

THESIS.

Subject: _____ Number: _____

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In the teaching of any subject it is of great importance that we have a thorough knowledge of the nature of the subject we teach; its relation to other subjects; its place as a means of mental development; and its utility in the affairs of life.

Number may be defined as how many; and it is one of the most important studies to be taught; for we see in every day life its practical use is more needed; the pupils learn to calculate with accuracy and rapidity; it teaches

them to reason exactly and logically. Our knowledge of the subject comes to us from without and from within; through our senses and through our consciousness.

Strictly speaking there is only one way to teach numbers, and that is by direct observation of numbers of objects. When the child first enters school, it is the duty of the teacher to find out by careful examination just what the child knows, and begin his instruction at that point.

Objects should be placed in the hands of the pupils, to be used for this purpose; for we learn to do by doing the thing to be done; as the child is his own physical discoverer, so he should be led by wise guidance to be his own mental discoverer.

There should be brought in from day to day different and unattractive objects, so that the child's attention would not be diverted from the lesson by bright objects, and that he may gain a conception of different things and not of the same thing.

It has been inquired in what order should the different operations in number be taught. The order should be determined by the power of the child to discover the facts in the number taught; each child should be led to discover for himself with the slightest possible help, all the facts in a number; for a discovered truth is often nearly learned in the discovery. If the teacher will only lead and let the pupil, he can discover every fact in the number for himself; and discovery employs the highest

mental action, while unneeded help weakens, and in the end renders the helped helpless.

In teaching, both form and number may be taught at the same time, using cubes, squares, cylinders and many other objects. The question may arise how long objects should be used. They should be used until the child has distinctly in his mind a number of objects, when he hears the number mentioned; not figures which mean nothing to him; if a new subject is

taken up) objects should be used; as money should be used in the study of interest, and blocks in the study of square and cube root.

⁴⁰⁹ There are but two operations in number, either uniting different numbers into one number or separating one number into different numbers, and these should always be taught at the same time.

Always be careful to teach number not the language of number; thus figures are only the language of number.

Constantly review the work passed over; for the child must use his mental strength, building up each day on what he has acquired the preceding day. The teacher should never explain anything in number except the language, for as long as the language is imperfect the idea of the number will be defective.

The child who is led by a skillful teacher to discover new truths for himself, becomes an explorer, an experimenter, and an inventor on his

own account; he gains analysis in receiving his knowledge and synthesis in displaying and applying it. News allow a child to begin by counting for counting has no relation.

There are two motives in teaching number, one to train the power of attention; the other and more important one is the development of the power to reason logically.

Each number should be taught as a whole; the child should be led to find out the even and uneven numbers

which any number contains,
and use all the weights and
measures that come within that
number.

The teacher should not be-
come impatient if the pupil
advances slowly; but remember
the ideas, that he gains being
derived by himself from facts
present to his senses, are clear
and accurate. The teacher should
remember that it is by constant
repetition that we learn any
thing; so he should constantly
review his pupils, and drill
with number of objects,

for ideas should always
precede words in number.