DEVELOPMENT OF A DIAGNOSTIC REMEDIAL PROGRAMME FOR ATTAINING LEARNING OUTCOMES IN BASIC READING AND COMPREHENSION FROM INITIAL LEVEL UP TO CLASS IV

Rita A. Parmar[*]

Sr. Lecturer on Deputation,Childrens University, Sector-20, Gandhinagar, Gujarat, India
Email: rutaparmar@yahoo.com

ABSTRACT

Reading, writing and counting /arithmetic are the base of the primary education. Through good reading skill students can learn everything, grasp everything. Due to good reading and comprehension skills positive effect can be put on other subject's achievement. According to various surveys and assessment programmes the primary level students are weak in this basic skills. Hence the aim of the present study was DEVELOPMENT OF A DIAGNOSTIC REMEDIAL PROGRAMME FOR ATTAINING LEARNING OUTCOMES IN BASIC READING AND COMPREHENSION FROM INITIAL LEVEL UP TO CLASS IV. " For that researcher prepared 40 hours basic reading and comprehension programme. The basic components of reading and comprehension were included in this programme. Forty –two (42) types of activities were constucted in this programme. The reading test and comprehension test were developed by researcher for the study to the effect of remedial programme on attaining learning outcomes in basic reading and comprehension from initial level up to class IV. This is an experimental study with an integration of quantitative as well as qualitative methods of interpretations. One group pretest-posttest design was accepted for this study. There were a pre-test, treatment and post-test and delayed post test for the experimental group. Various descriptive techniques were used for logical analysis and interpretation of qualitative data and t-test for quantitave data. Conclusions of the study suggested that the present Reading-Comprehension remedial programme was significantly effective for attaining learning outcomes in basic reading and comprehension from initial level up to class IV and sustainable too.

Key-words: *Diagnostic remedial programme, learning outcomes*
* Author for correspondence

INTRODUCTION

Education is the process of enhancement and development of human life. The beginning of formal education of child is from primary education. The base of holistic development of students is put on by primary education and then it can be strengthened by higher education. Reading, writing and counting /arithmetic are the base of the primary education. Through good reading skill students can learn everything, grasp everything. Due to good reading and comprehension skills positive effect can be put on other subject's achievement. So it is required to give attention on this side in teaching- learning process. Great amount of attempts has been done to improve reading, writing and arithmetic in primary education. Yet, various surveys and assessment programmes point out this weakness. Children's University is also working for quality improvement of education. If Research based innovative methods and techniques and materials can be developed for the problem solving of reading at primary education level then it can be given new horizon to entire state

level education. Therefore the researcher needs to undertake a study in this area through children's University.

Significant of study

Language learning is most essential for formal education of the students. Due to proper knowledge of language student's interaction become easy and he/she can gain achievement in any field. They can solve difficult problems. For that reading is basic education. Reading skill is more important among four skills of language. It is the gate way of Knowledge consuming. Hence it is important for students to achieve reading skill from initial stage. Script and signs can be understood by reading, different punctuation mark can be understood, and comprehension can be doing through word and sentence form. Personality can be developed. Social communication becomes easy. Writing skill can be developed. It is necessary but nowadays students are weaker in reading at initial level up to IV. So they could not do reading comprehension. For their improvement in this area the Children's University needs to undertake a research. Through this study Children's University will contribute to the improvement of reading skill and reading comprehension level up to standard IV pertaining to the efforts of the Gujarat government. Reading and Comprehension programme can be useful for the text book writer to develop reading and comprehension techniques for initial level language books. The teaching-learning techniques of this reading comprehension programmes will help the teachers for attaining learning outcomes of basic reading and comprehension.therby it will prove helpful for their students.

Concept of Reading

Richard Anderson and the Commission on Reading (1988) define

" *reading as the process of constructing meaning from written texts. Skilled reading is*

> ***constructive****: learning to reason about written material using knowledge from everyday life and from disciplined fields of study;*
>
> ***fluent****: mastery of basic processes to the point where they are automatic so that attention is freed for the analysis of meaning;*
>
> ***strategic****: controlling one's reading in relation to one's purpose, the nature of the material and whether one is comprehending;*
>
> ***motivated****: able to sustain attention and learning that written material can be interesting and informative; and*
>
> ***a life long pursuit****: continuous practices, development, and refinement. "*

Thus, reading is a process of constructive, fluent, strategic, motivated and a lifelong pursuit . Reading means not only written sentences but reading of thought in it.

Characteristic of reading skill

Dechant (1964) remarks that it is quite difficult to give one comprehensive definition of reading that would suit everybody and thus there are as many

definition of reading as there are reading experts. He has given eight characteristics of reading.

1) *"Reading is a sensory process"* By this he wants to say that the reader must have the sense of vision so that he / she could be able to react visually to the graphic symbols.

2) *"Reading is a perceptual process"* Here he wants to say that meaning does not exist in the text itself but it is the reader who brings meaning to the text in the process of reading comprehension. The process involves looking at the word, word recognition; meaning awareness, and relating the word to its context.

3) *"Reading is a response"* By this he means that in the process of reading, some responses are made by the reader to the printed words which include vocal and / or sub vocal muscular responses, eye movement, the critical and evaluative responses, reader's emotional involvement and meaningful reactions to the text.

4) *"Reading is a learned response"* By this he means, reader must learn to respond to the reading; and it should be controlled by some sort of motivation and reinforcement.

