distinguishes the following steps.

2.10.1 DISCLOSING PARTICULAR PHENOMENA

Here Spiegelberg makes a distinction among three operations: the *intuitive* grasp of the phenomena; their *analytic* examination and their *description*.

a) *The intuitive operation*

Here the person is utterly focusing on what is given as it ordinarily appears. He now opens himself to the phenomenon, i.e., he is going

to view the phenomenon more closely. However, the phenomenon also is allowed to have its say.

b) *The analytic operation*

This does not mean that a syntactic analysis is made of the linguistic naming of a matter but that the structure of the *designatum* must be seen. This has to do mainly with tracking down the essences (elementals) and the structure of the phenomenon by intuitive operations and, therefore, is not identical with an analysis of its separate parts. The acts of analysis culminate in the fact that by this the person remains directed in order to disclose the constitutive essences and relationships of the structure or complex phenomenon.

c) *The descriptive operation*

A descriptive operation implies the introduction and allocation of classification signs to phenomena on the basis of their correspondence with other phenomena. When a word cannot be found in a language to name such newly unveiled types or sorts, contrasting limits (similarities and differences) can be pointed out. New terms that are used to name a matter need not always express fully the essence of the concept, relationship or method. The naming (word) also can serve as a guide for a deeper or complementary analysis of the matter being communicated.

2.10.2 DISCLOSING GENERAL ESSENCES (EIDETIC INTUITING)

To arrive at the essence of a matter a series of examples of the phenomenon can be imaginatively evoked or a number of examples of it are investigated. From a great number of particular cases the common and constant aspects that repeatedly emerge are identified and described. In the future these common aspects are accepted as essential or fundamental to the matter. Through this varied penetration of the phenomenon the essentials and the non-essentials are distinguished and separated. Now the former are considered and described as the essence of the matter.

2.10.3 DISCLOSING RELATIONS AMONG THE REVEALED ESSENCES

As an additional task the phenomenologist is going to look for the internal relationships of the comprehensive structure. Here the method of “free variation” can be used fruitfully to see the internal relationships. An actual question that can surface here is: To what extent is insight into these constitutive parts of a particular structure important? One involuntarily thinks here of the example of a triangle already mentioned.

2.10.4 DISCLOSING THE WAYS (MODES) THE PHENOMENON SHOWS ITSELF

The way the essence of a phenomenon is disclosed also is of particular importance because to arrive at a view of the essence implies that one must work from a variety and variation of perspectives.

A reducing exploration of the essence of a phenomenon is more than merely the importance of disclosure. It also broaches a way of acting and also is a question of method. Thus direct and indirect questions about the authenticity of the phenomenon possibly become clarified by referring to when, where, in what situations and in what ways the phenomenon shows itself.

2.10.5 DISCLOSING THE CONSTITUTION OF PHENOMENA IN CONSCIOUSNESS

With this aspect of reduction, Spiegelberg aims to determine in what ways the phenomenon establishes itself and takes shape in our consciousness. Investigating the stages of such “crystallization” does not mean a psychological or factual case study of what really happens to concrete individuals. The aim of such a study is to determine the typical structure of a constitution in consciousness by an interpretation of the essential sequence of its course. For example, the way form is given in consciousness to the image of someone you have encountered. Beginning with the first sensing, the subsequent perceiving of separate movements and hearing his voice all are contributing activities that in thinking are united into a total image. Spiegelberg²³ says the following about this: “The fact

²³ Spiegelberg, H., *The Phenomenological Movement*, p. 689a.

that this constitution is normally ‘spontaneous’ and ‘passive’ does not preclude the possibility of an active constitution in the wake of explicit reflections and attempts to integrate unrelated phenomena.”

2.10.6 ALL FOREKNOWLEDGE REGARDING THE PHENOMENON MUST PROVISIONALLY BE SUSPENDED

All available and transmitted knowledge with respect to the phenomenon in focus must provisionally be placed between brackets or suspended. This reduction step does not mean eliminating the knowledge but is an attempt to disclose the phenomenon anew as part of reality. A readiness for objectivity and being free of all prejudgments regarding the phenomenon must be striven for. Therefore, provisionally just as much value is attributed to all experiences without giving earlier lived experiences fixed values and meanings.

2.10.7 THE MEANING OF THE PHENOMENON MUST BE INTERPRETED

Finally, the reduction implies that what is considered essential now must be interpreted and expounded further. The interpreter thus must go further than naming only what is directly given. There must be a striving to try to disclose what initially was concealed.

With his steps of reduction, Spiegelberg seeks the essentials or as he says: “A leading back to the origins of which our all too hasty everyday thought has lost sight.”²⁴

At this stage it certainly is desirable to broach reduction as a didactic category so that the concept “reduction of learning material” can be put in a proper perspective.

