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# Effect of Interpersonal Intelligence Based Teaching Strategies on Students Academic Achievement

Dr. Vinita Advani[1]*, Ms. Hema G[2]

**ABSTRACT**

The intent of the present study was to investigate the effect of interpersonal intelligence based teaching strategy (IBTS) on students' academic achievement. Totally, 101 students who were found to be having higher mean scores in interpersonal intelligence participated in the study. The experimental and control group encompassed 51 and 50 students, respectively. All students were of IX standard students belonging to a school in Ahmedabad city. The sample was selected through purposive sampling. The experimental group was taught through IBTS whereas the control group received conventional teaching of same science topics. To determine the effectiveness of IBTS over conventional teaching method, an academic achievement test on the science topics which consisted of 30 multiple choice questions was administered. Mean, SD, SEd, and t-values were calculated to compare to test the hypotheses. The results showed that students who were taught through IBTS were achieved higher score than the other group. There was no difference in the academic achievement of boys and girls students who were taught through IBTS.

***Keywords:*** *Interpersonal intelligence based teaching strategy, Academic Achievement, Multiple Intelligences*

**E**ducating students of the 21st century demands a different approach, a deviation from the traditional way of teaching. Now, students are living and learning in a world with ever-changing and increasing technology. With easy and constant access to technology, teenage students are changing the way of communicating with people around them like sending text messages, twitter updates, facebook messages etc.,. In order to meet the demands of students, education must change with ever-changing students (Denise, 2014). There are three important skills today's students need to have rather than the traditional reading, writing and arithmetic mastery, they are:

[1] Assistant Professor, R.H. Patel English Medium B.Ed College, Kadi Sarva Vishwavidyalaya, Gandhinagar, Gujarat, India
[2] Research Scholar (Edu.), Kadi Sarva Vishwavidyalaya, Gandhinagar, Gujarat, India
*Responding Author

creativity and innovation, critical thinking and problem solving (including knowing how and where to find information) and communication and collaboration (Partnership for 21st Century Skills, 2002). The above three skills are not new, teachers use and teach these skills for a long time. However, these skills came under lime light through the work of Gardner and his theory of multiple intelligences.

According to Gardner (1999), intelligence is defined as the ability to process information that is activated in a cultural contest for problem solving or creating products which are worthy in a culture. He introduced 8 different intelligences including verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal and naturalistic (Gardner 1999; Armstrong 2000; Ormrod 2006; Peariso 2008). According to Gardner, there are two important advantages of multiple intelligences in education. They are: It gives the opportunity to plan our education program so as to make the students desired. (For example, musician and scientific training) and it enables us to reach more students trying to learn different disciplines and theories. Learning would berealized much easily on condition that students are trained by using these intelligence fields (Bumen, 2004). Gardner has criticized the traditional intelligence evaluation, teaching materials and teaching techniques used in schools. It suggests that, schools should consider and allow students to express themselves. It also emphasis that equal attention and reassurance should be given on those students who show difference in any one of the multiple intelligences. (Bowell, 2004; Chen, 2007). Multiple intelligences teaching involves the teacher to recognize dominant intelligences in both himself/herself and the students, the teacher should utilize his/her own intelligence to guide students in their learning and encourage their strengths, he/she should constantly stimulate students' dominant intelligences. Critical thinking, passion and enthusiasm for surrounding, courage to try new things, creativity and skills, generosity and tolerance and keen observations are some components of multiple intelligence teaching methods (Rockwood, 2003).

***Brief note on Interpersonal Intelligence***

In Gardner's theory, one of the intelligences is interpersonal intelligence, which is the third important skill required for the 21st century students. Interpersonal intelligence is the ability to perceive and make distinctions in the moods, intentions, motivations, and feelings of other people**.** They learn through interaction with other people and they have many friends and empathy for others. These learners try to see things from other people's point of view in order to understand how they think and feel. They have the skill to sense feelings, intentions and motivations. Although manipulative at times, they are great organizers. They make an effort to reach groups consensus and encourage co-operation. Both verbal (e.g. speaking) and non-verbal language (e.g. eye contact, body language) are used to open communication channels with others (Smith, 2008).

