

INTEGRATED MODEL FOR EFFECTIVE TEACHING LEARNING OF BIOLOGICAL SCIENCE FOR VISUALLY IMPAIRED STUDENTS

Dr.Madhuri Suresh Isave

Associate Professor, Tilak College of Education, Pune - 30

ABSTRACT

The paper focuses on models of teaching used in teaching learning process of visually impaired students. The research question was framed to understand the teaching learning process used by their teacher in classroom teaching. However, investigator prepared the integrated model which is based on inquiry based learning and stress reduction techniques. The integrated model is focused on biological science content. The findings seem to be in accordance with other researches which show that the models of teaching are benefitted for disabled students. Supported the study of Elefant(1980) highlighted the inquiry based learning is useful for deaf students and it can be useful for severe handicapped students. This finding indicates that there is a need for putting emphasis on critical findings with regards to models of teaching in the area of special education and especially for visually impaired students.

Key Words - Integrated Model, Inquiry training Model, Stress reduction model, Biology science, visually impaired students.

Introduction- Area of the paper is special education, science education and visually impaired students. A very few researchers have done research in this area especially for models of teaching in the area of special education. A special education research is an embryonic stage. In (1978) Bruce Joyce & Weil Marsha introduced the models of teaching in the field of education. A Models of teaching is a plan and pattern of curriculum for the teacher. Out of the four families of models of teaching, the researcher focused on information processing family and behaviour modification models of teaching. Inquiry training model and stress reduction model used in the teaching learning of biological science. Supported study of Suchman, R. (1961). According to him inquiry provides an advanced idea to self pace instruction, so that

students are able to learn what is relevant to them. For self directed activity the freedom and responsive environment are necessary. He contends that the ability to inquire and discover concept autonomously is more important than the attainment of concepts. He opined that through inquiry and the ability to individualize instruction, many of the problems associated with slow learners would be resolved. Elefant, E. F. (1980) has successfully carried out the BSITM with deaf children, which suggests that the method can be powerful with students who have severe sensory handicaps. After studied the teaching learning strategy use for the VI student the researcher noticed that VI learn biological science by traditional method. The teacher of VI students was not aware about new teaching learning strategy. The researcher interacts with VI students and noticed that every VI students had physical problem which creates stress in their mind. For VI students learning of scientific concept by traditional teaching method is difficult and created stress on their mind. An inquiry based learning is very much suitable and meaningful for the teaching learning of visually impaired students because the visually impaired students hearing concentration is powerful and through this concentration power they can easily grasp the content. In the science teaching learning process scientific inquiry is more important and visually impaired student can inquire verbally to the teacher. They can ask questions in the classroom. Taking this advantage the researcher used inquiry based learning strategy for biological science teaching to clear the concept of visually impaired student. While they learn tried to reduce their stress by using some stress reduction techniques with inquiry based learning. A new Model of Teaching was created especially for Visually Impaired student with the addition of Inquiry based learning and Stress Reduction techniques, which is an Integrated Model of Teaching.

Theoretical Background Inquiry Based Learning (IBL) has been great influence in Science Education. The philosophy of IBL found in the work of Piaget, Dewey, Vygotsky and Frire. IBL emphasised constructivist idea of learning.. The investigator selected biological science content for inquiry training. In Socratic method teaching by asking instead by telling and thinking is driven by questioning.

In the inquiry session VI students thought about the problem and asked questions.

