

Roopa language and movement program: an integrative perspective on child education

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(Received: 19 Jan 2016; Revised: 3 Feb 2016; Accepted: 28 Feb 2016)

Abstract

Introduction: Children's condition is considered of paramount importance in terms of movement and statues of early age education. On one side, children are biologically inclined toward movement and on the other side their parent's preference toward straight and categorical education like second language starts, which is quite contrary to their biological characteristics to make them staying put while learning. Looking for reconciliation, this study investigates the effect of Neshaat language and movement integrative program on children's gross motor development and their second language (English) learning.

Methods: The sample included 50 boys and girls with an average age of (5.12±1.32) who voluntarily participated in the study. In a semi-experimental method the children were randomly divided into one experimental group (n=25) and one control group (n=25). The experimental group attended the Neshaat program for 3 months (2 sessions in a week) and the control group also carried out the second language learning process with the same material conventionally, i.e. learning language without movement in a class. The data were analyzed though dependent and independent t-test and Pearson correlation coefficient.

Results: The results showed that this integrative program is relative to the conventional methods, which significantly increases the children's gross motor development ($t=4.010$, $p<0.001$) and improved the children's second language learning ($t=3.895$, $p<0.001$).

Conclusion: This result was in line with researches around the world that supports the hypothesis that physical activity and academic achievement are linked in a positive way.

Declaration of Interest: None.

Key words: Child Language, Activity, Motor, Child, Preschool.

Introduction

Hannaford (1995) reminds people that "the human qualities we associate with the mind can never exist separate from the body" because movement is an indispensable part of learning and thinking, as well as an integral part of mental processing. Furthermore, thinking and learning does not take place only in our head; people need to become more aware of the body's role in learning. Many educators and researchers agree that the brain is activated during physical activity and that movement is essential to learning (1).

In line with the issues addressed in the previous lines and along with the concerns regarding the optimal ways of second language education especially in early years, there have always been concerns regarding methodological tendencies and discrepancies in second language teaching and many researchers and practitioners have been for years searching for a way or a method to both motivate learners and use physical activities to boost second language learning (SLL) processes (2). It seems logical to say that foreign language education in preschool years is vital and there are

many studies to show this importance (3-6). Although there are various methods and techniques in teaching foreign languages, various studies have shown the effect of total physical response (TPR) method, (2,7,8). TPR is a method, which is built around the coordination of speech and action. In other words, it teaches language through activity (7). TPR creates a motivating environment, such an approach definitely injects fun and amusement into the learning, and students feel relaxed enough to imitate their teacher and express themselves kinesthetically (9). While learning a language, children focus on movements, so they acquire the language unconsciously, which reduce stress of learning a language just like Krashen (1982) mentions as affective filter hypothesis (10).

As it is known, motivation as an epicenter and backbone of learning has always been considered as a burden in the process of language teaching. Since the will to learn builds one of the basic elements of learning, students take an important step on the road for learning through motivation. However, students usually lose their willingness and interest toward lessons, which puts a major barrier in the way of effective SLL. Therefore, this study is also concerned with one of the highly effective ways of promoting motivation of the students showing reluctance to SLL. Noticing one of the most vital essentials of children's life, which is movement, our team started adapting and employing TPR teaching methodology to teach vocabulary and structure of English language to 5 to 6 year old kids in some preschool centers.

Though there is a great consensus regarding the effect of movement on learning, the motor development by itself in this age range is considered highly important. The main factor of motor development in early ages is fundamental motor skills including gross and fine motor skills (11). Gross motor skills are the skills, which mainly include gross muscles such as quadriceps muscles in legs, which are engaged in producing movements such as walking, running and jumping (12). Having grown up and improved the fundamental motor skills, through integrating them, kids can acquire and perform more complicated sport movements or daily activities. Therefore, it is believed that failing to reach proficiency in various fundamental motor skills prevents the development of effective and

efficient motor skills, which maybe used in activities, plays and sports (11). Pre-school kids manifest their personality and improve their capabilities and also assess their own, families and friends' limitations (13).