Teachers can encourage the development of interpersonal intelligence by designing lesson plans that include group activities, seminars, and dialogues. Tools include the telephone, audio conferencing, time and attention from the teacher, video conferencing, writing, computer conferencing, and email. Cooperative learning groups, peer groups for brainstorming, revising and editing, writing activities to the community outside the school, inviting guests to the classroom to tell stories or to talk about their experiences, using puppets to teach writing lessons (Bratcher, 2012). At all levels of education like elementary, middle school and higher education, teachers explore more effective methods. Interpersonal intelligence links well with the present day learning goals of communication and collaboration as well as critical thinking and problem solving.

Therefore, this study was conducted to determine the effect of interpersonal intelligence Based Teaching Strategies on students' academic achievement as compared with conventional approach.

## REVIEW OF LITERATURE

In the context of education and student achievement, multiple intelligences helps parents and teachers understand education holistically. It persuades parents and teachers to examine their own ideas and assumptions about achievement and consider various teaching strategies. Several studies suggest that multiple intelligence-based teaching increases student achievement (Campbell & Campbell, 1996; Kornhaber, Fierros, & Veenema, 2004). Ozdemir, Guneysu, and Tekkaya (2006) in their research investigated the difference between direct-instruction facilitated by a teacher (traditional), and a differentiated science instruction on fourth grade students' understanding in science. Multiple intelligence-based science instruction challenges students to develop meaningful understandings of the world around them and create connections between their lives and interests. Furthermore, multiple intelligences helps educators foster and cater to students' individual learning needs and preferences and links the classroom with the broader community. Most importantly, multiple intelligence-based instruction was a holistic and inclusive instructional model that helps educators create cross-curricular links and integrate different learning styles and abilities.

Multiple intelligence-based instruction has significant implications in education. It can help in particular with students' achievement (Barrington, 2004). In this regard, teachers can ensure to provide variety in activities to improve the students' potential as much as possible (Bas, 2008). As quoted by Shore (2004), multiple intelligences provided greater and relevant educational experiences to diverse learners. It helped educators to support every learner by appreciating their own potential and talent. Child centered teaching, open- ended projects, cross-curricular activities, independent study, learning centre activities, multi model work, group projects, discovery learning are some of the techniques that embrace Gardner's theory of multiple intelligence teaching (Nnamdi and Udogu, 2013). By reviewing the relevant literature, there

were several research studies which emphasized to determine intelligences types and the impact of a subject according to multiple intelligence theory on students' academic achievement, retention of knowledge and attitude (Sibel, 2013).

***Objectives***

1. To study the effectiveness of interpersonal based teaching strategy (IBTS) in learning science concepts
2. To compare the effectiveness of IBTS on academic achievement of boys and girls in learning science concepts
3. To compare the effectiveness of IBTS and conventional teaching strategy in learning science concepts based on gender

***Hypotheses***

1. There will be no significant difference in the mean scores of academic achievement of students taught through IBTS and conventional teaching strategy.
2. There will be no significant difference in the mean scores of academic achievement of boys and girls taught through IBTS.
3. There will be no significant difference in the mean scores of academic achievement of boys taught through IBTS and conventional teaching strategy.
4. There will be no significant difference in the mean scores of academic achievement of girls taught through IBTS and conventional teaching strategy.

***Delimitations Of The Study***

The study was delimited to standard IX students of English Medium schools of Ahmedabad city. The study was also delimited to only few topics of science from IX standard Science Text book of Gujarat State Education Board.

***Operational Definitions Of Key Terms***

**1. Interpersonal intelligence:** It is one of the multiple intelligences of eight intelligences. The ability to understand another person's feelings, motivations, and intentions and to respond effectively refers to interpersonal intelligence.

**2. Interpersonal intelligence based teaching strategy:** It refers to the strategy where students learn the concepts of science through interpersonal intelligence related methods like group presentation, team activity, team spirit etc.

**3. Conventional Teaching strategy:** It refers to the strategy where students learn the **concepts of science through conventional teaching methods.**

**4. Academic achievement:** It refers to the scores obtained on self-constructed achievement test in the form of restricted response items.

