

Accuracy and automation



The program to improve child's numerical ability specifically subtraction of numbers up to 100 requires knowledge of counting and addition to enable the child to imagine the process of subtraction which is considered as the reverse process of addition.

Given that the child is already able to do addition of integers from 1 to 100, the child is ready to be introduced to the process of subtraction. It is necessary to check if the child knows how to count backwards such as counting from 10 to 1. Aside from this, the terminologies used for subtraction should be introduced to the child including the symbols and the meaning of these symbols to the process of subtraction.

First, subtraction of one digit numbers without the need of "borrowing" should be taught. Next, subtraction of two digit numbers with and without borrowing can be incorporated. It is highly recommended to use drawings such as shapes or toys to help the child visualize how subtraction is done and to understand the concept of transfer and deduction.

Reinforcement may affect the child's academic performance. Educational toys have been increasingly used to improve the academic performance of learners particularly in the lower levels.

Some educational psychologists found that among Grade I and II pupils, computerized educational toys with immediate reinforcement improved their performance in Spelling and Arithmetic. The pupils who were exposed to conventional toys and who were not reinforced did not improve in their performance.

Learning occurs with constant correct practice. The drill method is based on the law of exercise. However, correct practice or exercise in itself does not result in learning. There are other factors that interact with exercise.

For example, studies show that practice or exercise without knowing the reasons for practicing or exercising does not improve learning. Similarly, if the learner does not know how accurate he is in the exercise, performance does not improve. This non-improvement indicates that he is not learning. To enhance learning, exercise should not be done blindly. Learners must know the reasons for an exercise and for everything they do. At the same time, they should be given feedbacks on how well they perform in their activities and efforts.

Thorndike's law of exercise may be better understood when seen with his trial-and-error concept. To him, all learning involves trial-and error. In the trials, the learner generally acquires certain responses while eliminating others. Rewarded responses are acquired and " kept" while those that are punished are eliminated.

Repetition is also a key to successful learning of children especially with math concepts. In order to master the processes they need to keep on trying and doing things over and over again. To start, the teacher will say the number first and then the child will say it aloud. This can also pave the way for interaction between the teacher and the student.

It is vital that every child acquires mastery in mathematical concepts since this is a skill that can be learned through practice and understanding. There is no need for memorization just a an analysis of how the mathematical processes are done.

Having math fact accuracy is important since mathematical problems have definite right and wrong answers especially on arithmetic problems. There should be precision inculcated among students for the math basics will be their foundations to higher mathematics.

Aside from this, concepts regarding money and time are best learned by students who have accuracy and fluency in mathematics.

Ball, D. (1992). Magical hopes: Manipulatives and the reform of math education. *American Educator*, 16 (1), 14-18, 46-47.