The Effect of Life Skills Training on Decision-making Skills of Dyscalculic Students

K. C. Vashistha*, Aditi Bapte**

Abstract

The objective of the present paper is to examine the efficacy of life skills training on the decision-making skills of dyscalculics at the elementary level. This research is quasi-experimental in nature, based on pre-test and post-test design. Thirty dyscalculic students from the elementary level in Agra city were selected and divided into two equal groups of Experimental (n=15) and Control (n=15). Training sessions on life skills were administered on the Experimental group for a period of one month in their schools. The tools used were (i) Dyscalculic identification scale, (ii) Making decisions in everyday life, and (iii) Life skills training through self-constructed lesson plans. The statistical analysis exhibited that the Experimental group showed a positive enhancement in decision-making skills as compared to the control group of dyscalculic students. The result, thus, inferred that the life skills training can effectively bring about an increment in the decision-making skills of dyscalculic students, which can ameliorate their existing conditions to a certain extent. It also confirms that the provision of life skill-based curricula in these schools caters to the needs of dyscalculic children in a better way by enhancing their calibre to face the world at large.

* *Professor and Head:* Department of Foundations of Education, Faculty of Education, Dayalbagh Educational Institute (Deemed University), Dayalbagh, Agra–282005.

** *Research Scholar,* Faculty of Education, Dayalbagh Educational Institute, Dayalbagh (Deemed University), Agra–282005.

Introduction

Research in the field of learning disabilities circumvents a mighty ocean and research in the field of dyscalculia is like a drop of water in this ocean (learning disabilities). Researchers need to go a long way before they can fully explore this little drop. Hence, there is an urgent need to explore the underneath psycho-cognitive world of dyscalculic children, which enables the pedagogue to deal with it in a rational manner. Further, dyscalculia in itself is treated as a new area of investigation in comparison to its counterpart dyslexia.

Pioneer researchers Butterworth (2005), and Wilson and Dehaene (2007) concluded that these students face problems in the acquisition of counting, addition strategies, memorisation of number facts, representing quantity, number comparison, number symbols, etc., (Gross-Tsur et al., 2008). Children with dyscalculia fall behind early in primary school and may develop stress, anxiety and low self-esteem (Huntington, 1993). In secondary school, they face difficulty in passing mathematics and science courses. Ysseldyke (2005) emphasised on the importance of decision-making skills for learning disablility. Decision-making skills can, therefore, help students make wise decisions. Decision-making is not just a task but is recognised as a process or more famously as P.O.W.E.R (Problem, Options, Weigh, Elect, and Reflect) model as proposed by the Namibia Youth Programme (Chandan, 2008). Decision-making is easier when students are taught skills, which are useful in taking 'big' and 'small' decisions that help them derive satisfaction from their decisions (Trammell and Hausler, 1986). A skill is a learned ability to do something well. So, life skills are the abilities that individuals can develop to live a fruitful life. The World Health Organisation (WHO) (1997) has defined life skills as "the abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life" and has identified ten-core life skills, which are — self-awareness, empathy, critical thinking, creative thinking, decision-making, problem-solving, effective communication, inter-personal relationships, coping with stress and managing emotions.

The decision-making skills efficiently fall under the umbrella term of 'life skills' as recognised by the WHO (1997). Life skills training positively effects problem-solving, effective communication (Forneries et al., 2007), and adjustment to stress (Jeffery, 2002) in students. It is also evident that applied training, token reinforcement and relaxation training significantly decreased mathematics learning disorders (Hamid, 2006). Kazemi, et al. (2013) recognised that most studies have researched the effectiveness of life skills training in high school students. A few researchers have studied the

effectiveness of the training on self-esteem, communication skills and social skills (Momeni, et al., 2012), particularly related to mathematics learning disorder. The objective of the current research was to study the effects of life skills training on decision-making skills of dyscalculic students. This research would help in adding a new dimension towards the better understanding of these students.

Objectives of the Study

1. To identify students with dyscalculia at the elementary level school in Agra city.
2. To develop activity-based lesson plans on life skills for elementary-level dyscalculic students.
3. To study the effect of life skills on the decision-making capability of dyscalculic students.
4. To compare the decision-making skills of dyscalculic students with/without life skills instruction in elementary-level schools.

