EFFECT OF CONCEPT MAPPING AND GUIDED DISCOVERY INSTRUCTIONAL STRATEGIES ON SELF PERCEPTION OF SLOW LEARNERS

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Abstract

Psychologists and theorists believe that environment and experiences play a key role in developing one's self perception. The present paper examined the effect of Concept Mapping and Guided Discovery Instructional Strategies on Self- Perception of Slow Learners. This study was experimental in nature and conducted on a sample of sixty slow learners studying in sixth standard chosen from government and government aided schools of District SBS Nagar. For the identification of slow learners, Teacher referral form and Draw A Man Test has been used. For assessing self- perception of slow learners, Self- Perception Scale developed by Harter (2012), revalidated by the investigator was used. The data collected when analysed, showed that slow learners have gained significantly from pre-test to post-test on their self- perception in concept mapping and guided discovery instructional strategy group. However, in the control group (traditional instruction) the mean gain scores in self- perception were lesser as compared to the experimental groups (concept mapping and guided discovery instructional strategies). This indicates that concept mapping and guided discovery instructional strategies have been proved statistically significant and effective in improving the self- perception of slow learners.

Key words: *Slow learners, Self-Perception, Concept Mapping, Guided Discovery*

Introduction

Education is a process of living through continuous reconstruction of experiences. It is the development of all those individual abilities, which will enable him to control his environment and fulfil his possibilities. The learner is an active participant in teaching learning process. The process of interaction between the learner, teacher and the learning resource in an appropriate learning environment is learning. The process helps to provide opportunities for learners to develop their potential, skills and knowledge needed him for life and for the society, the nation and contribute to the welfare of mankind (Herlily, Anhar, Ahda, Sumarmin, 2018). To make an individual productive member of society, he should be educated. Education is the full development of

the child's personality. It is a dynamic process that helps an individual to unfold his potential and change for better knowledge, enlightenment and self-realization.

Slow Learners

Students in classroom vary in many aspects specially in learning ability as no two individuals look exactly alike, so they differ in their attitudes, interest, intelligence and their ability to adjust. Slow learners are omnipresent and exist in all over the countries, all races and in all nationalities. Many studies by researchers and common observations have indicated that the slow learning child is educable.

A slow learner is not a distinctive category, it is a term used by teachers to describe students who have the ability to learn required academic skills, but at rate and depth below average same age peers. Slow learners need more time, more repetitions and often more resources from teachers to be successful. Researches showed slow learners have low achievements and comparably low IQ scores (70–89).

Kirk (1970) states that slow learner is not considered as mentally retarded and is not eligible for special education because he can achieve a moderate degree of academic success at a slow pace than the average child. The child is educated in the regular classes with special provisions except an adaptation of the regular class programme to fit his slower learning ability.

Table 1. Showing the Classification of Intelligence Quotient

Wechsler's Classification	
IQ Range	**Intelligence Classification**
130 and above	Very superior
120- 129	Superior
110-119	High average
90-109	Average
80-89	Low average
70-79	Borderline
69 and below	Extremely low

Source: http://en.wikipedia.org/wiki/IQ_reference_chart and Sahu (2003)

From the above classification tables of an IQ, slow learners who are with an IQ of 70-89 would comprise the group described as low average and borderline.

Self- Perception

Self-perception is the way you perceive yourself. It is the person's image about his own self, his beliefs, feelings, attitudes, fears and hopes. The prime mover of self- perception theory was Bem. Individuals decides about his own emotions, attitudes, feelings and other internal states partially by inferring them from observations of their own behaviour and the circumferences in which their behaviour occurs. The individual is functionally in the same position as an outside observer and this is particularly true when to some extent internal cues are weak, confusing and ambiguous.

Experiences have significant role to develop one's self-perception. A person will see himself in a positive way if he has experiences that help him to achieve the things he wants. State of mind of a person clearly impacts is/her ultimate performance. Boone (2001) claims that "At the core of truly deep reflection is self-knowledge. In order to get over yourself she writes, "you first have to know yourself well".

Concept Mapping Instructional Strategy

Concept mapping is one of the most powerful metacognitive learning strategies used by students of all ages and in all fields (Novak, 1990). Concept mapping is a constructivist teaching learning strategies based on Ausubel's Assimilation theory of cognitive learning to promote meaningful learning in the classroom. Concept maps are two dimensional graphical representations of one's knowledge of a domain (Gowin & Novak, 1984). A concept map is a diagram that shows the relationship between concepts. It is a graphical tool for organizing and visualising knowledge. It includes concepts, usually enclosed in circles or boxes and the relationships between concepts indicated by connecting lines. Concept maps are graphical displays of relational information. The technique of concept mapping was developed by Joseph D. Novak in the 1970s. The nodes represent concepts while the connecting lines show relationships between the nodes.

According to Martin (1994), "Concept mapping is a two- dimensional representation of cognitive structures sowing the hierarchies and the interconnections of concepts involved in a discipline or a sub discipline". Larkin and Simon (1987) described how diagrams, in comparison with text, can support comprehension and problem solving more effectively. Maps can reduce the cognitive load required to add a new association to an already linked with previously encountered concepts by allowing a more efficient visual search than text passages.

