

EFFECT OF TRAINING ON JUNIOR AND SENIOR SECONDARY SCHOOL STUDENTS' CREATIVE THINKING PERFORMANCE

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Abstract

This study examined the effect of training on junior and senior secondary school students' creative thinking performance. One hundred and forty-two (142) students formed the samples. Eighty-one (81) of them were from the junior class, while 61 were from the senior class. Data were collected by creative thinking test. Mean and standard deviation, as well as Analysis of Covariance (ANCOVA) were used to test the hypothesis at 0.05 level of significance. Results showed that there was no significant difference in the mean performance of junior and senior secondary school students on creative thinking performance.

Introduction

There is growing awareness that the society has changed (Adeyanju, 1996). According to Tucker (1996), this rapid change requires new adjustment, new habits, and new ways of thinking.

This was not so in the past. In the villages, life followed the same pattern, in repetitive manner; the son followed the footsteps of the father. Now, all this has changed. The old methods of doing things have been replaced by newer methods. Whether people like it or not,

whether they choose to be mute spectators or active participants, the fact remains that before their eyes, their environment is changing.

Under these changing conditions, simple conformity to the past may lead to unresolved problems. Thus, Harris (2002) opines that creative thinking training that is out of the ordinary must be used in order to contend with the changes.

According to Boulden (2002), creative thinking is the process of challenging accepted ways of doing things in order to find new solutions or concepts and also be aware of the obstacles that stand in the way of creative person. Adeyanju (1996) opines that creative thinking can be used to solve problems. For example, Asian countries, like Japan, China, Indonesia, Korea that were considered as underdeveloped in the early part of the 20th century, applied creative labour force, and they are able to develop to industrialized society status.

If creative thinking is so powerful and useful in problem solving, the need to use Cognitive Research Trust Training Programme (CoRT) for enhancement of creative ability becomes necessary. This study examined the effect of training on junior and senior secondary school students' creative thinking performance.

Statement of problem

Psychologists have agreed that children change over time. Those stage theories believe that all children must pass through different stages in the same order. These stages are believed to be biologically programmed to unfold in a fixed sequence in all normal people. They also believe that a child cannot progress to the next stage until the current one has been mastered. The position of the stages of cognitive development implies that younger people should be less creative than older people. In this case, senior students should be more creative than the junior students. But in practice, is this the case?

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Purpose of the Study

The main aim of the study was to find out the effect of training on junior and senior secondary school students' creative thinking performance. Specifically, it sought to determine the mean performance of junior and secondary school students on creative thinking performance

Hypothesis

The following hypothesis was formulated to guide the study: There is no significant difference in the mean performance of junior and senior secondary school students' creative thinking performance.

Theoretical and Conceptual Framework

CoRT was designed by De Bono in 1974, revised in 1994, and 1995. The aims of the programme are as follows:

- a. To provide a framework where emphasis is placed directly on teaching thinking.
- b. To encourage students to feel in control of their thinking rather than drifting in the sea of confusion and emotions.

Evidence has shown that CoRT has been useful in fostering creative abilities in students. For example, De Bono (2001) reports that the programme was implemented in Maltese Primary School and the results showed that the pupils had the opportunity to learn how to think creatively. Maximum benefit was also obtained when realization took place that the CoRT training programme could be useful in a number of practical situations in the classroom as well as in situations arising outside the classroom.

Creative thinking enhancement is influenced by age. According to Piaget (1964), people progress through four sequential stages of cognitive development, which explain the cognitive development of

individuals from childhood to adolescence. Using this theory, the following creative abilities are manifested:

Sensorimotor stage, 0-2 years

During the early part of this stage, the child understands his or her environment only through sensor motor activities, such as sucking, touching, and feeling. Consequently, the child develops the ability to form cognitive representation of the world. For example, by 6-9 months of age, the child begins to understand that objects exist even when they are out of sight. These changes mark the beginning of a far more complex cognitive functionary.

Preoperational stage, 2-7 years

This stage marks a dramatic change in cognitive development. At this stage, most children begin to think in mental images. Though the young child's ability to think is quite illogical by adults' standard, the child's thought is egocentric. Piaget does not mean by this term that the child is selfish, but that the child is simply not able to see things from another person's perspective. This shows that children at this stage cannot think in abstract terms. Thus, learning is based on interaction in the environmental stimuli. By arranging and rearranging toys, chairs, observing things, the child does not only acquire knowledge, but also improves his or her creative ability.

Concrete operational stage, 7-11 years

The opening of this stage is marked by important cognitive challenges. According to Piaget, the concrete operational stage is when children begin to deal with conservation problems because their thought is decentred. This means that they can think of more than one thing at a time. It is also a stage when real thinking begins. Thus, if they are exposed to varied experiences within and outside the school, they will acquire more knowledge in terms of facts, methods and concepts that will increase their mental capacity to be creative.

