

Philosophical Organic Approach – Logic of Teaching Numeration and Number ‘Zero’

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Abstract

In the past years, rote learning, especially in the teaching and process was the usual practice. This takes the form of indoctrination; Children do not learn through rote memorization, it is only an end in itself. True learning is that which is achieved through the understanding and insight of the problem at stake. An application of philosophy through the play-way method was suggested. This is because it could assist the child develop his mathematical capacity for independent logical thinking and increase his perceptual abilities through the use of all his senses. The writers have prepared materials to represent the numbers under geometrical forms and with objects, which will simplify the combination of numbers, under the organic approach.

INTRODUCTION

In recent times, the organic approach is the general application which teachers use as the basic approach to problems but Santrock (2007) insisted that although there is developmental variation in the learning of mathematics by young children they tend to follow certain sequences or learning pattern. So, to enter directly into the teaching of numeration, which is a symbol that represents a number, there is the need to resort to the use of didactic (self-teaching) materials, which helps in the education of the senses. The three year old already know how to count numbers one to five or ten before entering school. This is because simple number ideas are assimilated by them formally from their general everyday experiences. A child might be able to count and recite from memory the natural series of numbers but they are confused when dealing with qualities associated with them. For instance, a child might be able to say that she has two brothers, and that there are three children in the family. She might be able to point to her fingers and say number names up to five or ten. However, it might be improper to assume that such abilities imply an adequate early experience of numbers or a real appreciation or understanding of it. Children develop the theory of mind- an understanding of what others think through out early childhood. Notable advances in theory of mind occur at around age 4. at that point, children become less egocentric and better able to understand the differences among perception, emotion and fact.

NUMBER SYMBOLS - NUMERALS

The answer to ‘how old are you’ to a 2 or 3 years old is been indicated by showing two or three fingers. The answer changes to ‘four’ and four fingers are up. By about five years of age, children will answer verbally without holding up fingers. This progression from concrete representation of a number idea to verbal abstraction is repeated many times as children learn to use the spoken or written words symbol to stand for idea of a number value. The written symbols: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, are called numerals.

A chart showing the correct way to write each numeral may be posted so that a child who is having difficulty can look to see how to form the numeral. As children gain experience in writing numerals, most of them write numerals correctly and neatly during writing practice session. Similarly, Decker and Decker (1997) encouraged the use of symbol system through the provision of manipulative objects.

Carefully planned activities with manipulative materials enable children understand the meaning of counting and the ways numerals are used to record the number of items in a set. A number is an abstract concept of quantity (cardinal number), a position in a row of objects, which have been ranked or ordered in arrangement (ordinary number) or an identification symbol or signal (numerical code). In learning to write number symbols, children experiences with tracing in the air, writing on sand, tracing on sand paper fillers and the use of materials like cylinders, beads, insets, flash cards pictures in secret boxes etc are important teaching techniques.

PHILOSOPHICAL IMPLICATION OF THE CHILD AND KNOWLEDGE OF NUMERATION

The philosopher views the child as a human young growing and developing in several dimensions, which includes essentially the dimensions of independent analysis and intelligent perception.

Plato regarded knowledge as what man is equipped with from birth, which can only be assisted by the perception of things around him. This is why the teaching of concepts through what the child has come across is very important to assimilation. The process of promoting knowledge in the Nursery School System is conscious, systematic and purposeful. Since knowledge is functional, learning should be directly related to the interest of the child who is always naturally disposed to learn what interest him especially through the play-way method of teaching. Vitgotsky in Decker and Decker (1997) stressed the social aspect of childhood recognition noting that children learn by participating in various experiences. He also believes that leaning occur in social interaction and not in isolation

On the relationship between philosophy and knowledge, the philosopher endorses childhood mathematics learning for the child in the reasoned expectation that, being based on deductive logic which is the logic adopted in this paper, mathematic develops the child's capacity for independent logical thinking. Secondly, being concerned with utilize relationships for approaching problem - solving tasks.

It is important to also note specifically that since the child is growing into an adult; he needs this unique contribution to rationality and problem resolution which mathematics can make to his psychological personality. This supports the view of the reconstructions who saw the future as a part of the present contending that we speculate on the future through present curriculum. It is important to stress that the starting point for subjects in the curriculum is what the child knows in order to establish what can be taught next. In this way, learning is undertaken in context but continually extends what the child already knows. In addition, learning is more relevant when a child experiences things with more of his senses than things experienced through one sense. The use of the play-way method of teaching cannot be overemphasized because when the teacher in the learning process adopts this method, the child makes use of all his senses.