On the other hand, today's modern lifestyle and industrialization, living in apartment complexes and the prevalence of watching TV and using tablets have imposed a chronic and severe lack of movement, which not only brings about problems such as obesity but also the resulting sicknesses prevents kids and adults from performing adequate physical activities. As a result of the lack of attention to these activities, individuals cannot effectively and efficiently develop their fundamental motor skills (14). These points get much more notable when knowing that compared to the past, kids' motor skills' condition has worsened i.e. comparison of the past studies with the results of new researches suggests a decrease in kids' gross motor capabilities especially in their gross motor skills (15). However, today various methods have been presented to remove these challenges among, which we can point to the purposeful programs of physical education in preschools (16). Although, to this point various studies have been conducted regarding perceptual motor skills (17), motor plays (18), motor development intervention (19), kinderkinetics program (20) and motor skill intervention (21) on the preschool kids' motor skills development. Until now there have been many studies regarding the issues including the effects of physical activities on learning and the relationship between speak and action, but there has been no study concerning the reconciliation between the language and movement through establishing an isomorphic relation between forms of the movements and meanings of linguistic elements while improving each one.

Therefore, the present study aims to investigate the effect of Neshaat language and movement integrative educational program on 5-6 year old preschool kids' gross motor development (GMD) and their SLL, which is English in this study.

Methods

In order to conduct the research study and to show the results in a numerical method, the researchers used a quantitative experimental research methodology and from among various

methods, two groups pre-test and post-test were chosen to evaluate the level of the progress of the samples under study.

This is a semi experimental research study with a control group. The statistical population includes healthy 5-6 year old kids in preschools of district 1 & 2 of the city of Tehran from which kids voluntarily participated in this study. Inclusion criteria includes being 5-6 years old, not having severe neurological and psychological problems, enjoying normal IQ and also not having significant prior exposure in English language. Exclusion criteria are lack of cooperation in the related tests and being absent in the educational sessions. This research study has been conducted with the endorsement of Tehran University Research Ethic Committee.

Denver-2 was employed as the data collection tool in two pre-test and post stages to assess the kids' GMD. Shahshahani et al. (2010) has reported the reliability and validity of the Persian version of Denver-2 among 0-6 year old kids in the city of Tehran as acceptable and has stated that this tool can be used to evaluate kid's gross and fine motor skills (22). The language test employed is the placement test and assessment test of family friends books.

First of all, each and every kid participated in the pre-test and post-test of assessing kids' GMD and SLL. Subsequently, they were assigned to two groups of experimental control and on a three months educational program during 24 sessions was run. Each week, the kids attended two sessions each one lasting 45 minutes doing the designed educational activities. Also at the same time, the control group members participated in routine sport classes of their preschool centers doing physical and SLL activities for two sessions a week each one lasting for 45 minutes (23).

As for the test procedures carried out in linguistic part the following courses of action were conducted:

At first, 50 kids of 5-6 year old were chosen as the population of the study. Then, they were randomly assigned to two experimental and control groups, each group including 25 members. Both groups were given a pretest to ensure comparability of the participant groups prior to their treatment and a post-test to measure the effects of the treatment. For three months the

control group members were taught the same target vocabulary through methods other than TPR, methods, which are quite prevalent in the mentioned centers. At the same time, the experimental group members were taught English vocabulary using TPR teaching methods in which also the physical movements were all scientifically devised and arranged to reach the optimum possible results.

Neshaat language and movement integrative program is the upshot of integrating two theories i.e. total physical response or TPR by Asher (1965) regarding language learning and Gibsonian's ecological theory of development (1960) through establishing an isomorphic relation between the forms of the movements and meanings of the linguistic elements. Gibsonian's ecological theory of development is now the most popular and highly accepted viewpoint regarding motor development in which the interaction among the task, the individual, and the environment is considered of high importance. Therefore, while planning, all three must be taken into account (24). Motor exercise program was run based on Gibsonian's ecological theory of development for 12 weeks in groups and at the time of the kids' presence at the nursery school (25). The experimental group exercises included three phases of warm up for 20 minutes, practicing skills for 20 minutes and cools down with funny games for 5 minutes. The warm up phase structure included stretch and joint movement; group plays full of movement and fun (such as tag, moving like different animals, playing dodgeball, bouncing with a sack, hide-and-go-seek) in order to increase heartbeat and releasing emotions (26). Based on the recommendations, the experimental group exercise program was based on the emphasis on improving balancing skills, locomotor and manipulation skills, first in close skill context and as the training sessions progressed, the program became more complex and tended to be based on open skills (27). Hence, the present movement exercise program was run based on the principle of easy to hard (from totally close skills towards open skills) and in line with the principles of motor development and learning (12). For instance, in the games with balls, kids went through stages of playing with a balloon standing in one place, playing with a balloon with body