Hypotheses of the Study

Ho_1: To study the effect of life skills instruction on decision-making skills of students with dyscalculia

Ho_2: To compare the decision-making skills of dyscalculic students with/without life skills training.

Design of the Study

The research was quasi-experimental in nature with pre-test and post-test design. The sample consisted of 30 dyscalculic students from the elementary level in Agra city and equally divided into two groups i.e., Experimental (n=15) and Control (n=15). Self-constructed life skills-based lesson plans were administered on the Experimental group. The life skills-based lesson plan focuses on decision-making skills. The Experimental group was engaged regularly for 15 days in their classrooms.

Tools of the Study

(i) *Dyscalculic Identification Scale* by Vashishtha and Gupta (2014): It is a tool for screening students with dyscalculia. It consists of 35 items and shows a high Cronbach Alpha Reliability of 0.88. It is standardised on wider population of dyscalculic students studying in the elementary level.

(ii) *Making Decisions in Everyday Life* by Mincemoyer, Perkins and Munyua (2001): The tool has 30 items for analysing the decision-making skills of students in the age group of 12-18 years. A correlation of 0.8 is suggested for at least one type of reliability as evidence. However, standards range from 0.5 to 0.9, depending on the intended use and an internal consistency of Alphas for the five factors in the scale ranging from 0.63 to 0.89.

(iii) *Life Skills-based Lesson Plans:* To improve decision-making skills through life skills, training-based lesson plans were developed by researchers themselves. These

are 15 in number covering the wider areas of decision-making skills essential at the elementary level for dyscalculic students.

Results and Findings

The descriptive statistics involved were mean and standard deviation (SD) values to determine the nature of the sample and eventually these statistics were used to infer the nature of the population parameter. The results and findings are shown in reference with testing of the hypotheses of the study. The experimental research involves the initial phase of administration of pre-test on both Experimental and Control groups. As already mentioned, before beginning the research, the Control and Experimental groups were equated in the groups of 15 members each. Their mean and standard deviation were calculated on pre-test scores. The descriptive statistics of the groups are shown in the Table 1.1.

The data in the above table enumerates the nature of the sample. The difference in the means of the groups in pre-test was 10.26. The purpose of pre-test was to examine the prior decision-making skills of the identified dyscalculic students before giving the treatment.

Student t-Test was applied on the scores of pre-decision making tool. The t-values were calculated and the level of significance was checked at 0.01 level.

Table 1.2 shows the t-value as 2.496, which was less than the tabulated t-value (2.76) at 0.01 level of significance. Therefore, it can be concluded that an insignificant difference was found in the decision-making skills of pre-test scores in Experimental group and Control group separately.

Table 1.1
Descriptive Statistics of the Groups in the Pre-test Scores

Groups	Sample Size (N)	Mean	SD
Experimental Group	15	67.13	9.91
Control Group	15	56.87	10.57

Table 1.2
Exhibiting the t-values for the Pre–test Scores

S. No.	Groups	N	M	SD	t-value
1	Experimental Group	15	67.13	9.91	2.496
2	Control Group	15	56.87	12.46	

p< 0.01

Table 1.3
Exhibiting the t-value of the Pre-test and Post-test scores of the Experimental group

S. No.	Groups	N	M	SD	t-value
1	Experimental Group	15	67.13	9.91	2.79
2	Experimental Group	15	74.47	10.01	

p>0.01

Thus, it can be presumed that their decision-making capabilities were almost similar before the treatment to be carried out by the researcher.

Ho_1: To study the effect of life skills instruction on decision-making skills of students with dyscalculia.

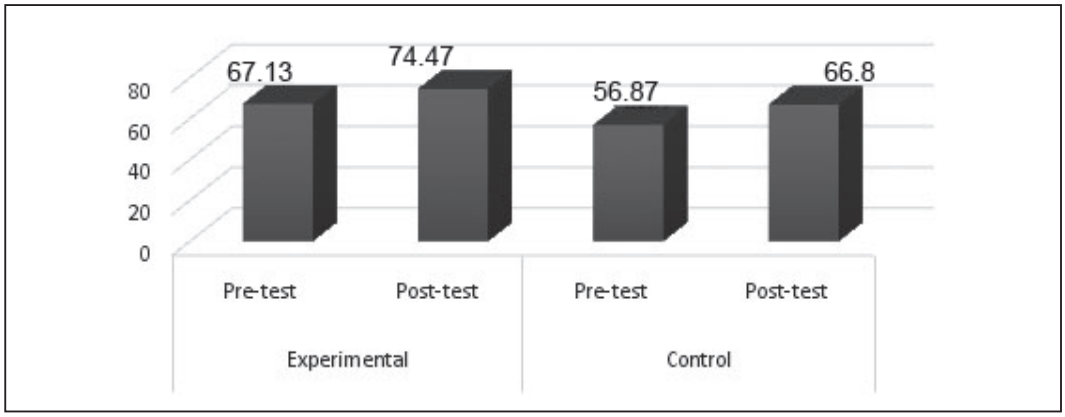
The above table shows the obtained t-value on the scores of pre-test and post-test of the Experimental group.