***Variables Of The Study***

**a. Dependent Variable:** Academic Achievement and interpersonal intelligence

**b. Independent Variable:** Gender – Male and Female

**c. Control variables:** Ahmedabad City, English Medium Schools, Standard IX students and Science topics of GSEB Science Text Book.

## RESEARCH METHODOLOGY

***Population***

The population of the study encompasses all English Medium IX standard students of Ahmedabad City.

***Sample***

Purposive sampling technique was used to select the representative sample required for the study. For this study, all the IX standard students of an English medium co-education school in Ahmedabad city was selected as sample. A self-constructed Interpersonal intelligence inventory was used to select the sample initially. A total of 155 IX standard students were participated in the survey of interpersonal intelligence. Following administration of the interpersonal intelligence inventory, students who had similar or the same mean scores were placed in group with a mix of male and female students. A total of 101 students who scored similar or the same mean scores in this inventory were selected for the experiment. These students were divided into two groups, Experimental group and Control group randomly by lottery method. Experimental group encompassed 51 students and Control group encompassed 50 students.

***Table 1: Distribution of Sample in Experimental group and Control Group***

| Variable | Experimental Group (Taught through IBTS) | Control Group (Taught through Conventional teaching method) |
|---|---|---|
| Male | 36 | 37 |
| Female | 15 | 13 |
| **Total** | **51** | **50** |

***Research Design***

In this study, true experimental method, two equivalent group post-test design only was employed. The experimental group was taught selected science topics using interpersonal intelligence based teaching strategy. The control group was taught the same content of the selected science topics through conventional method by the same teacher. After five days, achievement test was administered to both the groups to find out the effectiveness of the teaching strategies.

*Table 2: Research Design (Two Equivalent group Post-test design only)*

| Groups | Treatment | Test |
|---|---|---|
| Experimental Group | Interpersonal intelligence based teaching strategy (X1) | Post-test |
| Control Group | Conventional teaching strategy (X2) | Post-test |

***Research Tools***

**1. Interpersonal intelligence inventory:** A self-constructed interpersonal intelligence inventory was used to understand the type of intelligence the student possessed. The tool was constructed by following all the steps of construction of a tool such as content analysis, item construction and editing, expert review, piloting and finalization of interpersonal intelligence inventory. The final form of the tool comprised of 104 items with five point rating scales (Always, Usually, Sometimes, Rarely and Never). The items included in the inventory were all related to the interpersonal intelligence aspect of an individual. The score obtained are the score of the students' interpersonal intelligence.

**2. Achievement Test:** A self-constructed achievement test was required to check the effectiveness of interpersonal intelligence based teaching strategy on the selected science topics. This achievement test was constructed for administering post-test. This achievement test was constructed keeping in mind the following content of science concepts which were taught through IBTS and Conventional teaching method. The concepts are selected from IX standard Science Text books of GSEB. The concepts are: Concepts of Wave; Concepts of Motion; Concepts of Sound. The achievement test was prepared based on Blue Print. The test had a total of 30 multiple choice questions. All questions carried one mark each. The constructed achievement test was finalized based on the opinions and suggestions given by the experts. Scoring Key was also prepared by the researcher for the achievement test.

***Execution Of The Experiment***

The researcher taught 40 min per day for 5 days to complete all the selected science concepts. The concepts taught and the interpersonal intelligence based teaching strategies used for the respective topics are as follows:

| Science Concepts | Interpersonal intelligence based teaching strategies |
|---|---|
| Simple harmonic motion, Introduction and types of waves | Simulations, group brain storming, interpersonal interactions. |
| Characteristics of wave, sound waves and their range | Conflict mediation, group brain storming, cooperative learning |
| Sonar, Reflection and Echo | Discussion, peer sharing, group brain storming, imitation |

The control group was taught the same above topics in the same during of time through normal conventional method such as lecture method.

***Data Collection***

After five days of the experiment, post test was conducted to both the experimental group and control group. The time given for the achievement test was 30 minutes. Following the administration of the achievement test, the answer scripts were collected and scanned according to the scoring key. Thus, necessary data was obtained after data collection.