PHILOSOPHICAL IMPLICATION OF THE CHILD AND KNOWLEDGE HE ACQUIRES THROUGH PLAY.

WHAT IS PLAY?

It could be questioned if play has any positive use in the emotional, intellectual, social and physical development of children. Why do children play? How can play possibly be an educational process? And in what sense could play be called serious? Play is pleasurable and enjoyable even when not actually accompanied by sign of mirth it is positively valued by the player. Play is spontaneous and voluntary. Play is natural because it is not obligatory but it is freely chosen by the player. It involves some active engagement on the part of the player. Vitgotsky in Decker (1999) and Decker stressed further that young children specially benefit more when they can explore and manipulate mathematical ideas through play.

Play is not irresponsible fooling around: it is a very serious business and if it is allowed and guarded in the right way, it is an excellent preparation for later efficiency and competence of the child. This view negates the popular notion that play is just an enjoyment that serves no particular aim. Froebel sees play as the highest expression of human development. He sees it also as "essence of something" Froebel in Odigie (2014). Thus, Froebel requires a Kindergarten "Child Garden" where the essential nature of the child could be unfolded thereby developing a life that is secure and in harmony with nature and his fellow human beings. In addition, the child is naturally creative and that self-activity is one of the most important ways in which he learns. Play is a major factor in developing the child's intelligence. Children deprived of adequate opportunities for constructive play are children who later grow up deficient in constructive imagination, and are inhibited in experience. Montessori as translated by George (1973) saw the value of play in learning and used carefully defined "playthings" called "didactic materials" to help children learn various concepts in education. She also made the classroom a place where the child was free to move around and work at his own pace and in accordance with his own preferences. The philosophical value underlying the method of play is the freedom it gives to the child to choose the activity he likes best in the learning process.

TEACHING NUMERATION AND NUMBER 'ZERO' 'O' - THE PLAY-WAY METHOD

Ordinarily, we could define a method as a means or system by which a skill is accomplished or a job done. Methods of teaching are ways or means the teacher organizes the contents, techniques and teaching tools to achieve the desired learning.

WHAT IS PLAY WAY METHOD

It may be questioned how play could possibly be an educational process. In what sense could play be called 'serious'. Rousseau said that play is natural (Dearden in Peters (1979). Similarly, Froebel in Odigie (2014), also viewed play as 'essence' of something. Thus Froebel required a kindergarten or 'children garden where the

essential nature of the child could be unfolded. Moreover, the child is naturally creative and self-activity is one of the most important ways in which he learns. Play activities arranged in a Nursery School is specifically educational and not just therapeutic or happiness - producing because it also gives cognitive perspective to children's experiences. This paper gives model approach to the teaching of numerals and the number 'zero'.

TEACHING SKILLS: AN OVERVIEW OF THE TEACHER SPECIFIC OBJECTIVES

In preparing lessons, the teacher takes an overview of what he wants the children to achieve in the lesson. Vitgotsky in Decker and Decker (1997) stressed further that guidance assist learning within the zone of proximal development which includes the knowledge and skills that the child has the potential to learn Both research and experience have shown that it is desirable for the teacher to plan classroom activities in such a way every lesson, not only relate to previously taught lessons, but also enhance the application of specific skills. The teacher should take great care to relate content and teaching method together. There are essentially two types of plans:

- a) The Unit Plan
- b) The Daily Lesson plan

Unit Plan: The unit plan indicates specific areas of interest, which will contribute to the development of given skills, habit, attitudes and information, for example, the unit plan in the teaching of numerals and number 'zero' could take this form.

Class: Nursery one

Topic: The Numerals 0-9

Lesson Units

| | | |
|---------|------------------------|---------|
| Unit 1: | Writing of numerals -- | 1 and 2 |
| Unit 2: | “ “ | 3 and 4 |
| Unit 3: | “ “ | 5 and 6 |
| Unit 4: | “ “ | 7 and 8 |
| Unit 5: | “ “ | 9 and 0 |

This paper will focus on the writing of numerals 9 and 0. The daily lesson plan/note is an offshoot of the unit plan. The daily plan/notes is an elaboration of items specified in the unit plan into logical, sequential and manageable daily activities for a special level of education. Teaching skills: Teachers Activity (9 and 0).