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Formal operational stage, 11 years and above

This stage is characterized by an ability to use abstract concepts. The logic of formal operational thinking goes beyond the concrete details of each incident or problem to the underlying abstract principles involved. Although most adolescents have reached the level of operational reasoning, they still have cognition that at times retains an immature quality. This is not really surprising because they have recently developed the ability to reason abstractly but have little experience on which to base abstract thought.

Similarly, Brunner (1966) notes that people go through three stages of cognitive development. These are:

a. Enactive stage

In this infants' stage, infants acquire knowledge by actively engaging in activities. Brunner's enactive stage is similar to Piaget's sensorimotor stage. At this stage too, young children need a lot of opportunities to engage in activities with a variety of objects, if they are to learn creatively.

b. Iconic stage

In this stage, children learn through visual stimuli. This is to say that children rely on visual representations to aid their thinking. Students' visual perceptions determine how they understand the world.

c. Symbolic stage

In this stage, children can understand symbols, including words, mathematics and scientific notations. Once the students have reached the symbolic stage, they are able to take in large amounts and varied types of information. Symbolic materials include written passages, scientific and mathematics formulas, and abstract charts.

These developmental stages are not irreversible. As people get older, they typically use all three stages in acquiring knowledge.

In addition, Tesario *et al* (1991) maintained that when judging creativity in children, emphasis should be more on the creative process than on the product. By this, they meant that younger children do not always have the skills to make a creative product. A similar point is made by Malaguzzi (1995) who says that creativity becomes more visible when adults try to be more attentive to the cognitive process of children than to the results they achieve in various fields of doing and understanding.

Methodology

Experimental Procedure

Week 1: The researcher visited the management of the sampled schools, where formal introduction was done. In the same schools, some teachers were trained as research assistants.

Week 2: The research assistants presented the lessons before the researcher and necessary corrections were effected before the lessons were presented to the students.

Week 3: The researcher met with the research assistants. After self-introduction by participants, intact classes were selected for the study. The junior and senior secondary school students were next pretested with creative thinking test. Thereafter, the two groups were given treatment on Cognitive Research Trust training programme. At the end of the lessons, creative thinking test was administered on the two groups.

Results and Discussion

Table 6.1: *Test between the junior and secondary school students*

Students category	Mean	Standard deviation	N
Junior sec. sch. Students	43.0123	19.342	81
Senior sec. sch. Students	37.819	20.092	61
Total	40.781	19.769	142

Table 6.2: *ANCOVA table of the difference between means observed*

Source of variation	Sum of squares	Df	Mean square	F	Sig.	Decision
Pretest	5237.59	1	5237.59	14.878	.000	S
Students/category	411.976	1	411.976	1.70	.281	NS
Error	48932.414	139	352.032			
Total	291275.000	142				

In order to test the hypothesis, ANCOVA was used as indicated in Table 6.2. The independent variable was the training programme and the dependent variable was the scores on creative thinking test administered after the treatment was completed. The students' scores on the pre-test were used as the covariate in the analysis. After adjusting for pre-test scores, the result has shown that $F(1,139) = 1.170$, $\text{sig} (p) = .281$. This shows that there was no significant difference in the mean performance of the junior and senior school students on creative thinking test. Thus, the hypothesis which states that there is no significant difference in the mean performance of junior and secondary school students on creative thinking test is accepted.

There was no significant difference in the mean performance of junior and senior secondary school students on creative thinking test. This finding agrees with that of Gando (1997) that, in spite of children young age, they benefited tremendously from creative thinking training programme, and would give comments and ideas which would not normally originate from children of that age. The teacher also found out that teaching of creative training programme led to group work, which was enhanced. The teacher concludes that thinking skill

acquired in the training programme as well as interpersonal skill could be transferred to other fields.

The finding also corroborates that of Osborn (1999), which found that age does not place limit on creative thinking performance. Hence, Justice Holmes wrote his first book, *The Common Law* when he was seventy (70) years and” when he was over ninety (90) years.

The finding confirms that of Mangham (1992) that age is not a bar to creative power. He maintains that everyone has creative potentials which are often dormant because they are not exercised. This suggests that both the junior and senior secondary school students have creative talents in varying degrees, which is only made manifest through training.

Non-significant difference in the mean performance of junior and senior secondary school students on creative thinking test could have arisen due to the fact that creative potentials in both junior and senior secondary school students could be trained. In other words, students could be trained to use more productively the talents that they innately possess. This implies that there is danger in stereotyping children, because humans are far too complex to be placed in categories and without distortion.

It could also mean that creative ability is not greater in the junior or senior school students, but it may express be in ways which reflect different age interests.

Conclusion and Recommendations

Creative thinking potential is inherent. But it could be made manifest only through training. Hence, age is not a bar to creative thinking performance. Both the junior and senior secondary school students should be exposed to creative thinking training to enhance their creative abilities. The training could be extended to the early stages of childhood.

References

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