Guided Discovery Instructional Strategy

Bruner (1967) advocated a method of inquiry-based instruction known as discovery learning; in which students get benefit from their previous knowledge and experience to discover new facts for themselves. When utilizing this learning method there is a high rate of misconceptions and inaccuracies. So, role of teacher and guide has the top priority in this model. Guided discovery learning model helps to involve students in constructing their knowledge and trained them to solve problems. In this student-centred learning method

students are given the freedom to try, use intuition, investigate and obtain information through group discussions and find solutions based on their own activities and observations. Teachers play an important role in providing motivation, guidance, and direction in discovery activities. Teacher's guidance is not a kind of rule that must be followed instead of the required work procedure direction (Khasanah, Usodo & Subanti, 2018). In Guided discovery learning model, with the guidance of teacher, students actively involved in learning by discovering and investigating their own knowledge. Adkisson in Westwood (2008) tagged this method as a motivating method in which students enjoyed by learners. They learn independently and curiously guided by the teacher.

Objectives

1. To identify the slow learners.
2. To study the comparative effect of three groups taught through three different approaches i.e. concept mapping instructional strategy, guided discovery instructional strategy and traditional method on self-perception of slow learners.
3. To study the effect of concept mapping instructional strategy on self- perception of slow learners.
4. To study the effect of guided discovery instructional strategy on self- perception of slow learners.
5. To study the comparative effect of concept mapping instructional strategy and guided discovery instructional strategy on self- perception of slow learners.

Hypothesis

1. There exists no significant difference in the mean gain scores of three methods i.e. concept mapping instructional strategy, guided discovery instructional strategy and traditional method on self-perception of slow learners.
2. Slow learners will improve significantly in self- perception after administration of concept mapping instructional strategy.
3. Slow learners will improve significantly in self- perception after administration of guided discovery instructional strategy.
4. There will be no significant difference in the effect of concept mapping and guided discovery instructional strategy on self- perception of slow learners.

Methodology

Design

The study used experimental method and based on a pre-test post-test control group design. The two experimental groups i.e. EG_1 was taught by concept mapping and EG_2 was taught by guided discovery instructional strategy and the control group was taught using conventional method. Three groups i.e. two experimental and control group were taught for 38 sessions of 40 minutes duration daily.

Sample

The sample of the study consisted of sixty slow learners screened from 6th standard in a regular classroom from government and government aided schools of district SBS Nagar. The sample was divided into three groups with twenty slow learners each group i.e. EG_1 (n= 20), EG_2 (n= 20), and control group (n= 20).

Tools Used

Identifying Tools

- Teacher Referral Form (developed by the researcher)
- Draw A Man Test (Phatak, 1987)

Assessment Tool

- Self- Perception Scale for Children (Harter, 2012), re-validated by researcher

Procedure

For screening of slow learners, teacher referral form developed by the researcher taken into consideration and Draw A Man Test was administered on the students of VI class. On the basis of intelligence measured by Draw A Man Test, the students were identified as slow learners. Then, the selected sample was divided into three groups with twenty slow learners in each group. The study followed pre- test post- test control group design. At the beginning of the experiment, self- perception scale was administered on the selected sample in the three groups to obtain pre-test scores. Then, the treatment was given to two experimental groups i.e. EG_1 was instructed using concept mapping instructional strategy, EG_2 was instructed using guided discovery instructional strategy and CG (control group) was instructed by conventional method of teaching on selected content of science subject. The treatment was continued for about 38 sessions. At the completion of the experiment, same self- perception scale was administered to the three groups as post- test. The data found was then analysed using SPSS and the results were discussed in the light of the set objectives.

Results and Interpretation

Descriptive and Inferential Analysis for Self- Perception

Table-2 represent descriptive statistics for self- perception.

Table-2: A summary of descriptive statistics of pre, post and gain scores of self-perception of experimental and control groups

Dependent Variable	Groups ➡ Statistical Measure	Concept Mapping Instructional Strategy (EG_1) N= 20		Guided Discovery Instructional Strategy (EG_2) N= 20		Control Group (CG) N= 20		Total N= 60	
		Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Self Perception	**Pre- test**	85.05	9.98	85.10	12.68	83.00	7.82	84.38	10.22
	Post- test	109.75	11.70	109.10	8.064	94.50	6.84	104.45	11.42
	Gain Scores	24.70	14.66	24.00	14.02	11.50	6.62	20.06	13.57

Discussion

In the above table, the mean pre-test marks of experimental group 1 for self- perception is 85.05, experimental group 2 for self- perception is 85.10, and that of control group for self- perception is 83.00. It shows that the means of the groups are almost same and groups are equal on pre-test scores. The mean post-test marks of EG_1 for self- perception is 109.75, experimental group 2 for self- perception is 109.10 and that of control group for self- perception is 94.50. The mean gain score of experimental group 1 for self- perception is 24.70, experimental group 2 for self- perception is 24.00, and that of control group for self- perception is 11.50. The mean gain scores for self- perception of all the three groups varied between 24.70 and 11.50 with a difference of 13.20 in the mean gain scores of three groups and that of total is 20.06. This indicates that there exists a difference in the mean scores of students of three groups in terms of their self- perception.