5) *"Reading is development task"* By this he means that there should be a sort of readiness for reading in a learner. It is a task, and the required / specific skills should be taught to the learners to grow and develop reading in them.

6) *"Reading can be an interest"* By this he wants to say that, a teacher should develop a kind of interest in his / her learners for reading so that successful comprehension could be achieved.

7) *"Reading is a learning process"* Here he describes reading as a medium of learning. According to him, reading helps in acquiring knowledge and develops the reader socially and intellectually.

8) *"Reading is communication"* Here, he defines reading as an active process of communication where there is a communication between a reader and a writer; and the communication can be a success only if the reader can make meaning from the printed page.

(Adapted from Dechant 1964:1-2).

Importance of Reading

Patel N. (2010) describes importance of reading

Script and signs may be understood.

Various punctuation signs can be understand.

Comprehension can be done through understanding of words and sentences.

Unfoldment of personality

Knowledge and information can be achieved.

Protection of Cultural heritage.

Social communication may be easy.

Development of writing skill.

Componants of Reading

Learning Point Associates (2004) presents a review of the five essential components of Effective Reading Instruction, which is based on the report presented by The National Reading Panel Report (National Institute of Child Health and Human Development [NICHD], 2000).

The components presented are:

1. Phonemic Awareness

2. Phonics

3. Fluency

4. Vocabulary

5. Comprehension

Above all components are included in the present study.

Process and Product View on Reading

The two most important views for reading skills are the 'process' and the 'product' view of reading. Alderson (2000) gave a thorough description about the process and product views of reading. According to him the product is basically a result of the process of reading. And the process of reading means 'reading proper' (ibid, p. 3). In other words the 'process' of reading may be understood as a sort of communication between a reader and the text; where the reader is not only involved in the process of eliciting meaning out of the text, but also relates the text to his/her prior knowledge; gives judgment about the usefulness, theme and tone of the text and also counts the difficulty level of the text. The process of reading can be dynamic and varied for the same/ different reader on the same/different text at the same/ different time or with a same/different purpose in reading. "The process is normally silent, internal, private" (ibid, p. 4). Research in 'introspection' has identified various strategies that are used by good and poor readers in the process of reading. Researchers have also looked at the textual problems and the affective issues that arise for readers in the process of reading. Researchers supporting the process view have suggested that the reading teacher should distinguish between the processing of good and poor reading among the students and when the students are able to understand the process thoroughly, they may be able to search out for other existing strategies which may help them. Thus through the help of different strategies a poor or an average reader can improve his/her reading. He/she can choose the appropriate way to approach the text. A good reader can watch his/her progress of reading comprehension process and can choose the appropriate strategy in order to be a successful reader. Thus the reading comprehension process is a complex process which involves various strategies to figure out the intended meaning from the text. Alderson (2000).

At the same time the product view of reading has not been set apart. It is always there in the light. In order to support the product view, it has been said that whatever be the process of reading, the outcome, that is, the product, will always come as the same. "What matters is not how you reach that understanding, but the fact that you reach it,…..or, what understanding do you reach" is more important (Alderson 2000:4).

In a second language reading class, students can be given certain tasks with a fixed outcome (product) and with some particular skill or strategy as a way/method (process) to achieve that outcome. Here the tasks are itself the purpose of reading and so should be closer to real life purposes. Such tasks motivate the students; generate their interest and take then into the real world, outside the class and also present a valid picture of the particular type of read-

ing. After analyzing the task, the teacher will come to know that whether it is the language of the text, or the task which is difficult for the learners or whether the learner's background knowledge is the factor, which influenced the reading ability. This means that both the process and product of reading are affected by the difficulty level, type, organization, genre and language in which the target text is written, by the learner's prior knowledge related to the subject/topic or theme of the text; and by the task itself (Alderson 2000). Thus both the process and product of reading checks the reader's efficiency and ability to read appropriately and reading comprehension may be viewed as a product of the reading process.

The attentions of earlier research and teaching have swung towards the product of reading because of the fact that the process of reading is a highly complex phenomenon and has variations. But then it was realized that variation may occur in product too as different readers have different background knowledge and experience. Meaning does not reside in the text rather it is created by the readers on the basis of their interaction with the text and their own background knowledge (Alderson 2000). This shows that readers' background knowledge and the knowledge of the target language affects the product of reading to a large extent. Now the question arises as to which interpretation/understanding the "product" is to be accepted. To this there are as many explanations as there are approaches. According to post modernists "all products are possible and equally correct, or that none are correct, and that the notion of correctness is inappropriate, or theoretically misguided" (ibid, p.6). Hence "the

problem remains, for researchers, theorists and test constructors alike: how to decide which interpretations are acceptable and which are not?" (ibid, p.6) .Alderson (ibid) has tried to solve this problem by distinguishing between different levels of understanding / interpretation / product of a text. He calls upon the literal understanding as the least difficult product, the more deeper and difficult is to infer the meaning which is not stated directly in the text, and the most difficult is to approach the text critically; then to evaluate and so on. Here, he comes closer to Gray's (1960) concept of reading "the lines"; "between the lines"; and "beyond the lines". So for Alderson (ibid) both process and product are important aspects of reading and he views "reading as a process, or to examine the product of that process" (ibid, p.7)

Concept of Reading Comprehension

"Reading comprehension is defined as the level of understanding of a text/message. This understanding comes from the interaction between the words that are written and how they trigger knowledge outside the text/message."