movement, playing with a ball standing in one place, playing with a ball with body movement. There was one instructor for every 5 kids (28). According to cognitive-motor approaches, there were plenty of opportunities for the kids to find different motor solutions. The activities in each session were in line with kids' needs and growth level (for example: different objects, different heights, speed and trajectory of movements, discrete skills or dual task). In addition, according to the recommendations in the mentioned approaches, providing verbal feedback aiming at boosting the kids' cooperation motivation in activities and in line with motor learning principles (presenting much feedback in the begging of the exercise and gradually decreasing it in the remaining time) was performed by the teachers (12, 27).

There were also movement sets & linguistic elements correspondence i.e. regarding the physical part, the lesson started with a warm up phase in which the kids prepared themselves to start the lesson. Then they performed the actual exercise and after that there was a cool down part

in which kids had fun. As for the linguistic aspect too, there were three corresponding phases in the first part which words were introduced and taught through storytelling. After that, the previously taught words were practiced through putting them into sentences and structures. The third and last part comprised of a repetition of the words through having funny activities.

The collected data were analyzed through Pearson correlation coefficient and paired and individual sample t-test with ($\alpha = 0.05$) as well as SPSS software version 18.

Results

The results of the descriptive figures suggested that 54% of the kids participating in the present study were boys and 46% of them were girls. The Kolmogorov-Smirnov test results showed that the data were normally distributed ($P > 0.05$). Therefore, using paired t-test, intra group changes from pre-test to post-test were analyzed (table 1).

Table 1. The paired samples test results for experimental and control group

Group		Mean	Std. Deviation	Std. Error Mean	t	df	P
Neshaat	Pre-test to post-test SLL	-3.71	1.383	0.370	-10.05**	13	<0.001
	Pre-test to post GMD	-2.64	1.906	0.509	-5.189**	13	<0.001
Control	Pre-test to post-test SLL	-1.64	1.692	0.452	-3.633**	13	0.003
	Pre-test to post GMD	1.79	2.636	0.705	2.534*	13	0.025

The result of table 1 indicated that from the pre-test to post-test both groups have progressed significantly in movement and language

proficiency ($p < 0.01$). However, to compare the average score of both groups in the pre-test and post-test, independent t-test was run (table 2).

Table 2. The independent samples test results between experimental and control group

	Levene's Test		t-test for Equality of Means				
	F	P	t	df	P	Mean Difference	Std. Error Difference
Pre-test SLL	0.424	0.521	0.335	26	0.740	0.21	0.639
Post-test SLL	1.957	0.174	4.010**	26	<0.001	2.29	0.570
Pre-test GMD	1.451	0.239	-1.829	26	0.079	-0.93	0.508
Post-test GMD	0.933	0.343	3.895**	26	0.001	3.50	0.898

* * Differences are significant at the 0.01 level.

The result of independent t-test in the pre-test suggested that there is no significant difference between the two groups in terms of their gross motor development ($t = -1.83$, $p = 0.07$) and language learning ($t = 0.335$, $p = 0.74$) but the post-test results indicated that there is a significant difference between them regarding their gross

motor development ($t = 4.010$, $p < 0.001$) and their linguistic capabilities ($t = 3.895$, $p < 0.001$) i.e. they were all for the experimental group (table 2).

In the end, Pearson correlation coefficient was used to find out the relationship between the kids' gross motor skills development with learning a foreign language.

Table 3. The result of Pearson correlation in pre- and post-test

	Descriptive Statistics		Correlations		
	Mean	Std. Deviation	N	P	r
Pre-test GMD	3.46	1.401	28	0.18	0.25
Pre-test language	11.61	1.663		8	6
Post-test GMD	3.89	2.936	28	0.00	0.56
Post-test language	14.29	1.883		2	9**

** Correlation is significant at 0.01 level (2-tailed).

The results suggested that there is a significant relationship between the kids' motor development scores and their linguistic proficiency ($r=0.569$, $p=0.002$) i.e. the more the motor development is, the higher SLL will be.