Review of Related Literature

Elefant, E. F. (1980) has successfully carried out the BSITM with deaf children, which suggests that the method can be powerful with students who have severe sensory handicaps Julka, A. (2005) has conducted a study to understand the problems that students with VI From the study it was concluded that VI children develop their concept of objects from their unique experiences. In order to meet the unique needs of VI, the students must have access to specialized services, book, and material in appropriate media as well as specialized equipment and technology. Geetha, A. (2007) highlighted the importance of yoga and meditation in stress management. Yoga is an exact science. It aims at the harmonious development of the body, the mind and the soul. The practice of yoga will help people to control emotions and passions, increase resistance power and remove the disturbing elements from mind, remove fatigue and get concentration and self sufficiency(Elefant ,1980) used the Biological Science Inquiry Training Model for deaf children, which suggest that the method can be useful to students who have severe sensory disability. (Eunice, B. & Kenneth, D. 1973) conducted another study remarked on deaf children. They studied the effect of science inquiry on deaf children. (Phatak, 1999) used the Models of Teaching for slow learners. From these studies the researcher concluded that the Models of Teaching are not only useful for normal students but also it can be applicable in the area of Special Education. It is clear from the above cited research findings that no study was found regarding Inquiry Training Model for Visually Impaired students. In the area of Special Education for VI students, most of the studies have concentrated on the aspects like, socioeconomic status of VI, adjustment problem of VI in classroom, comparative study with sighted children and achievement in education. There are some studies available on the inquiry approach, which are mentioned in the review and all are related to normal students. , but very few study has been done based on the development of inquiry approach in Visually Impaired students.

Objectives of the study-

- 1) To study the teaching learning strategy used for biological science to Visually Impaired students.
- 2) To prepare an Integrated Model by addition of Biological Science Inquiry based learning and Stress Reduction techniques.
- 3) To test the effectiveness of Integrated Model to develop inquiry approach and to reduce stress in Visually Impaired students.

The **population** for this study was Visually Impaired students and their teachers from all integrated schools in Pune district. The **samples** selected for this study was 12 VI students for test the efficacy of IM. 15 user group teachers' informant for study the usability of IM and 10 Science teachers informants to study the teaching learning strategy used for VI. Tools used for the study was questionnaire, interview and prepared model. Statistical techniques was t-test, Percentage, graphical presentation and conversational analysis for interview data.

Methodology of the research Research method of the study was **Mixed Method research** In the present study one quantitative and one qualitative method was included. In the present study researcher has selected -True Experimental - Post test design to draw inquiry approach. It is an applied research **Procedure-** Visited to integrated school and selects the sample. Conducted interview of science teacher to know the teaching strategy used by them in classroom teaching for VI. Prepared Integrated model and implemented on sample group. Conducted inquiry sessions in classroom along with stress reduction techniques.

Syntax- Phases of Integrated Model

PHASE I	Stress reduction warm up activities Visual Technique, Establish a relaxed atmosphere Take the warm up activity so body is ready for exercise. Give instructions about exercise and perform simple exercise Find a comfortable position. Use visual technique for imagination
PHASE II	Explain some puzzling event which is based on biological content. Ask students to inquire independently.
	Data gathering: Verification Verifying the nature of objects, conditions and

PHASE III	properties Data gathering: give examples Hypothesize and test Casual relationships
PHASE IV	Moving focus relaxation Instruct students to focus and relax on individual part of body from feet to toes (first feet, then thighs, hips and waist, abdomen , lunge and breathing muscles , neck, hands, arms and waist, face, mouth and tongue.)Maintain slow rhythmic pace.
PHASE V	Formulation of an explanation Formulates rule or explanation
PHASE VI	Analysis of the inquiry process Determine inquiry strategy and develop concepts
PHASE VII	Wind up Practice rest and or tension and release Arouse from relaxation
PHASE VIII	Debriefing and transfer =Obtain feedback from participants as to their reactions, sensations and respond to their questions Discuss possible uses of the method

Data analysis and Interpretation- In order to test the development of inquiry approach in the students, a number of questions asked by the students of group II were considered. On the basis of above objective the following hypothesis were formulated and for testing the hypothesis mean, standard deviation and t-test was used.

H-There is a significant difference between the mean scores of the development of inquiry approach after using Integrated model.

H₀- There is no significant difference between the mean scores of the development of inquiry approach after using integrated model

Number of questions asked by VI students in per session

Students		S	E	S	S	I	O	N	S	
	1	2	3	4	5	6	7	8	9	10.
Questions asked	35	39	52	66	70	75	80	85	92	103

Session	N	Mean	SD	df	Tabulated t Value	obtained t Value	Level of significance 0.05 level	Comments
First session of VI student	12	2.9	27	22	2.07	15.06	Significant	Reject H_0
Tenth session of VI student	12	8.58	24.92					

Observation - Table -indicates that the obtained 't' value is **15.06** at 0.05 significant level which is greater than tabulated 't' value 2.07.Hence 't' value is significant. It means accepted the research hypothesis and rejected the null hypothesis

Interpretation - After using the Integrated Model for the VI student the result obtained suggests that there was significant difference in the their inquiry approach. This means that implementing Integrated Model for VI is proved to be significantly effective for the development of inquiry approach in the VI students.

