

The effect of using the Jigsaw strategy on the hearing impaired students at the second cycle of basic vocational education acquisition of scientific concepts and some basic science processes

Introduction

The recent years have witnessed an increasing interest on part of researchers in educating students with special educational needs .However, this tendency is evident as a reflection of the world wide attention drawn to such a special group of learners. The temporary education trends to such a special group call for the individualization of learning and consequently to giving less fortunate students the right to be cords for and educated in a way that would provide them with equal life chances and maximize the use of their abilities .The international society is trying as well as to change the people's points of view about individuals with special need from pity and sympathy to apposite one that considers them equals to ordinary individuals who can provide much and help the society to improve.

One of the categories of people with special needs are the hearing impaired ones who face special difficulties that make them unable to acquire scientific concepts and their related mental processes which is one of the basic aims of science teaching to this group of students. In this way, it was of a special needs and importance to try to find effective teaching strategies that might help in overcoming those academic difficulties.

The cooperative learning strategy (Jigsaw) is one of the modern and highly developed teaching strategies that help in enhancing teaching and learning. It transfers learners from being passive receivers to positive sharers in

an atmosphere of love and cooperation. So, it enables learners to become positively involved in their education.

From all what proceeded, we can conclude that teaching science to hearing impaired students faces a few academic difficulties due to the special nature of the learners, and that those difficulties might be resolved through the use of cooperative learning strategy(Jigsaw). Naturally, our attention is directed towards the degree of effectiveness of the Jigsaw strategy in helping hearing impaired students at the prep stage to acquire scientific concept and some basic learning processes.

Problem of study

The science teachers working with hearing impaired students attempt to use the usual ways of teaching leading to a clear deterioration in the standard of the students concerning the variant aspects of learning thus, the recent study attempts to use the Jigsaw strategy in teaching hearing impaired students at the second cycle of basic vocational education and measuring its processes acquisition.

In light of what preceded the study is trying to answer the following question:

What is the effect of using the Jigsaw strategy on the hearing impaired students at the second cycle of basic vocational education acquisition of scientific concepts and some basic science processes?

The following sub question could be derived:

- 1- What are the concepts included in the "microorganisms and human being" unit introduced to second year of vocational prep students?

- 2- What are the suitable science processes to be used in teaching science to hearing impaired students at the second year vocational prep education?
- 3- What is the suggested vision for reformulating the "Microorganisms and human beings" unit taught to the hearing impaired second year vocational prep students using the Jigsaw strategy to help in the acquisition of scientific concepts and some basic science processes?
- 4- What is the effect of using the Jigsaw strategy on the hearing impaired students at the second cycle of basic vocational education acquisition of scientific concepts?
- 5- What is the effect of using the Jigsaw strategy on the hearing impaired students at the second cycle of basic vocational education acquisition of some basic science processes?

Importance of study:

The study is considered highly significant as it helps in:

- 1- The Science Teaching develop at prep stage through using Jigsaw of cooperative learning , which may be sharing at increasing positive to interact between students and made them sharing at learning and Teaching process.
- 2- The unit "microorganisms and human being" present from Science book to second year vocational prep which it prepare picture of Teaching situation according to Jigsaw strategy of cooperative learning which it can be as aguide for Teacher when we Teaching and planning to another units at different stages .
- 3- Presenting of practical model how to using Jigsaw of cooperative learning at studing of Science , the matter which may be useful for Science Teachers and circles planning for preparing Teacher to serves

at developing Science Teacher and Technical and Methods.

- 4- The natural of Teacher current through interest in scientific process at Teaching of Science through presenting model for training Hearing Impaired students at practical some basic scientific processes which it transfers effective taat at another life Teaching Situations .
- 5- Presenting two objective medium those: Testing Scientific Concepts and basic science processes and can be useful for Teachers of Science at built similar testes for the change units of Science curricula.
- 6- Providing teachers of science, teaching to hearing impaired students at the prep stage with a guide that clarifies and explains the procedures to be followed when using the Jigsaw strategy to introduce scientific concepts and some basic science processes
- 7- Providing hearing impaired students with the basic science processes that might function introduced throughout the secondary stage.

Aims of the study

The present study aims at:

- 1- Reforming the second unit "microorganisms and human being" from the science book at the second year vocational prep education by using the Jigsaw strategy as a new teaching strategy for hearing impaired students.
- 2- Preparing a list of the scientific concepts included in the unit

- 3- Specifying some basic science processes that should be acquired by hearing impaired students.
- 4- Bridging the gap in the acquisition of hearing impaired students of scientific concept and some basic processes
- 5- Using the Jigsaw strategy in helping hearing impaired second year vocational prep students to acquire scientific concepts and some basic science processes.

Hypotheses of the study

The study attempted to test the following hypotheses:

- 1- There is a statistically significant difference between means scores of the control and experimental groups' subjects in the acquisition of scientific concepts post test in favor of the experimental group.
- 2- There is a statistically significant difference between means of scores of the experimental and control groups subjects in the acquisition of some basic science processes post test in favor of the experimental group.

Limitation of the study:

The study is limited to the following:

- 1- A sample of hearing impaired second year vocational prep students at Demo prep and secondary school for the hearing impaired at Fayoum Government.

- 2- The "microorganism and human beings" unit introduced to second year vocational prep students during the scholastic year 2007/2008.
- 3- The scientific concept included in "microorganisms and human beings" unit.
- 4- Some basic science processes (**Observing – Classifying – Inferring**) .