Previous Knowledge

Children are already familiar with the numbers 1-8 taught in the previous lessons. It is necessary to teach in graded form.

Set Induction

The skill of set induction is that of gaining the attention of the children and directing them towards the aims the teacher have proposed for the lesson. If we achieve a positive learning set with the children, they are likely to continue to be interested and involved throughout the lesson. Some ways of doing this are;

- a) Through questioning
- b) The use of a picture, which until you introduces it, had been covered in the “secret box”.
- c) Telling of a brief story or incident
- d) The introduction of an unusual object.

The following teaching skills adopted in the teaching process below could illustrate and reinforce simple number vocabulary.

Introduction

Teacher introduces the lesson through songs, rhymes, counting eg.

- a) Two little black birds sat on a wall
- b) One, two, three, four, five
- c) Counting Arms legs, ear eg.

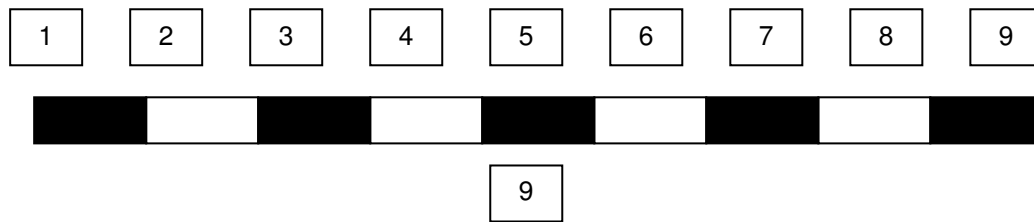
Eki is holding up some fingers on one hand. How many are they?

Step I

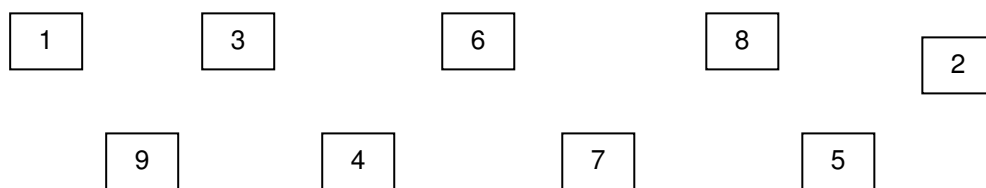
Ask children to show their first finger and direct them to write the number 9 and 0 in the air initiating the teacher using the “Three Period Lesson”, the teacher introduces the name - nine, and ask children to write the number 9 and 0 on sand and trace on sand paper fillers.

Step II

To prepare the child for writing of symbols and associate each numeral with the right number situation ask them to place the rod on corresponding number e.g. find the ninth-rod and card written 9.



CHILDREN ARE ALSO ASKED TO RE-ARRANGE NUMBERS ON CARDS IN CORRECT COUNTING ORDER



Step III

The Concept of 'Zero'

Children are already able to identify the numerals 1 - 9, children recite the rhyme on little Mickey mouse who has nothing. The teacher then places herself in the midst of the children as they sit around in their chairs. She says to herself in a low tone "nothing" zero means nothing. She increase her tone gradually and turn to one of the children who had already preformed the counting exercise and tells him to come to her zero times. The child will almost run to the teacher and suddenly return to his place.

The teacher would tearfully ask the child why he did not come to her. The children's voices would be raised in a shout and laughter saying 'zero means 'nothing', zero means nothing'. Teacher answers in affirmative. She then invites them to come to her once.

Step IV

To give the children further practice in associating each numeral with objects and introduces the concept of 'zero', she uses the spindle box. The child is asked to sort the rods (counters) into sets, placing each set in a different box. One box will be empty. The teacher explains that when a box contains no counter at all, we indicates thus by the numeral '0' called 'nought' or 'zero'.

