

## Teacher Education Institute (TEI)

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### Multiplication Tables

We believe that it is more important for students to understand what they are doing than to learn how to solve problems or to compute without such understanding. We also believe that students will gain this understanding if content and methodology relate to their experience of the world.

Thus the approach we recommend emphasizes teaching through a variety of creative and artistic formats that relate to the students' stage of development. It concerns itself initially with the inner life of the student. After involving the "inner child" the approach moves gradually to the students' contact with the outer world. Since elementary school children live very much in the world of feeling, the process starts in the affective realm, moves to action and the world of concrete experience, and only then to concept.

One has only to observe young elementary school children to see that they are imaginative and active. These two attributes are used as the corner-stone of the approach. On the one hand the imagination is stimulated. This is achieved through a variety of creative and artistic formats. On the other hand, a number of activities, especially those containing rhythms, are introduced. Through this process, understanding occurs which is meaningful and permanent. Thus students learn from and through their own experience. The teacher's task here is to provide the right structures, content and methodology.

#### The Imagination

The elementary school child's world is an imaginative one; it is one of colour and pictorial representation. Consequently storytelling is used extensively to stimulate the imagination, and to relate to the students' inner life and experience. From this beginning, the student is led gently towards symbolic representation, and a grasp of concepts. It is an effective method of teaching to both the left and right hand brain - to encourage both intuitive and linear thinking.

#### Rhythmic Action

Younger elementary school children generally respond immediately and spontaneously to rhythm. Rhythm is a natural part of their world. The popularity of the playground swings, the jump rope games, the skipping games, and the ball games with accompanying rhymes, all reflect rhythm within children, and their desire to involve themselves in rhythmic activity.

It is a very natural step therefore to use rhythm in the early teaching of multiplication. This may be done in a number of ways. Rhythmic counting generally finds an enthusiastic response with young children. For example rhythmic counting may accentuate every fourth number - for instance the numbers 4, 8, 12 etc. are spoken louder than the rest. This is also effective when accompanied by movement such as clapping or striding.

For example, a group counting from 1 to 36 would clap their hands when saying 3, 6, 9 etc.: or make a stride forward on these numbers. If the numbers between are gradually spoken softly then eventually the children will just be calling out the multiples of 3 or the multiples of 4 etc. Chanting the tables also has a place. This is even more effective if the chanting is accompanied by some kind of physical movement such as marching or clapping.

#### The sequence of teaching is as follows.

**First Stage:** The first stage is to relate material to the experience of children. It is accepted that 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 the main task is to teach to the "heart" and "hands". Wherever possible, content is introduced so that it relates to artistic and pictorial representation, for example, through storytelling. 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. 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. This is the time when patterning activities should be introduced so that the patterns of multiplication are experienced and created.

**Third Stage:** The third stage is to work through concrete examples. This may be achieved using various kinds of manipulatives, through involvement in activities and games, and through problem solving. Rhythmic activities and chanting would also be appropriate at this stage.

**Fourth Stage:** The final stage is to introduce the abstract concepts and to work symbolically with numbers. This is when computational practice would be appropriate.