

'Observation of Nature itself is the true foundation of human instruction because it is the sole foundation of human knowledge.'

Consign Paper to the 14 Rubbish Bin

Have you, as a parent or teacher, had a look in your child's schoolbag recently? If so, I hope you are one of the fortunate ones who can say, 'I didn't find any crumpled-up worksheets that were completed months ago, nor any A4 sheets on which just a few lines had been written before they too were stuffed in the schoolbag. And I'm glad to say I didn't find any 'weighty' books, which, although scarcely used at all, had to be carried to school and home again day after day. And the worksheet folder had the full set of sheets, all carefully completed and arranged according to topic.'

Or have you looked at your office or your desk or even, if you like, your bookshelves and wished all paper were consigned to the waste bin? Did the devil perhaps create not just paper money, as we hear in Goethe's *Faust II*, but paper in general?

Let us get back to Pestalozzi. He did use a lot of paper himself — the critical edition of his writings runs to forty-five volumes — but he tended to feel that paper was unsuitable as a basis for acquiring knowledge. So the first thing he did when, at the age of forty-five, he was given the chance to try out his educational ideas in a corner of the schoolroom of Dysli, the shoemaker, was to put away all the pious books. It created a scandal. Instead, he got the pupils to stroke the dilapidated walls with their fingers and say things such as, 'The wallpaper is rough. Here is a hole in the wall.'

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Pestalozzi opposed the manner of teaching that was current at the time in which pupils spent years laboriously learning to read from books they did not understand and talking about things of which they had no personal experience and could not really comprehend. Pestalozzi battled untiringly against this use of empty words, this 'idle prating', this 'chitter-chatter' as he called it. What was clear to him was that before one can *read* one must be able to *speak*, and one can only speak when one is *thinking* what one is saying. But thinking rests on clear *concepts* and these, in turn, rest on the real *observation* of things. Thus Pestalozzi arrived at his thesis '*that observation is the absolute foundation of all knowledge.*'

A teacher who wants to develop his pupils' faculties of mind in a natural way must therefore make sure that they perceive real things *with all their senses* — by seeing, hearing, touching, smelling and tasting. In so doing he is using *observation* as the basis on which he can build up all further reflection on and discussion of objects about which he is teaching them.

Pestalozzi makes a theoretical distinction between *four stages of observing the outside world*:

In the first stage, that of *dark* observation, simple stimuli are recorded by our sense organs, as happens with animals as well. Pestalozzi therefore often calls this mode of perception 'animal observation'.

But the second stage, like the further stages, is only possible for humans, for in it we become aware of precise form, are clear about number and can use language to name an object or objects. Pestalozzi calls this stage of observation *definite* observation.

In the third stage of observation as many of our sense organs as possible should be employed to determine the further characteristics, for example the texture of the surface, the colour, temperature, sound, taste, smell, weight, consistency. That turns definite observation into *clear* observation, which must always be accompanied by naming the characteristics. Thus at this stage the pupils can not only name the object itself but also find the appropriate expressions for its characteristics. That, however, is only possible if the senses have been intensively trained. The training of the senses, the observation of concrete objects and the linguistic processing must always go hand in hand with each other.

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In the fourth stage the object is shown in various relationships which are not immediately accessible to the senses. It is only exceptionally that pupils can discover them from their own investigations, as a rule they have to be taught them. Thus for example they will learn what an object is used for, who produced it, how it has developed in the course of history, with what other objects it is closely related, what its value is, what hidden dangers it has. As the pupils acquire this knowledge, clear observation becomes a *distinct concept*. Knowledge about an object can, of course, be extended indefinitely, so a distinct concept is not something final but can be broadened and deepened in the course of one's life.

In practice these four stages cannot be separated in the classroom, but it is helpful if a teacher remains aware of the essentials: starting out from real objects, involving all the senses, formulating observations precisely, differentiating between the acquired concepts through the teachers' explanations.