Table 3. Tests of Between-Subjects Effects

Tests of Between-Subjects Effects									
Source	**Dependent Variable**	**Type III Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**	**Partial ta Squared**	**Noncent. Parameter**	**Observed Power**[b]
Corrected Model	SP	2206.533[d]	2	1103.267	7.269	.002	.203	14.538	.924
Intercept	SP	24160.267	1	24160.267	159.184	.000	.736	159.184	1.000
Groups	SP	2206.533	2	1103.267	7.269	.002 (0.001540)	.203	14.538	.924
Error	SP	8651.200	57	151.775					
Total	SP	35018.000	60						
Corrected Total	SP	10857.733	59						

In table 3. SP: Self Perception

In the table 3, F- ratios for the dependent variables were calculated. F- ratio was found to be statistically significant for self- perception with $F_{(2, 57)} = 7.269$, $p < \alpha$ (0.05), Partial Eta Squared (η^2) = 0.203. As p < 0.05, it is clearly indicated that there exists a statistically significant differences among the mean gain scores of three groups of slow learners taught through different methods (concept mapping instructional strategy, guided discovery instructional strategy and traditional approach) on self- perception. Therefore, the hypothesis stating, "There exists no significant difference in the mean gain scores of three methods i.e. concept mapping instructional strategy, guided discovery instructional strategy and traditional method on self- perception of slow learners" was not accepted.

The pair wise comparison of groups on Self- Perception has been given in the table 4.

Table 4. Multiple Comparisons of different groups for Self- Perception

						95% Confidence Interval	
Dependent Variable	**Groups (I) N = 20**	**Groups (J) N = 20**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**Lower Bound**	**Upper Bound**
Self – Perce ption	Concept Mapping Instructional Strategy (EG$_1$)	Traditional Approach (CG)	13.20*	3.895	.004	3.5902	22.8098
	Guided Discovery Instructional Strategy (EG$_2$)	Traditional Approach (CG)	12.50*	3.895	.007	2.8902	22.1098
	Concept Mapping Instructional Strategy (EG$_1$)	Guided Discovery Instructional Strategy (EG$_2$)	.7000	3.895	1.000	-8.9098	10.3098

The table 4 reveals that there is a mean difference of 13.20 between the mean gain scores of concept mapping instructional strategy (EG$_1$) and traditional approach on self- perception of slow learners; the standard error was found to be 3.895, which is statistically significant at 0.05 level of significance ($p < 0.05$). It indicated that experimental group 1 (Concept mapping instructional strategy) performed better than control group (Traditional approach) on self- perception of slow learners. Thus, concept mapping was an effective strategy in improving self - perception of slow learners. Hence, the hypothesis stating, "Slow learners will improve significantly in self- perception after administration of concept mapping instructional strategy" is accepted.

There is a mean difference of 12.50 between the mean gain scores of guided discovery instructional strategy (EG$_2$) and traditional approach on self- perception of slow learners; the standard error was found to be 3.895, which is statistically significant at 0.05 level of significance ($p < 0.05$). It indicated that experimental group 2 (Guided discovery instructional strategy) performed better than control group (Traditional approach) on self- perception of slow learners. Thus, guided discovery was an effective strategy in improving self- perception of slow learners. Hence, the hypothesis stating, "Slow learners will improve significantly in self- perception after administration of guided discovery instructional strategy" is accepted.

There is a mean difference of 0.70 between the mean gain scores of concept mapping instructional strategy (EG$_1$) and guided discovery instructional strategy (EG$_2$) on self- perception of slow learners; the standard error was found to be 3.895, this mean difference is not statistically significant at 0.05 level of significance ($p > 0.05$). It indicated that experimental group 1 (Concept mapping instructional strategy) and experimental group 2 (Guided discovery instructional strategy) performed equally on improving self- perception of slow learners. Hence, both the groups are not significantly different from each other on self- perception of slow learners. It can be concluded that the hypothesis stating, "There will be no significant difference in the

effect of concept mapping and guided discovery instructional strategy on self- perception of slow learners" is accepted.

Conclusion

In conclusion, concept mapping and guided discovery both interventions are helpful in significantly improving self-perception of slow learners. Traditional instruction, on the other hand, did not yield any significant changes in the self- perception of slow learners. Concept mapping instructional strategy and guided discovery instructional strategy, both of the approaches are effective in improving self- perception of slow learners. Most theorists believed that students' favourable attitude toward learning and positive self–perception of their capability have significant impact on their motivation, resulted in enhancing their academic achievement (Harter, 1981; Bandura, 1994). This study is suggesting that teachers should use concept mapping and guided discovery instructional approach for enhancement and improvement of self- perception of slow learners.

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