Conclusion

The purpose of the present research study was to find out the effect of Neshaat integrative educational program of language and movement on the pre-school kids' gross motor development and second language learning competence. The results indicated that the Neshaat program resulted in the kids' gross motor skills development. The mentioned results were in line with the previous findings of purposeful physical education (16), perceptual motor skills, (17), motor plays (18), motor development intervention (19), Kinderkinetics (20) and motor skill intervention (21). This finding upholds this general saying that performing perceptual motor skill training leads to the improvement of kids' motor capabilities.

Recent motor development theories, which are based on cognitive approaches, emphasize on the interaction between the individual, the task and the environment. Also, in exercise programs it is suggested that cognitive intervention and problem solving method must be paid an attention (13). The tasks in Neshaat educational program can be considered as dual tasks accompanied with extra cognitive load because while performing motor skills, kids would produce words and sentences in a second language (27). Moreover, in the Neshaat educational program, through receiving feedback and the teachers' guidance, kids would engage in performing the skill in order to go through the problem solving process i.e. they engaged in discovering what they do and how they do. Based on the suggestions in this approach, skills are broken into simpler parts and gradually and progressively these simpler parts would add up to each other so that kids will have time to internalize the tasks' parameters and qualities (12).

More results suggested that there is a significant relationship between kids' motor skills development and their SLL. This result was in line with research from around the world that supports the hypothesis that physical activity and academic achievement are linked in a positive way (29, 30). Physical activity at school could enhance academic performance by increasing cerebral blood flow, enhancing arousal level, changing hormone secretion, enhancing nutrient intake, changing body build, and improving self-esteem (30).

The cerebellum, the small portion of the brain close to the brain stem, is commonly linked to movement. It makes up only one-tenth of the brain's volume, but contains over half of its neurons, making it a virtual switchboard of cognitive activity. Wolfe (2001) suggests that there are strong links between the cerebellum and memory, spatial perception, language, attention, emotion, nonverbal cues, and decision making (31). Jensen & Dabney (2000) reported that exercise; especially aerobic exercise positively affects the levels of some neurotransmitters, such as glucose, which stimulates cognition (32). Blakemore (2003) explain the following known effects of exercise on the neurological system: a) The number of capillaries increases around the neurons of the brain, thus facilitating an increase in blood and oxygen. This improves the speed of recall. b) Circulation is enhanced due to increased capillaries and the transport of more oxygen and nutrients to the brain. c) Gross-motor repetitive movements stimulate the production of dopamine, a mood-enhancing neurotransmitter. d) When some exercises are performed, endorphins are released and alertness increases. e) The release of chemicals such as serotonin and dopamine reduces depression by as much as 50 percent. f) The production of the hormone NGF (nerve growth factor), which enhances brain function by stimulating the growth of nerve cells, may be spurred (33).

The detailed treatments of the language learning section of this study along with the verified conclusions are as follows:

The results were astonishing. Not only regarding language-learning process but also in terms of motivation and the willingness to learn and to take part in the classes. Richards & Rodgers (2001) considers young age an advantage in

acquiring a foreign language. They believe that language development is fast in early years and for the beginning levels in foreign language teaching, TPR is a suitable technique (7). Accordingly and due to the fact that the idea of both SLL and working on physical aspects of today's lifestyle in early years is a prevalent concern for Iranian families specially in large cities, employing this teaching method can be considered as a major step towards reaching to the two mentioned goals. It is worthy of noting that there are points of departure in the actual action we take in our classes and the principals mentioned in TPR studies. Among other things we can point to the motor form and meaning resemblance, which could not be achieved without much hard work and meticulousness. Furthermore, it has been tried to use a TPR principle i.e. contextualization through storytelling in transition from warm up to exercise. In this way kids would internalize both words and structures in their long-term memory and significantly increase the time they are stored in their mind. Therefore, Neshaat educational program, which is based on motor cognitive method, resulted in a significant development in the pre-school kids' gross motor skills and their SLL, which in turn upholds the ecological theory in motor development and the TPR method in SLL.

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