The acquisition of distinct concepts is the basis for two of the most important human faculties, which are intimately related: *thought* and *speech*. But that is not the end of a pupil's intellectual development for in a mature person fully developed thought expresses itself in correct *judgment*. If thought is based on real *observation*, then the judgments that are based on it will derive from a true understanding of the facts and not be a simple regurgitation of the undigested opinions of other people. In other words, education based on observation will guide young people to *truth*. *Living in truth is the ultimate goal of intellectual development.*

Naturally this requires time. *Passing judgment* is not a matter for small children, it is an ability that matures slowly. Pestalozzi is quite clear about this: *I believe the time for learning is not the time for making judgments; the time for making judgments starts with the completion of learning, with the ripening of the causes for which one makes judgments, has the right to make judgments; and I believe that every judgment should have inner truth for the individual who delivers it, should emerge from a comprehensive knowledge of these causes as mature and complete as a ripened seed falls, freely and without the use of force, out of the husk.*

In our modern schools, however, pupils mostly get their knowledge second hand, they memorise what others have discovered. Naturally

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that is understandable and justified over large areas of the curriculum. It only becomes problematical if it makes it as good as impossible for pupils to make their own observations and acquire knowledge independently, and if even in those areas where that would be possible, they are allowed to take the easier, though less educationally valuable route of acquiring knowledge ready-made. On the general level of the organisation of education, this appears in an unfortunate dominance of paper and electronic media.

From Pestalozzi's point of view we must oppose this trend with the battle cry: Back to the phenomena! But a teacher can only take this demand seriously insofar as he has the freedom to turn to those phenomena that are in the immediate vicinity of the school. And he can only do that if he is not compelled to feed his pupils standardised Euro-fare that has been pre-packaged in units with the associated teaching materials.

Pestalozzi's reasons for using materials from the immediate vicinity as a starting point are not purely educational. He felt it was important that people should be firmly rooted in the concrete situations in which they had to conduct their lives. Anyone who at first finds his everyday surroundings problematic, but then faces up to them by observing and thinking, will build up vital forces within himself, which will encourage him to act responsibly within his environment.

Mastery of the craft of teaching reveals itself in the proper treatment of phenomena in the classroom. Such a teacher will know what skills he can develop in the pupils through dealing directly with phenomena, what important basic concepts he can impart and what practical advantages for teaching he can exploit:

- In general it is easier to arouse pupils' enthusiasm for working on an object or theme from real life than for studying prescribed texts and images. It can turn a lesson into an experience, removing the sense of artificiality. The pupils hardly see it as 'learning' at all. They feel the way we adults do when we go to a foreign country. In general we do not go there with the purpose of acquiring knowledge but for the experience; with that, however, the extension of our knowledge comes automatically. Knowledge is not the *purpose* but the *result* of the undertaking. Knowledge as a waste product, if you like, what is

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left over after we have occupied ourselves heart, soul and senses with some phenomenon.

- As regards its treatment in class, a real phenomenon is always *more open* than any kind of presentation on paper or screen. This openness makes it possible to contemplate different objectives or to bring them into the lesson spontaneously. That makes the pupils' contribution more important. In particular, however, the teacher can develop the pupils' sense of how to go about discovering things for themselves when confronted with some phenomenon. In this way the pupils learn the basic techniques of research and develop curiosity and genuine interests.
- An important aspect of this exploration of phenomena is the employment of all the relevant *senses*. Thus direct contact with phenomena helps to train the senses and develop the habit of using them. This can only happen through hands-on experience, through direct observation of a phenomenon.
- The fact that the pure phenomenon, which has not been specially prepared for teaching purposes, is open in all directions, makes it particularly suitable and fruitful in helping pupils *learn to ask illuminating questions*. They should discover that education does not just mean giving the right answers; that putting the right questions is at least as important.
- *Observation* is only fully developed when sense perception and questioning combine. By learning to observe correctly, pupils acquire an important basis for coping with problems, but also a means of enriching their inner life.
- Asking the right kind of questions, using all one's senses, observing precisely and thinking logically ultimately lead to new knowledge which the pupil — together with the teacher and the rest of the class — *has acquired himself*. Knowledge acquired in this way is unlikely to be forgotten.