-   Keith Rayner, Barbara Foorman, Charles Perfetti, David Pesetsky, and Mark Seidenberg (November 2001)

    "Comprehension is a "creative, multifaceted process" dependent upon four language skills: phonology, syntax, semantics, and pragmatics." "It is also determined by an individual's cognitive development, which is "the construction of thought processes". Some people learn through education or instruction and others through direct experiences."

-Tompkins, G.E. (2011)

" Proficient reading depends on the ability to recognize words quickly and effortlessly."

-Adams, Marilyn McCord (1994)

Types of Comprehension Strategies

According to Harvey and Goudvis (2000) there are six main types of comprehension strategies.

1. **Make Connections**—Readers connect the topic or information to what they already know about themselves, about other texts, and about the world.

2. **Ask Questions**—Readers ask themselves questions about the text, their reactions to it, and the author's purpose for writing it.

3. **Visualize**—Readers make the printed word real and concrete by creating a "movie" of the text in their minds.

4. **Determine Text Importance**—Readers (a) distinguish between what's essential versus what's interesting, (b) distinguish between fact and opinion, (c) determine cause-and-effect relationships, (d) compare and contrast ideas or information, (e) discern themes, opinions, or perspectives, (f) pinpoint problems and solutions, (g) name steps in a process, (h) locate information that answers specific questions, or (i) summarize.

5. **Make Inferences**—Readers merge text clues with their prior knowledge and determine answers to questions that lead to conclusions about underlying themes or ideas.

6. **Synthesize**—Readers combine new information with existing knowledge to form original ideas, new lines of thinking, or new creations.

Students quickly grasp how to make connections, ask questions, and visualize. However, they often struggle with the way to identify what is most important in the text, identify clues and evidence to make inferences, and combine information into new thoughts. All these strategies should be modeled in isolation many times so that students get a firm grasp of what the strategy is and how it helps them comprehend text.

Interactive Process of Reading Comprehension

The ability to recognize words rapidly and accurately was then regarded as an important predictor of reading ability chiefly with younger L1 readers as well as for college level students. However, it was felt later that neither the bottom – up nor the top –down approach is sufficiently accountable for the reading process, and hence this resulted in the proposition of the interactive model which incorporates both the bottom –up (lower level) and the top –down (higher level) processing skills of reading. The credit of interactive model goes to Rumelhart (1977). According to Grabe, W. (1991:383) "interactive approaches can refer to two different conceptions,

i) It can refer to the general interaction which takes places between the reader and the text.

ii) …….refers to the interaction of many component skills potentially in simultaneous operation; the interaction of these cognitive skills leads to fluent reading comprehension. "….. reading is interactive; the reader makes use of information from his / her background knowledge as well as information from the printed page. Reading is also interactive in the

sense that many skills work together simultaneously in the process"

In this model every component in the reading process can interact with any other component, be it "higher up" or "lower down" (Alderson 2000:18). The reader uses different kinds of information from multiple knowledge sources which interact simultaneously.

Overall it concludes that reading involves both lower - level rapid automatic identification skills and higher – level comprehension / interpretation skills (Carrel 1988b, 1989a; Eskey and Grabe 1988; Rayner and Pollatsek 1989; Samuels and Kamil 1984; Grabe 1991).

Stanovich (1980) has introduced a model and has named it as an **interactive compensatory model**. In this model readers have an opportunity to compensate their weaknesses in one area by their strength in another area. For example poor/weak orthographic knowledge may be compensated by good / strengthful syntactic knowledge. These models were widely accepted as they gave innumerable range of models and also they "posit an interaction of a variety of processes ...." (Day and Bamford 1998).

Objectives of the study

- To construct reading test and reading comprehension test for standard 1,2,3,4 saperately

- To diagnose present competencies of reading and reading comprehension

- To develop programme for basic reading and reading comprehension skills

- To study the effect of reading – comprehension programme in reference to reading and reading comprehension learning outcomes

- To prepare guideline for basic reading and reading comprehension skills for teachers

- To develop teaching-learning material for reading – comprehension programme

Main Hypotheses

1. There will be no significant difference between the scores on the pre –test of Reading test std. 1,2,3,4 and the scores on the post-test of Reading test std. 1,2,3,4.

2. There will be no significant difference between the scores on the pre –test of Reading test std.1-4 and the scores on the post-test of Reading test std. 1 - 4.

3. There will be no significant difference between the scores on the post –test of Reading test std. 1-4 and the scores on the delayed post test of Reading test std. 1-4.

4. There will be no significant difference between the scores on the pre –test of Comprehension test std. 1,2,3,4 and the scores on the post test of Comprehension test std. 1,2,3,4.

5. There will be no significant difference between the scores on the pre–test of Comprehension test std.1-4 and the scores on the post-test of Comprehension test std.1-4.

6. There will be no significant difference between the scores on the post –test of Comprehension test std.1-4 and the scores on the delayed post test of Comprehension test std. 1-4.

7. There will be no significant difference in the post-test mean scores on Reading Comprehension test in the experimental group in relation to school type and gender.

Variables

1. Independent variables :

   1.1 Remedial programme for basic reading and comprehension skills

2. Dependent variables :

   2.1 Learning outcomes in basic reading and comprehension skills

Research Methodology

This is an experimental study with an integration of quantitative as well as qualitative methods of interpretations.

The one groups pretest-posttest design was accepted for this study. There were a pre-test, treatment and posttest and delayed posttest for the experimental group.