RQ.-What will be the existing situation of science teaching of Biological Science in integrated school for Visually Impaired students?

Answer of this research question is the VI students were taught theoretical science only. In teaching and learning process a limited teaching learning strategies used in the classroom teaching. As we know the hearing concentration and verbal expressiveness is a powerful instrument for Visually Impaired students. Taking this advantage inquiry process was a better teaching learning strategy for VI students.

Findings of the study are- Integrated Model was significant to enhance inquiry approach in Visually Impaired students. Stress reduction activity helps to reduce stress of Visually Impaired students while conducting with inquiry.

Implications of the study The science teacher should try to prepare discrepant event based on the content of science that leads to the development of questioning skill in the VI students.The science teachers could use inquiry training strategy in regular teaching so as to develop inquiry skill in the VI students. The science

teachers of VI could use stress relaxation techniques for students to sustain the concentration of the student in classroom in the teaching learning process.

References-

- Ahuja, R. (2001). Research Method. Rawat publication. Jaipur, New Delhi.
- Begum, Sara. (2006). Cognitive development in blind children. Discovery publishing house, New Delhi,10-11 pp.
- Begum, Sara. (2006). Cognitive development in blind children. Discovery publishing house, New Delhi,12 pp.
- Begum, Sara. (2006). Cognitive development in blind children. Discovery publishing house, New Delhi,26 pp.
- Begum, Sara. (2006). Cognitive development in blind children. Discovery publishing house, New Delhi,43 pp.
- Choudhary, K. & Virkar, P. (1988). Information Processing Models of Teaching. Dwarka Prakashan, Pune.
- Clarke, R.A., Biology by Inquiry. (Part 1.2.3.). Heiemann educational bank ltd.London.
- Good, C.V. (1973). Dictionary of Education. McGraw Hill book company, New Delhi.
- Jones, M. G., Minogue, J., Oppewa,l T., Cook, M. P. & Broadwell, B. (2006). Visualizing without vision at the micro scale: Students with visual impairments explore cells with touch. Journal of Science Education and Technology, 15(5), 345-351pp.
- Joshi, A.N. (1987). Training for inquiry training. Perspective in Education, Vol.3.No.4,263-265pp
- Joyce. & Weil, M. (1985).Models of Teaching. (2nd ed.). Prentice- Hall of India Pvt. Ltd. New Delhi.
- Joyce, B. ,Weil, M. (195).Models of teaching. (2nd ed.). Prentice- Hall of India Pvt. limited. New Delhi.399.pp.
- Joyce. B., Weil,M. (1997).Models of teaching. (5thed.). Prentice- Hall of India, Pvt. limited. New Delhi.

- Kashinath, H.M. (2000). Effectiveness of inquiry method of teaching science in fostering science process skill, creativity and curiosity. *Perspective in Education*, Vol.16.No.3,181pp.
- Nielsen, Lilli. Environmental intervention for visually impaired preschool children with additional disabilities, *VIP Newsletter*, Vol. 8, No. 3.
- Nielsen, Lilli. The blind child's ability to listen, *VIP Newsletter*, Vol. 10, No. 3.
- Page, G.T. & Thomas, J.B. (1978). *International dictionary of Education*. Koyan page lit.
- Rajkani, M. A., & Suguna, R. D. (2006). *Special Education*. Discovery publishing house, New Delhi.
- Rajkani, M. A., & Suguna, R. D. (2006). *Special Education*. Discovery publishing house, New Delhi.21pp.
- Rajput, J.S. (2004). *Encyclopedia of Indian Education*, (1st edn.). Vol.I.(L-Z). NCERT.1105-1106pp.
- Rehabilitation Council of India. (2000). *Status of disability in India*.