

## Teacher Education Institute (TEI)

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### Fractions

Learning about fractions is one of the most challenging tasks for elementary school children. The concepts involved are difficult and complicated. It is however necessary that children should leave elementary school with a good theoretical and practical grasp of this area. If this is accepted we need to ask two questions.

The first - is there a correct time when fractions should be taught or first be introduced?

The second - is there an approach or methodology through which children can learn more easily?

From our viewpoint the answer is in the affirmative to both questions. Yes, there is a correct time to introduce fractions; and yes, there is an approach through which children can learn more easily.

When should fractions be taught? According to our approach it is important to introduce fractions to children of 9/10. The reasons for this are somewhat complicated and relate to children's growth patterns.

Children at this age are losing their holistic and integrated perception of the world. Up until this time children think globally, that is, they perceive and feel themselves to be part of the world. They also see the world as a unity. Teaching needs to relate to this unity and wholeness; indeed an important element is to convey the idea of totality, a wholeness which has various parts.

Between the ages of nine and ten, the holistic perceptions become fragmented. The teaching of fractions (taught from the whole to the parts) relates to the division and fragmentation of these holistic perceptions. Consequently, this is the ideal time to introduce "fractions", for in this subject area we have the experience of taking the whole to parts and then reassembling these various parts.

We continually advocate that there is a "right time" to introduce much of the content of different subject areas. This is usually determined by the child's stage of all-round development (including emotional, social, psychological and physical) and not just cognitive growth. Our approach therefore differs from conventional approaches in that decisions regarding when a topic or concept is introduced are made with regard to far more than just the academic attainment or intellectual development of children.

They are made by taking into account the all-round development of children. They are also made after asking quite different questions than those normally asked. The educator might ask the question: "Is this child ready to handle this content at this particular time?"; whereas the teacher using the approach we advocate would find this question somewhat irrelevant, and would tend to ask such questions as: "What will help us feed and enrich this child at this particular stage of development?"

How should fractions be taught? Children of 7-14 live very much in the world of feeling. Before this, their earlier years have been dominated, to a great extent, by the "will"; from around 7 the affective comes to the fore; after puberty the intellectual activity predominates. The elementary school child's world is also one of colour, and pictorial representation; consequently approaches such as storytelling, which stimulate children's imagination, are to be recommended.

The sequence in teaching a new concept is usually as follows.

First Stage: The first stage is to relate material to the experience of the student. This experience is different from the adults' experience. In essence, children are not miniature adults. When teaching adults we would probably teach immediately to the "head" whereas for elementary school children we need to teach to the "heart" and "hands". Wherever possible, content is introduced so that it relates to artistic and pictorial representation. One way of doing this is through storytelling where the students' imagination is stimulated although it should be added that a subject area such as fractions does not lend itself to the formulation of stories as easily as say history does. Through this type of format information is absorbed in a way that is in empathy with the students' experience.

Second Stage: The second stage is to encourage the students to express their experience through a variety of artistic formats. Some children will want to do this quickly; others will want to take their time. This stage should not be hurried and the children should be given enough time to work through a number of formats according to ability, aptitude and temperament.

Third Stage: The third stage is to work through concrete examples.

Fourth Stage: The final stage is to introduce the abstract concepts and to work symbolically with numbers.