1. **Population**

All the students studying in standard 2-5 in Guajarati medium primary schools of Gandhinagar city was the population of for this study.

2. **Sample**

A group of 30 students studying in Borij government primary school and 29 students studying in Prerana private primary school of Gandhinagar were selected as experimental group. Thus the total sample size was of 59 students. The sample was selected by 'convenient sampling' method. Both the schools are affiliated with Children's University as Vidyaniketan.

Table: 1 Sample size for experimental work

No.	School's Name	Std.-2		Std.-3		Std.-4		Std.-5		Total	
		Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
1	Borij P.school	01	07	02	01	04	05	05	05	12	18
2	Prerana P. school	06	02	06	02	06	00	04	03	22	07
	Total	07	09	08	03	10	05	09	08	34	25
	Total(B+G)	16		11		15		17		59	

3. **Tools for the study**

   <u>Tools for qualitative data :</u>

   3.1 Teacher's diary developed by the researcher

   3.2 Observer's report developed by the researcher

   <u>Tools for statistical data:</u>

   3.3 Reading test developed by the researcher

   3.4 Comprehension test developed by the researcher

4. **Development of Remedial programme for basic reading and comprehension skills**

Reading and review of related books on reading-comprehension skills & Educational methodology and related researches.

Selection of basic components of reading and comprehension based on expert's opinions and books and researches.

Adopted of an activity package for basic

reading and comprehension developed by Chaudhary H. at primary level.

Reformation of an activity package for reading and comprehension at secondary level.

Validation of an activity package for reading and comprehension through experts.

This was developed meticulously and carefully to achieve students basic reading and comprehension skills. It consisted exercises, pair work, group work, collective and individual activities, observation picture reading, discussion and questions, signs identity and make a pair, picture and word game, follow reading technique, word reading, sentence reading, paragraph reading, alphabet reading, word construction, pictures, songs and poems, games, tablet games, synonymous word, questions on sentence, fill the blanks and stories and questions. It was based on the practical aspects of reading and comprehension skills components at conscious cognitive and affective level. The package included print and interesting visual materials. It was validated by experts and a sample testing in the classroom. The programme contained 42 types of activities in total and 25 periods of 90 minutes.

5. Implementation of Remedial programme for basic reading and comprehension skills

The study was conducted under two major parts. First was development of the programme and second was its implementation. The implementation also intended for quality improvement of the programme. The programme was implemented in two primary schools at the same time. So there were two experimental groups. The experimental groups consisted of boys and girls students of standard 2-5. Based on the pre-test of Reading and comprehension, the poor boys and girls in reading and comprehension skills from standard 2-5 were selected as a sample. The implementation started from 12 August 2014 and completed 16 October 2014. The execution of whole programme consumed 40 hours. The programme was implemented by two ladies teacher in both the schools. Both the teachers were worked in two different groups. One group consisted of slow learners and second group was fast ahead in learning. After the implementation of remedial programme, the post-test was conducted on sample. Two month later delayed post-test was also conducted.

6. Data collection

Multiple techniques were used for data collection to catch wider view of the reality. The data collection work was done throughout the study, i.e. before, during and after implementation of programme. Various tools and techniques were used for quantitative and qualitative data collection. They are as under:

1. Teacher's diary - Qualitative data
2. Observer's report - Qualitative data
3. Reading test – Quantitative data
4. Comprehension test –Quantitative data

7. Data analysis and Interpretation

Various descriptive techniques were used for logical analysis and interpretation of Qualitative data. Moreover verbal and non verbal expressions were taken in to consideration for interpretation. The following techniques were used for data analysis.

Techniques for qualitative data analysis :

Language analysis

Content analysis

Analysis of likes and dislikes

Non verbal expression i.e. gestures, body expression, face expression

Techniques for quantitative data analysis :

The hypotheses were tested with the help of the t-test.

Table-2 Effect of Reading –comprehension remedial Programme on scores of Reading test in different level in experimental group

Std.	Test	N	score	Mean	Std. deviation	Df	Co-relation	T-value
1	pre-test	16	21	7.56	3.14	1.39	0.86	4.40**
	post-test	16	21	13.68	8.04			
2	pre-test	11	20	0	0	1.90	0	3.33**
	post-test	11	20	6.36	6.32			
3	pre-test	15	15	3.06	3.41	0.65	0.71	8.20**
	post-test	15	15	8.46	3.04			
4	pre-test	17	15	0.41	1.17	0.60	0.27	9.11**
	post-test	17	15	5.88	2.52			
1-4	pre-test	59	71	2.94	3.89	0.55	0.72	10.43**
	post-test	59	71	8.74	6.15			
1-4	post-test	59	71	8.74	6.15	0.72	0.77	0.08
	de. post-test	54	71	8.68	5.24			

** 0.01 level significant

Table-2 suggested that obtained T-value of std. 1,2,3,4 and 1-4 is significant at 0.01 level. The mean of post-test is higher than the mean of pre-test. There is no significant difference between the mean of post-test and the mean of delayed post test. It shows that the effect of Reading-comprehension programme remains for long time. It means it is sustainable development about reading skills.