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- Finally, the pupils learn to express their new knowledge *in language* and to present it in a pleasing and proper form in text and pictorial representations they have made themselves.

This last point brings us to one of Pestalozzi's important principles: namely that the teaching of factual subjects (science, local history) and of the mother tongue should always go together. In concrete terms this means that the teacher and pupils will spend enough time examining a phenomenon thoroughly for the pupils to be clear in their minds about it and able to write a description in their own words. This is much more productive than doing a final test with a series of separate questions. Pupils who know from experience that they are expected to report on any topic fully and in their own words will approach a new area of knowledge with that in mind right from the start. And the teacher does not have to depend on the answers to tests for assessment, but can get a much more precise idea of how well a particular pupil has mastered the material.

Naturally this all requires sufficient time. Since, however, schools nowadays are so organised down to the last detail that they feel this time is not available, they attempt to save time by using 'more efficient methods'. The solution appears to lie in something that has established an almost tyrannical hold over educational practice today: the so-called *worksheet*. It contains brief information, questions to be answered, perhaps pictures or small tasks to be carried out. On pre-printed lines or in gaps in the text pupils have to insert specialist terms, answer questions, perhaps even formulate a discovery in a short sentence. The perceived advantages of using such worksheets are that the pupils will be active during the lesson, at the same time committing the results to memory as a basis for revision and the following achievement test, and that in comparison with the process described above time will be saved.

In principle it is necessary to use the time available efficiently, but this must not be an absolute requirement. A completely rationalised learning process makes it difficult to take account of the particular class, of individual pupils and the specific learning situation; it also makes it difficult to pursue the topic into areas that are not allowed for in the plan. Moreover it is not necessarily a good idea to try and *make things easier* for the pupils with printed handouts since a pupil's *exer-*

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tion is identical with 'the use of faculties' and thus with *the fundamental requirement for the development of faculties*. In this respect the habitual use of printed worksheets is questionable. Pupils save time and energy, but that means that lower demands are made on their powers, which in turn means a loss of education. For this reason I believe that the best work sheet is a blank piece of paper.

The demand, central to both educational theory and practice, that teachers and pupils should devote their attention as far as possible to the phenomenon itself does not fit in well with the standard 45-minute period. This dominates the whole of teaching, especially at senior secondary level. At worst this system can mean that pupils have to deal with up to ten subject areas in any one day - a psychological impossibility. A change to the system is urgently needed here.

The solution is relatively simple: the *four-phase timetable*. After deducting weeks devoted to sport, special topics and projects, the remaining school time is divided into four phases (A, B, C, D) of equal length. Half of the subjects are taught in phases A and C, the other half in phases B and D, but with twice as many hours per week as at present. That in principle means the end of the stand-alone 45-minute lesson. Two timetables are drawn up for the whole of the school year. The two subjects that remain outside this arrangement are sport and instrumental tuition, which are taught throughout the year. Depending on the local situation and questions of personnel, other subjects can be accommodated in the timetable in the traditional way.

The four-phase timetable favours 'epoch teaching' (as practised for example in the Waldorf schools), makes it possible to linger over a topic and is the best way of organising teaching to take account of all the concerns expressed in this book. It has the advantage of having been tried out: at the teacher training college where I worked it was used successfully over many years. Doubling the weekly periods per subject made projects possible which could hardly be undertaken with the normal timetable: student plays in German or a foreign language, geological or botanical outings, historical research 'on site', attendance at outside events, practical experiments in chemistry, biology and physics, choir projects.

Essential for the realisation of the four-phase timetable, however, are the good will and flexibility of all concerned. It is occasionally unavoidable

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that a teacher will have to take two periods more than the norm in one phase and two periods less in the other. The more closely knit a school community, the easier it is to organise a four-phase timetable. And anyway, concentrating pupils in large campuses is educationally counterproductive.