Method of the study:

The present study used the semi-experimental method as it dealt with two equivalent groups (control and experiential). The experimental group studied "microorganism and human beings" unit using the Jigsaw strategy while the control group studied the same unit in the usual method.

Procedures of the study:

The present study followed the following procedure:

- 1- Reviewing the related literature and previous studies dealing with the following topics: cooperative learning, scientific concept, basic science processes and hearing impaired students.
- 2- Selecting the "microorganisms and human beings" unit taught to the hearing impaired second year vocational prep students.
- 3- Analyzing the scientific content of the unit to specify the scientific concepts and basic science processes included.
- 4- Preparing a list of the scientific concepts included in the unit and showing it to the jury members.
- 5- Preparing the experts' report in the unit's according to the Jigsaw strategy.

- 6- Preparing the teacher's guide containing the procedures to be followed when using Jigsaw strategy when teaching the specified unit.
- 7- Preparing the scientific concepts acquisition test related to "microorganisms and human are being" unit introduced to second year vocational prep at Al-Amal Schools.
- 8- Preparing the scientific processes acquisition test related to the selected unit.
- 9- Judging the validity and reliability of the tests after showing them to the jury members.
- 10- Selecting a sample of hearing impaired students at second year vocational prep stage and dividing them to a control and an experimental group.
- 11- Pre administration of the tests to both groups and analyzing the results statistically.
- 12- Teaching the selected unit using the Jigsaw strategy to the experimental group and in the usual method to the control group.
- 13- Post administration of the tests and Results statistical analysis.
- 14- Conclusion, suggestion and recommendations.

Results of the study:

First: The scientific concepts test:

There is a statistically significant difference at 0.05 between means of scores of the experimental and control groups students in the post scientific concepts test in favor of the experimental group.

Second: The science processes test:

There is a statistically significant difference at 0.05 between means of the experimental and control groups

students in the post science processes test in favor of the experimental group.

Recommendation of the study:

In light of the results, the researcher recommends the following:

- 1- Using cooperative learning strategy in teaching science as it proved highly effective in achieving both academic and social aims at the same time.
- 2-Enforcing master learning through the experts' views as it is reflected in the basic groups learning.
- 3-Reorganizing the activities and exercises included in the vocational prep stage science books hearing impaired students in the form of cooperative grouping activities that allow students the chance to cooperate, collaborate, discuss, take roles and converse together to learn from each other's experiences.
- 4-Paying extra attention to the good preparation and arrangement of classrooms and labs to expand the effect of Jigsaw strategy in order to achieve the desired teaching aims.
- 5- Providing students at the faculty of Education a chance to be trained on the use of Jigsaw strategy in teaching to enrich their experience and enable them to use it later on.
- 6- Encouraging teachers to use cooperative learning strategy when teaching their students.
- 7- Training teachers of hearing impaired students on using Jigsaw strategy when planning lessons and

helping them to acquire the ability and skill to manage it.

- 8- Constructing hearing impaired science curricula in a way that allows the inclusion of a considerable amount of group classroom activities to provide students a chance to interact and acquire the communication skills needed nowadays.
- 9- Paying more attention to cooperative learning strategy and its related theory when planning for science teacher's preparation program especially for the teachers working with hearing impaired students.
- 10- Reformulating the science books introduced at the vocational prep stage to include the Jigsaw strategy. Teachers should be provided with clear notes about the implementation of the strategy procedures.
- 11- Training the science teachers working with hearing impaired students in specialized centers and the faculty of Education at both the technical and vocational levels to be able to deal with the students and the scientific content.
- 12- Carrying more research work dealing with hearing impaired students using other teaching strategies such as: concepts maps, learning cycle, etc. and measuring their effect on achieving science teaching aims.
- 13- Reforming science curricula introduced to hearing impaired students to include topics suitable for the nature of their disability. In addition to planning suitable programs that enable those students to function and adapt to the environment effectively, solve problems directly or indirectly and handle various situation.
- 14- Providing financial support required to schools and teachers to assist them to use cooperative learning in schools.

Suggestions of the study:

During the implementation of the study, the researcher encountered a few related problems that might be solved through further research and other studies. Some of them are:

- 1- The effect of using other cooperative learning strategies in teaching science to the prep stage.
- 2- A suggested program to train teachers of hearing impaired students on using cooperative learning in teaching.
- 3- Longitudinal research work and follow up studies that measure the effect of using cooperative learning on the educational output.
- 4- A study to measure the effect of cooperation and competitiveness on acquisition and attitudes of hearing impaired students.
- 5- A similar study on a larger sample of prep stage students and/or other years.
- 6- Using the Jigsaw strategy and measuring its effect on achieving other science teaching aims at the prep stage such as: developing scientific thinking, developing scientific values and appreciation.
- 7- The effect of Jigsaw strategy on developing creative thinking and social accordance among hearing impaired students.
- 8- A study to specify the difficulties faced by science teachers when using cooperative learning.

- 9- A comparative study of cooperative learning effect on achievement using various cooperative learning strategies.
- 10- The effect of Jigsaw strategy on achievement of high order objectives such as synthesis, analysis, analysis and evaluation.
- 11- The effect of Jigsaw strategy on the acquisition of integrative science processes at the vocational secondary stage of hearing impaired students.