## DATA ANALYSIS

The data analysis was done based on the scoring / responses of the students. The data obtained was entered in MS-Excel sheet as per the classification based on hypotheses. The data was analysed with the help of t-test.

**Data analysis of hypothesis 1**

The scores obtained by the students in the experimental group and control group were assessed and presented in table 3.

***Table 3: Effectiveness of IBTS in terms of Mean scores, S.D, SED and t-Value***

| Groups | N | Mean | SD | SED | df | t-value | Remark |
|---|---|---|---|---|---|---|---|
| Experimental Group | 51 | 24.49 | 4.13 | 1.03 | 99 | 6.25 | Significant at 0.01 level |
| Control Group | 50 | 19.75 | 3.48 | | | | |

From the table 3, the computed t-value (6.25) was higher than the table value at 0.01 level. Hence the null hypothesis 1 was rejected. Therefore, it can be said that the IBTS was found to be significantly effective.

**Data analysis of hypothesis 2**

The scores of experimental group were evaluated and presented in below table 4.

***Table 4 Comparison of achievement scores of students on the basis of gender in Experimental group in terms of Mean scores, S.D, SED and t-Value***

| Gender | N | Mean | SD | SED | df | t-value | Remark |
|---|---|---|---|---|---|---|---|
| Boys | 36 | 23.91 | 4.23 | 1.85 | 49 | 0.97 | Not significant |
| Girls | 15 | 25.08 | 3.04 | | | | |

From the table 4, the calculated t-value (0.97) lower than the table value at 0.05 level. Thus, the null hypothesis was not rejected, as there was no significant difference found in the scores of achievement test of boys and girls.

**Data analysis of hypothesis 3**

The scores of experimental and control group were evaluated and presented in below table 5.

***Table 5 Comparison of achievement scores of boys' students on the basis of teaching strategy in Experimental and Control group***

| Groups | N | Mean | SD | SED | df | t-value | Remark |
|---|---|---|---|---|---|---|---|
| Experimental Group | 36 | 23.91 | 4.23 | 1.08 | 71 | 4.2 | Significant at 0.01 level |
| Control Group | 37 | 20.28 | 3.04 | | | | |

From the table 5, the calculated t-value (4.2) was higher than the table value at 0.01 level. Thus, the null hypothesis was rejected.

**Data analysis of hypothesis 4**

The scores of experimental and control group were evaluated and presented in below table 6.

***Table 6 Comparison of achievement scores of girls' students on the basis of teaching strategy in Experimental and Control group***

| Groups | N | Mean | SD | SED | df | t-value | Remark |
|---|---|---|---|---|---|---|---|
| Experimental Group | 15 | 25.08 | 3.04 | 1.40 | 26 | 3.12 | Significant at 0.01 level |
| Control Group | 13 | 20.68 | 4.22 | | | | |

From the table 6, the calculated t-value (3.12) was higher than the table value at 0.01 level. Thus, the null hypothesis was rejected.

***Major Findings***

1. It was found that Interpersonal based teaching strategy was more effective than conventional teaching strategy.
2. It was found that the academic achievement of female students was more than male students taught by Interpersonal based teaching strategy.
3. It was found that the academic achievement of students (both male and female) taught by Interpersonal based teaching strategy was more than conventional teaching strategy.

## CONCLUSION

It was noted that students with higher level of interpersonal intelligence performed better when taught through IBTS. Hence, IBTS serves as a good and powerful method of developing students' interpersonal intelligence. If properly used to teach students, it could enhance students' achievements. If this concept is understood in an appropriate way it may be helpful in raising the standard of Education. Also, in order to make the education system learner centred, it is very important to materialise this concept.

## RECOMMENDATIONS

Teachers at all levels should be trained for integrating and using interpersonal intelligence based teaching strategies in teaching science and any other subject in order to enable the students to be successful in the academics. Policy makers and curriculum designers should incorporate the use

of interpersonal intelligence based teaching requirements effectively. Parents and teachers should encourage students to embrace the interpersonal intelligence to develop their potentials.

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***Conflict of Interests***
The author declared no conflict of interests.

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