Table-3 Effect of Reading –comprehension remedial Programme on scores of Comprehension test in different level in experimental group

Std.	Test	N	score	Mean	Std. deviation	Df	Co-relation	T-value
1	pre-test	16	15	0.25	0.77	1.11	0.27	5.41**
	post-test	16	15	6.31	4.62			
2	pre-test	11	17	2.09	2.21	0.95	0.37	1.92**
	post-test	11	17	5.45	3.23			
3	pre-test	15	20	3.73	3.86	1.78	-0.10	2.65**
	post-test	15	20	8.46	5.13			
4	pre-test	17	22	2.64	3.46	1.12	0.05	5.22**
	post-test	17	22	8.52	3.29			
1-4	pre-test	59	74	2.16	3.10	0.64	0.12	8.01**
	post-test	59	74	7.30	4.24			
1-4	post-test	59	74	7.30	4.24	0.65	0.32	2.99**
	de.post-test	54	74	5.35	4.25			

** 0.01 level significant

Table-3 suggested that obtained T-value of std. 1,3,4 and 1-4 is significant at 0.01 level. The mean of post-test is higher than the mean of pre-test. There is no significant difference between the mean of pre-test and the mean of post test of std. 2. It shows that the effect of Reading-comprehension programme on std.2 is no more. It should be improved for std. 2. There is significant difference between the mean of post-test and the mean of delayed post test of std. 1-4. The mean of post-test is higher than the mean of delayed post-test of std. 1-4. It shows that the effect of Reading-comprehension programme is no more for a long time. It means the activities of comprehension should be improved.

Table-4 Effect of Reading –comprehension remedial Programme in reference to school type and gender

Variables	Test	N	Mean	Std. deviation	Df	Co-relation	T-value
School Type	Gov.	30	17.4	8.27	2.48	-0.23	1.10
	Private	29	14.65	8.89			
gender	Boys	34	14.21	8.44	2.18	0.02	1.98*
	Girls	25	18.56	8.36			

* 0.05 level significant

Table-4 suggested that obtained T-value of school type is not significant. It means Reading-comprehension programme works on both the type of school government as well as private school is same. There is significant difference between the mean of Boys and the mean of Girls. It shows that the effect of Reading-comprehension programme is more on girls than boys.

Findings of the study

Findings on the bases of statistical data analysis

1. Reading-Comprehension remedial programme is effective for attaining learning outcomes in basic reading from initial level up to class IV and sustainable too.

2. Reading-Comprehension remedial programme is effective for attaining learning outcomes in basic reading-comprehension from initial level up to class IV. The sustainable development comprehension activities should required more practice.

3. There was no significant difference between the post-test mean scores of government school and private school. Reading-Comprehension remedial programme works on both types of schools with the same intensity.

4. There was significant difference between the post-test means' scores of Boys and Girls. The post-test means' scores of Girls is higher than that of boys. Reading-Comprehension remedial programme works more on Girls than Boys.

Findings on the bases of qualitative data analysis

1. It can be said on the basis of the teachers' note that the Reading-Comprehension remedial programme is very effective on students of standard 2-5.

2. Students like most of activities of Reading-Comprehension remedial programme. Students had a very positive feedback on majority of tasks. Students' reading interest grows up.

3. It can be said on the basis of the teachers' note that the method of learning – reading and comprehension during the programme was very good.

4. Students were doing good reading through follow/further reading.

5. Different physical-mentally typical students can also achieved learning outcomes of reading and comprehension through this programme.

6. Reading and Comprehension related unexpected result was found in students through different techniques of programme.

7. Continuous practice and revision became helpful in learning at initial level

8. It can be said on the basis of the teachers note that teachers also felt happiness during the teaching-learning process because of interesting and varieties of activities of the Reading-Comprehension programme and their different abilities were also developed.

9. Students learnt without fear and happily due to free classroom atmosphere and students teachers relation became soulful.

10. Students could learn better in peer and group learning.

11. Students felt difficulty in acquaintance and utterance of similar type of alphabets and complex words, fill in the blanks in sentences, sentence construction, sign pictures and some activities of comprehension.

Conclusion

Reading and Reading comprehension skills are very important skills during entire education and whole life. The present study has tried to strengthen these skills centering upon the initial level up to standard IV's students of Gandhinagar city. On the basis of these findings and its analysis we can say that reading and reading comprehension skills can be developed through

this remedial programme from very beginning stage of formal education in language weaker students also. Moreover the study also suggested that different teaching – learning techniques should be developed for reading and reading comprehension skills and they should be applied in classroom teaching.

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THE EFFECT OF PREGNANT WOMEN'S INVOLVEMENT IN TAPOVAN RESEARCH CENTER ACTIVITY AND EDUCATION ON HER MENTAL HEALTH

Ashok N. Prajapati[*]

Assistant professor, Center of Research, Children's University, Gandhinagar, Gujarat, India.
Email: anprajapati84@gmail.com

ABSTRACT

The purpose of this research is to investigate some of the factors affecting on mental hygiene of the pregnant women. Null Hypothesis was framed regarding the pregnant women from the involved and not involved point of view of Tapovan research center activity and from educational point of view regarding below and above graduation. A random sample method was used to select 120 pregnant women's from north and middle Gujarat. Collection of data was carried out with the help of mental hygiene inventory, which contains personal data sheet and mental hygiene inventory for pregnant women. For analysis of data 't' test was used. Results revealed that significant difference was found whenever pregnant women involved in Tapovan research center activities. On the contrary no significant difference was found with respect to education.
Key-words: *Pregnant Women, Involvement, Education and Mental Health*
* Author for correspondence

INTRODUCTION

In the past the significance of 'health' was only 'the physical health'. But the concern of physical health is not unlike from the mental hygiene. Even the medical science has accepted that mental factors are more or less responsible for every type of physical illness. If one has to bring about the complete answer to the physical health, he has to plan each activity keeping in view the decisive factors of the mental health. The term "mental hygiene" includes the totality of the health of the society.