With this table, it can be inferred that the t-value is 0.01 level of significance. Therefore, it shows that a significant difference was found in the decision-making scores of pre-test and post-test of the Experimental group. Thus, for the very objective a comparison was done on the pre-test and post-test scores of the Experimental group to see if a viable difference is observed after the implementation of the life skills instruction designed by the researcher. The value as presented in the table comes out to be 2.79, which is greater than the t-tabulated values at 0.01 level of significance. This leads to the rejection of the null hypothesis, hence, confirming that there is a significant effect of life skills instruction on decision-making skills of students with dyscalculia.

Ho_2: To compare the decision-making skills of dyscalculic students with/without life skills training

After the implementation of life skills instruction on the Experimental group, decision-making post-test was administered on it and the Control group consisting of the dyscalculic students. The purpose of administering post-test was to measure the decision-making skills of the students in the groups, compare their skills with that of pre-test scores and compare the post-test scores between the two groups. The post-test results, then, served as a basis for testing the hypothesis i.e., there will be no significant effect of life skills instruction on the decision-making skills of students with dyscalculia.

Graph 1: Exhibiting the comparison of pre-test and post-test means of the Experimental and Control groups



Graph 1 shows the difference in means of pre-test and post-test values of Experimental and Control groups. The intra-difference in case of Experimental group has increased, as can be seen from the difference of means of pre-test and post-test scores of decision-making.

The given table shows the t-value as 2.82, which was found significant at 0.01 level of significance (df=28). Therefore, it can be concluded that both the groups under study were considerably different from each other in terms of post-test scores on decision-making skills.

Discussion and Conclusion

The objective of the present research was to determine the efficacy of life skills training on decision-making skills of students with dyscalculia. The findings have been discussed with reference to the hypotheses testing. The results of the current study are consistent with previous researches considering the importance of targeted life skills programme for youth with physical disabilities as reported by Kingsnorth, et. al., (2014). Tahereh, Mohammadkhani and Mohammad (2011) noted that life skills training has a significant effect on happiness,

Table 1.4
Exhibiting the t-value for the post–test Scores in Experimental and Control–groups

S. No.	Groups	N	M	SD	t-value
1	Experimental Group	15	74.47	10.01	
2	Control Group	15	66.8	10.31	2.82

p>0.01

quality of life and emotional adjustment of adolescent students. The use of assistive technologies (Hamid, N. 2006; Amiripour et al, 2012; Narimani, M., Abbasi, M., and B. Ahadi, 2013) and effective remedial interventions have always paved way for positive results in students with dyscalculia (Ramaa and Gowramma, 2004).

It can be concluded that life skills instruction proves to be highly beneficial in increasing students' skills of decision-making. Good numerical skills are important for being a successful member of the society. For this reason, life skills are implemented as an intervention and the same is showcased by the study undertaken by Kazemi, Momeni and Abolghasemi (2013). Thus, when students with dyscalculia enter this demanding world, they face problems in simple calculations and skills required to take decisions. Hence, in the long run, they become victims of anxiety, low self-esteem and depression. Thus, the researchers tried to bring about an improvement in the decision-making skills of these students by the implementation of life skills instructions encompassing the five life skills (decision-making, communication, creativity, problem-solving and self-awareness) out of the ten-core life skills as enshrined by WHO (1997). The decision-making skills are interwoven in the life skills instruction in the form of the P.O.W.E.R. Model. It is important to identify their problem, consider the various options available to them and make the best decision among these choices. At the same time, it is also important to weigh the consequences of these decisions. This training or programme is not a separate component but intervened in the daily curriculum. Thus, its greatest benefit is that it is not burdensome to the students but a great way of learning skills that are required for a happy life. The research provides evidence of the improvement brought about in the decision-making capabilities of dyscalculic students compared to their friends who did not undergo life skills instruction.