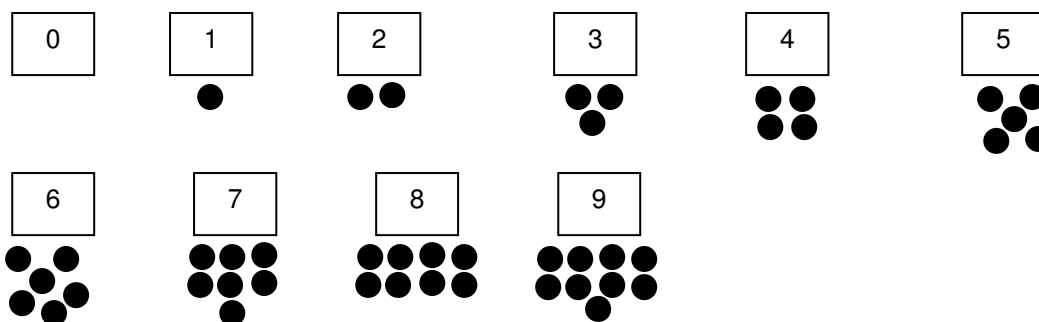
More exercise

With a group of children sitting in a circle, the teacher ask them to:

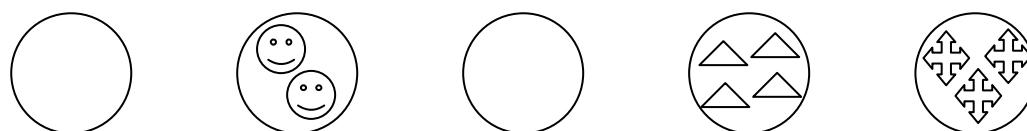
- 1) Clap their hands a number of times e.g. 1, 2, 3 times. Then she ask a child to clap zero times.
- 2) Place a number of familiar objects on a table e.g. counters, beads, rods and write out on separate pieces of paper, the numeral 0-9. The teacher folds the pieces of paper and ask a group of children to take each and then go to the table and fetch the correct number of objects. The child with zero finds it hard to come back with nothing. The teacher then checks everyone's number of objects.

Step V

To give the child further practice in counting of objects with the numerals and place in correct order, the teacher mixes the cards on the table and gives the box of counters or soda straw to the child. The teacher then ask the child to find 1-9 and ask him 'how many counters shall we placed underneath it? The child does the exercise.



For conservation and to help the child relate the concept of number to everyday situations, pictures depicting everyday objects could also be shown and children are asked to tick object without any picture and arrange in correct order.



Teacher also explains to pupils that the number '0' is an important number because in the process of place value if we add '0' to the number I, we have '10'.

CONCLUSION OF TEACHING SKILLS

Conclusion is a skill of successfully bringing the lesson to an end. It is essential that the teacher notes how much time she has left. If a lesson ends abruptly many of the objective that has been achieved in the lesson can be lost. Moreover, if a lesson merely drifts on to conclusion with no expected point of closure, children feel lost and lose the objective of the lesson. Teacher should always allocate time to review the most important points of work that has been covered in the lesson, clear up materials and settle the children into quiet frame of mind. This therefore sums up one of the position of Montessori, as translated by George (1973) which says:

It is my belief that the thing which we should cultivate in our teachers is more of the spirit than the mechanical skill of the scientist; that is, the direction of the preparation should be towards the spirit rather than towards the mechanics.

PUPILS ACTIVITIES

It is important to obtain and maintain harmonious relationships. In focusing the skills, the teacher should be alive, alert looking for and responding to changes in the children's behavior. Try to put questions to a group and when you receive an answer from a child, instead of commenting on or accepting that child's answer, ask another child to comment on or think about or make observation on the answer. In his way, you enable more children to take part in the learning interaction in the classroom. Children learn more when they learn with their mates It is also a useful device for keeping the attention of a group of children. Pupils also perform other tasks assigned in the course of teaching.

EVALUATION

Different scholars of education have viewed evaluation from different angles. Asuru (1999), views evaluation as consisting of ways of ascertaining the extent to which educational objectives are realized. Yet others perceive evaluation as a mechanism for assessing the suitability of educational programs in terms of time, effort, money

and other resources allocated to it. From the foregoing, it is quite obvious that formal evaluation system emanated out of the need for pragmatism and the avoidance of obsolescence of knowledge within the educational system in view of the forces of change, which characterizes the society. Furthermore, evaluation summative or formative is intended to enable the teacher to judge the efficacy of his teaching techniques through the children's performance, to expose areas of difficulty in lesson taught and to establish the suitability of instructional materials used in the teaching - learning process.

CONCLUSION

The organic approach to the teaching of mathematics makes little or no use of indoctrination. This makes retention permanent, which improves changes in behavior of the learner in the learning process. With the aid of sufficient didactic (self-teaching), materials and play way method, children learn concepts in education naturally and with great achievements.

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