The concept of mental health and adjustment are closely related. A person who possesses sound mental health may be said to be an adjusted person. Mental hygiene is a branch of science which deals with the mental health of the individuals. Clifford

Beers started the movement of mental hygiene in the first decade of the 20th century with the publication of A Mind That found itself (1908). His book revolutionized the concept of mental health.

For the last several years, the concept of mental health has been accepted at the global level. Approximately all the countries of the world have accepted the importance of the mental hygiene and the many institutions related the mental health have been established in America and the European countries. The mental health of the person is the relative state rising from the context of the social milieu he has got and his abilities. Since of this, the mental health is not an invaluable ideal, but the 'real state' which can be evaluated in the particular context.

Definition of Mental Health

The WHO defines mental health as "a state of well being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community". It was previously stated that there was no one "official" definition of mental health. Cultural differences, subjective assessments, and competing professional theories all affect how "mental health" is defined.

In line with E G Boring, "The aim of mental hygiene is to aid people to achieve more satisfying and more productive life through the prevention of anxieties and maladjustments."

Menninger (1945) defined "mental health as the adjustment of human beings to each other and to the world around them with a maximum of effectiveness and happiness".

In the words of D B Klein, "Mental hygiene as its name suggests is concerned with the realization and maintenance of the mind's health and efficiency"

Kaplan and Sadock (1993) define mental health as: "a condition of well-being and the feeling in person when can come to terms with society and personal situation and social features are satisfying for him/her"

Mental health is as important as physical health to everyone. A good mental health is necessary for leading a good life. One cannot succeed in one's life efficiently if he/she is suffering from stresses and strains and is struggling with mental health problems such as depression or unsteady feeling due to academic, social or family pressures, with poor mental health one loss overall effectiveness (Negi,

2010). Mental health is a balance between all aspect of life- social, physical, mental, spiritual and emotional aspect of a person. It imparts on how we manage our surroundings and make choices in our lives – clearly. It is an integral part of our overall health (Negi, 2010).

The theoretical viewpoint on social support research indicates that the availability of social support contributes to overall wellbeing (Lakey & Cohen, 2000). Myers, Sweeney and Witmer (2000) projected a wheel of wellness to accommodate the developmental dimension in a wellness model. The model proposed five life tasks, depicted in a wheel, which are interrelated and interconnected. Those five tasks were essence or spirituality, work and leisure, friendship, love, and self direction. The life task of self direction were further subdivided into the 12 tasks of (i) sense of worth, (ii) sense of control, (iii) realistic beliefs, (iv) emotional awareness and coping, (v) problem solving and creativity, (vi) sense of humor, (vii) nutrition, (viii) exercise, (ix) self care, (x) stress management, (xi) gender identity, and (xii) cultural identity. These life tasks interrelate dynamically with a diversity of life forces, including but not limited to one's family, community, religion, education, government, media, and business/industry.

Characteristics of Mental Health (johada, 1958)

Dissimilar theoreticians have recommended a multitude of criteria for defining mental health. A swift overview of related literature makes to say Johoda (1958) as most broad among them. She summarizes a set of criteria in current use are given below:

1. Attitude towards the self
2. Self-actualization
3. Integration
4. Autonomy
5. Perception of reality, and
6. Environmental mastery

Tapovan research centre

Pre-natal education is a part of cultural way of life in Indian tradition. It is necessary that the education of a child's excellence begins from its conception and continues all through the life. During pregnancy the child is affected by the physical, psychological and spiritual well-being of the mother. We need to authenticate this knowledge through a series of researches. Children's University has taken initiative with the help of a two-dimensional concept of TAPOVAN RESEARCH CENTRE. These two dimensions are: (1) Researches in the eugenics and (2) Guidance and education of pregnant mothers for giving birth to the best of the children.

Concept of Tapovan Research Centre

I. It is a centre of researches in eugenics.

II. Incredible centre for educating pregnant women; it has a beautiful garden and other facilities.

III. A unique place for nurturing best progeny for transforming the society

IV. A centre of development and implementation of profound and the best practices in Garbh-sanskar and Garbh-vignan

V. A centre for the harmony of family and the expecting mothers

A research-centre for studying the developmental progresses of a child in the womb and the expecting mother's physiological, psychological and affective development.

Activities of Tapovana Research Center

1. Pranayam/Yoga	9. Showing Film/ Video
2. Prayer	10. Prakrtivihar
3. Meditation	11. Sanskrit Reading
4. Garbhasamvad	12. Personal Counseling
5. Art skills/ Paintings	13. Group Counseling
6. Games–Intellectual/ Physical	14. Mathematical Puzzles
7. Music	15. Development of Elocution
8. Reading/Discussion	16. Storytelling

Presented research was carried with the intention of checking impact of Tapovan research center's activities on pregnant women's mental health.

Objective of this Study

The main objectives of study were as under:

1. To study the mental health of pregnant women with respect to her involvement in activities carried out by Tapovan research center.

2. To study the mental health of pregnant women with respect to their education.

3. To measure the mental health of above graduate and below graduate pregnant women with respect to her involvement in Tapovan research center activities.