The present study was limited to only 30 dyscalculic students from elementary schools in Agra city of Grades 6, 7 and 8. The activity-based lesson plans will include the decision-making skills, communication skills, creative-thinking skills, self-awareness and problem-solving skills. So, it is suggested to use large samples and longer periods to study broader dimensionalities of the effects of life skills training in future.

References

Butterworth, B. 2005. Developmental Dyscalculia. In J.I.D. Campbell (Ed.), *Handbook of Mathematical Cognition* (pp. 455–468). Psychology Press, New York.

Chandan, U., E. Cambanis, A. Bhana, G. Boyce, M. Makoae, W. Mukoma and S. Phakati. 2008. *Evaluation of My Future is My Choice (MFMC) peer education Life Skills Programme in*

Namibia: Identifying Strengths, Weaknesses, and Areas of Improvement. Windhoek, UNICEF Namibia.

Forneris, T., S.J. Danish and D.L. Scott. 2007. Setting goals, solving problems and seeking social support. *Pubmed Adolescence,* 42 (165), 103–114.

Gross- Tsur, V., O. Manor and S. R. Shalev. 2008. Developmental dyscalculia. *European Child Adolescent Psychiatry, 9(2),* 1158–1164.

Hamid, N. 2006. Examine of mathematics learning disorders in Tehran's primary school and effectiveness applied training, token reinforcement and muscle astray on decreasing of mathematics learning disorder. *Journal of Educational Science. Ahvaz University, 13 (2),*119–136.

Hazel, J.S., J.B. Schumacher, J.A. Sherman and J. Sheldon. 1982. Applications of a group training program in social skills and problem solving to learning disabled and non-learning disabled youth. *Learning Disability Quarterly, 5,* 398–408.

Huntington, D.D. 1993. Adolescent with learning disability at risk? Emotional well-being depression, subside. *Journal of Learning Disability, 26(3),* 159–166.

Jeffrey, P. 2002. *Competency Coping and Contributory Life Skills. Journal of Agricultural Education.* Pennsylvanian University, 1, 68–74.

Kazemi, M., et. al. 2013. Effectiveness of Life Skills Training on Self-esteem and Communication skills of students with dyscalculia. *Procedia — Social and Behavioral Sciences, 114,* 863–866. doi:10.1016/j.sbspro.2013.12.798

Kingsnorth, L., et. 2014. A Retrospective Study of Past graduates of a residential life skills program for youth with disabilities: service providers' perspective. *Procedia — Social and Behavioral Sciences, 121,* 63–66.

Narimani, M., M. Abbasi and B. Ahadi. 2013. The effectiveness of training acceptance/commitment and training emotion regulation of high-risk behaviours of students with dyscalculia. *International Journal of High Risk Behaviour Addiction*, 2(2), 51–58. doi:10.5912/ijhrba.10791

Wilson, A.J., S.K. Revkin, L. Cohen, S. Cohen and Dehaene. 2006. *An Open Trial Assessment of The Number Race, an Adaptive Computer Game for Remediation of Dyscalculia.* Doi: 10.1186/1744-9081-2-20. Retrieved from http://www.behavioralandbrainfunctions.com.content/2/20

Ysseldyke, J. 2005. Assessment and decision making for students with learning disabilities: What if this is as good as it gets? *Learning Disability Quarterly*, *28*(2), 125–128.

Momeni, S., et. 2012. Study of the effectiveness of social skills training on social and emotional competence among students with Mathematics learning disorder. *Creative Education,* Vol. 3, no. 8, 1307–1310.

Tamereh, M.H., S. Mohammadkhani and H. Mohammad. 2011. The effectiveness of life and emotio negulation. *Social and Behavioral Sciences,* 407–411.

Amiripour, P., et. 2012. Scaffolding an effective method for mathematical learning. *Indian Journal of Sciences Technology*, Vol. 5, issue 9, 3328–3331

Ramma, S. and I.P. Gowramma. 2004. Analysis of Difficulties and errors in number concept among children with dyscalculia, normal achieves and children with visual impairment, paper presented in the 5th world corgress on Dyslexia, Maccedonia, Greece.