2.11 THE DIDACTIC CATEGORY “REDUCTION”

a) *What is a didactic category?*

According to Van der Stoep, in a didactic sense, the concept “didactic category” is more correct and accountable than the

²⁴ Spiegelberg, H., *The Phenomenological Movement*, p. 133b.

concept “characteristics of the didactic situation”. Didactic categories imply that there is a *viewing of the essences* of the primordial phenomenon by which truisms are disclosed. Many aspects that are described as characteristics of the didactic situation are not necessarily also didactic categories. A didactic category discloses an essence of the teaching phenomenon as this shows itself in the primordial relationship and as a truism of the primary event and is not limited to the formal school situation.

To disclose the essential of the didactic structure one, therefore, must make use of didactic categories that necessarily must be truisms from the life world of persons and not from the formally constituted school situation. The didactic categories also carry authority in each school situation because this second-order and constituted event in school really is only a *reconstitution* of the original event that already occurs daily in the life of the child in the family situation. Following Van der Stoep’s definition a situation is the total of circumstances with respect to which a person must act. This implies that the didactic categories, as descriptions of such a situation, must make this totality of circumstances observable or known. They must serve as guidelines by which the activities they assume can be properly understood and anticipated.

b) *The meaning of the didactic category “reduction” for practice*
Van der Stoep²⁵ makes a practical pronouncement about reduction when he says: “In the primordial situation the didactic course is not one of particularities but of essences. Initially the adult does not involve himself with the child with respect to life details. Rather he attunes his activities much more to life contents for the child also to reduce to what is most important, necessary, proper to life and life-stylizing which, ipso facto, give rise to the particular themes of his interventions.” In the spontaneous life world it is conspicuous that the adult in his explanations and descriptions continually is involved in stripping particular concepts of all superfluous and less important particulars. The help from the adult amounts to the fact that he tries, with the essentials or core learning materials as point of departure, to constitute a framework within which the child, with a relative degree of security and safety, can meaningfully construct

²⁵ Van der Stoep, F., *Didactiese Grondvorme*, p. 30c.

the theme jointly with him and later by himself. By his acts of reduction the adult is placed in a position to be able to choose for the unlocking of complex structures or difficult concepts simple examples or where possible appropriate models that facilitate their mastery and to insert them between the child and reality. In terms of such a good example or model that already inherently includes the essence of the matter, the child learns to know reality and in the future he will explore his surrounding world with greater *security*. This reducing activity forces the adult to give an account of what he is going to present as a lesson aim for the child; at the same time this constitutes the contents that must serve as beacons and fixed points in terms of which the child is going to orient himself. A solid orientation will prevent the child from easily becoming lost in less important details and becoming blocked by all kinds of particulars.

2.12 REDUCTION OF LEARNING MATERIAL IN GENERAL

For many centuries scientists have asked questions and provided answers about reality. School curricula can serve as particularly meaningful attempts by didacticians or curriculum compilers to express reality in words. Although cultural contents already are taken up and ordered in the syllabi, still this does not guarantee that the concepts necessarily are going to be part of the child's life world. The child's controlling and making the syllabus subjects his own remains a task of teaching. Thus, it is the primary task of the teacher, by way of a reduction, to penetrate to the essentials of the syllabus subject. Only when he succeeds in clearly delimiting the lesson aim for himself and refines it to its essence will he be able to succeed in placing the matter as a problem within the questioning horizon of the child. In doing so he makes sure that his interpretation discloses the essentials of the matter and that, accordingly, the child arrives at his own insight.

In reducing the learning material it is important to search for the "elementals" and the fundamentals, i.e., for the simple that indeed is not so simple because such contents make the insight into the structure and mutual relationships more easily observable.

For Pestalozzi the "elemental" was a very important concept as is evidenced in the following quotation: "It was a central aim of

Pestalozzi to analyze all educational material, to reduce it to its simplest elements, and then to present it gradually to the child in such a way that the level of difficulty always corresponded to the child's capacity to comprehend it."²⁶

The teacher, as interpreter of the syllabus contents, however, sometimes finds himself in a difficult position. Describing a particular area of reality as taken up in the syllabus often lends itself to a factual as well as a symbolic interpretation. Over the years some words have acquired so-called "refined" meanings and under various circumstances and in successive situations varied meanings are given to the same word.

Mommers says it thusly: "Fundamental experiences are the 'Funktionziele' [functional aim] of teaching. This is in a certain sense in contrast to its 'stofflichen Zielen' [material aims]. But if the teaching is directed to the 'Funktionziele' then by this the learning material also necessarily will be done justice."²⁷

Depending on the structure of the phenomenon, in reducing the learning material there can be a search for essences as reflected in the matter itself. On the other hand, with more complex structures there also is a search for supplementary coherencies and good methods unique to the matter.

Reducing the learning material is preparatory work in the sense that in his preparation the teacher must already search for its essences, coherencies and good methods on the basis of which he can design his lesson structure.

It is first certainly necessary to more completely indicate the place and meaning of reducing the learning material in the lesson structure.

²⁶ Heafford, M., *Pestalozzi, His thought and its relevance today*, p. 86a.

²⁷ Mommers, F., *De plaats en de betekenis van het exemplarisch onderwijs in de didactiek*, p. 15b.