Hypothesis of This Study

1. There is no significant difference between score of mental health of involved and not involved pregnant woman in Tapovan research center's activities.

2. There is no significant difference between score of mental health of below and above graduate pregnant woman in Tapovan research center's activities.

3. There is no significant difference between score of mental health of below and above graduate pregnant woman with respect to their involvement in Tapovan research center's activities.

4. There is no significant difference between score of mental health of below and above graduate pregnant woman who were not involved in Tapovan research center's activities.

5. There is no significant difference between score of mental health of involved and not involved pregnant woman with respect to their above graduation in Tapovan research center's activities.

6. There is no significant difference between score of mental health of involved and not involved pregnant woman with respect to their below graduation in Tapovan research center's activities.

Variables

The following variables were treated as independent and dependent variable:

(1) Independent Variables:

   (I)   Education Level-Below & Above Graduate

   (II) Involvement of Tapovan Activities - Involvement & Not Involvement

(2) Dependent Variables: Score achieved on Mental Hygiene Inventory

Research design

2*2 Factorial Design:

	A		
B	**A1**	**A2**	**Total**
B1	A1B1 (30)	A2B1 (30)	60
B2	A1B2 (30)	A2B2 (30)	60
Total	60	60	120

A1 = Sample of Pregnant women who were participating in Tapovan research center activities

A2 = Sample of Pregnant women who were not participating in Tapovan research center activities

B1 = Sample of Pregnant women who were of below graduate

B2 = Sample of Pregnant women who were of above graduate

Research Sample

According to the purpose of present study all the pregnant women of North Gujarat and Middle Gujarat were constituted as population for the present study. Total 120 pregnant women were randomly selected as a sample from Gandhinagar and Mehsana district. Out of these 120 pregnant women 60 pregnant women were randomly selected who were participating in Tapovan Research Center activities and 60 who were not participating in Tapovan Research Center activities. Out of these 60 pregnant women in both category randomly 30 pregnant women who were below graduate and 30 were above graduate were selected as a sample.

Tools

Following standardized tools will be used for collecting the data.

(1) Personal Data Sheet:

A personal data sheet developed by investigator was used to collect information about types of family, education, income per month and participating in Tapovan research center activities.

(1) Mental Hygiene Inventory :

The mental hygiene Inventory was made by Dr. D. J. Bhatt and Ms. Geeta R. Geeda. This scale contains 40 statements pertaining to five domains aim of mental health, these five dimensions include perception of reality, integration of personality, positive self evaluation, group oriented attitudes and environmental mastery to be rated a 3-point scale. In this scale statements no. 1, 3, 9, 14, 19, 20, 22, 24, 25, 26, 28, 33, 34, 35, 37, 38 are negative and others are positive. Which statements are positive and for agree, disagree, neutral 3, 2, 1 score is used and which are negative statements for agree, disagree, natural 2, 3, 1 score is used. Reliability of present study is checked by three methods in which 0.81 by logical similarity 0.94 by half-divided method, and test, re-test has 0.87 and validity is 0.63 established by the author.

Procedure

In this research test were administrated to 120 pregnant women to study the various hypotheses. Before attempting the questionnaire the subjects were requested to read the instruction carefully and follow them in true spirits. After collecting data 't' test was used to check the significant difference.

Result and Discussion

Ho.1 There is no significant difference between score of mental health of involved and not involved pregnant woman in Tapovan research center's activitie

Table:1 Result of Mean Scores of regarding involvement of pregnant women in Tapovan Research Center Activity.

Particular	N	M	SD	't'	Significant
Involved	60	101.55	8.17	5.47	0.01
Not Involved	60	92.00	9.60		

- Significant level of 'T' value
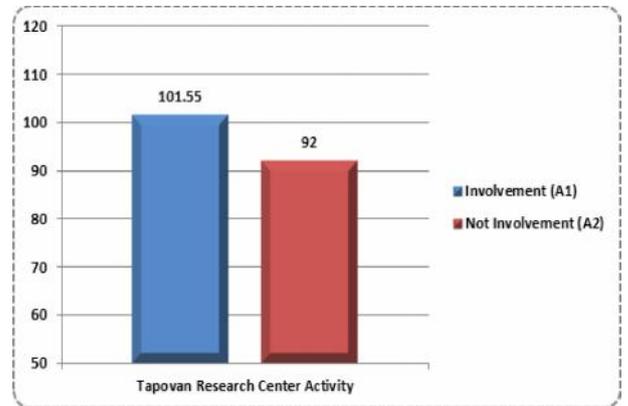- 0.05 level 1.98
- 0.01 level 2.62

Fig:1 Bar Chart of Mean Scores of regarding involvement of pregnant women in Tapovan Research Center Activity.

It is observed that the mean scores in Table No.01 and Graph No: 1 reveled that pregnant women who were involved in the Tapovan research center activities acquire more score (M=101.55) than the not involved (M=92.00) on mental health inventory.

To test the hypothesis t test has been calculated. The value of the t ratio between mean score of mental health of pregnant women who are involved in Tapovan research center and not involved in Tapovan research center is 5.47, which is significant at 0.01 level of significances. It means that hypothesis has been rejected. From the mean score it has been

seen that the mental health of the pregnant women who are involved in the Tapovan research center is significantly higher than the women who are not involved.

Ho.2 There is no significant difference between score of mental health of below and above graduate pregnant woman in Tapovan research center's activities.

Table:2 Mean Scores on Mental Health with regard to Education.

Particular	N	M	SD	't'	Significant
Below Graduate	60	97.37	9.06	0.67	NS
Above Graduate	60	96.18	11.07		

- Significant level of 'T' value
- ➢ 0.05 level 1.98
- ➢ 0.01 level 2.62

It could be seen the mean scores in Table No. 02 that the below graduate exhibit more mental health (M=97.37) than above graduate (M=96.18). For testing the significance of difference, t test has been calculated. The t value is 0.67 which is not significant. It revel that null hypothesis no. 2 is accepted.

Ho.3 There is no significant difference between score of mental health of below and above graduate pregnant woman with respect to their involvement in Tapovan research center's activities.

Table:3 Mean Scores on Mental Health with regard to Education and their involvement in Tapovan research center activities

Particular	N	M	SD	't'	Significant
Below Graduate	30	102.23	6.11	0.56	NS
Above Graduate	30	100.87	9.87		

- Significant level of 'T' value
- ➢ 0.05 level 2.00
- ➢ 0.01 level 2.66

It could be seen the mean scores in Table No. 02 that the below graduate exhibit more mental health (M=102.23) than above graduate (M=100.87). For testing hypothesis t test has been calculated. The t value is 0.56 which is not significant. It proves that null hypothesis no. 3 is accepted.

Ho.4 There is no significant difference between score of mental health of below and above graduate pregnant woman who were not involved in Tapovan research center's activities.

Table:4 Mean Scores on Mental Health with regard to Education and their involvement in Tapovan research center activities

Particular	N	M	SD	't'	Significant
Below Graduate	30	92.50	8.98	3.38	NS
Above Graduate	30	91.50	10.31		

- Significant level of 'T' value
- ➢ 0.05 level 2.00
- ➢ 0.01 level 2.66

It could be seen the mean scores in Table No. 02 that the below graduate exhibit more mental health (M=92.50) than above graduate (M=91.50). For testing hypothesis t test has been calculated. The t value is 0.38 which is not significant. It proves that null hypothesis no. 4 is accepted.

Ho.5 There is no significant difference between score of mental health of involved and not involved pregnant woman with respect to their above graduation in Tapovan research center's activities.

Table:5 Mean Scores on Mental Health with regard to below graduation and involvement in Tapovan research center activities.

Particular	N	M	SD	't'	Significant
Below Graduate	30	102.23	6.11	4.17	0.01
Above Graduate	30	92.50	8.98		

- Significant level of 'T' value
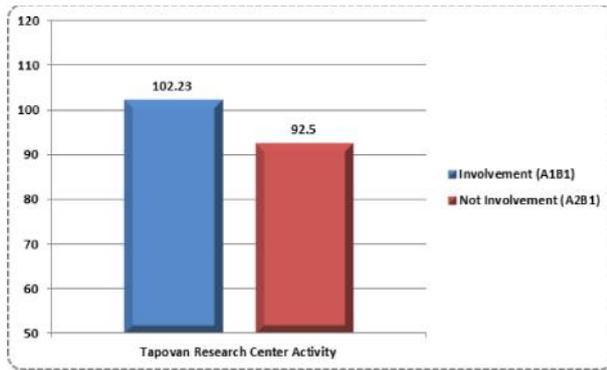- ➢ 0.05 level 2.00
- ➢ 0.01 level 2.66

Fig:2 Bar Chart of Mean Score on Mental Health in Relation to Involvement of Tapovan research center activities and below graduation.

It is observed that the mean scores in Table No.05 and Chart No: 2 that the mean score of mental health of below graduate pregnant women who are involved in Tapovan research center activities is more (M=102.23) than not involvement (M=92.50). Table No. 05 reveals that the difference between mean scores of two groups is significant at 0.01 level (t=4.17); therefore null hypothesis No.5 is rejected.

Ho.6 There is no significant difference between score of mental health of involved and not involved pregnant woman with respect to their below graduation in Tapovan research center's activities.

Table:6 Mean Scores on Mental Health with regard to above graduation and their involvement in Tapovan research center activities.

Particular	N	M	SD	't'	Significant
Involved	30	100.87	9.87	3.55	0.01
Not Involved	30	91.50	10.37		

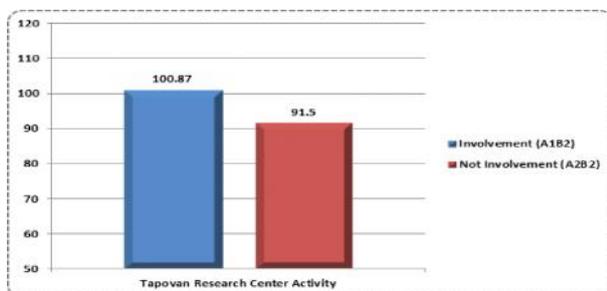- Significant level of 'T' value

Fig:3 Bar Chart of Mean Score on Mental Health in Relation to their education (Above Graduation) and their Involvement in Tapovan research center activitie

➢ 0.05 level 2.00
➢ 0.01 level 2.66

It is observed that the mean scores in Table No.06 and Chart No: 2 that the mean score of mental health of above graduate pregnant women who are involved in Tapovan research center activities is more (M=100.87) than not involvement (M=91.50). Table No. 06 reveals that the difference between mean scores of two groups is significant at 0.01 level (t=3.55); therefore null hypothesis No.6 is rejected.

Conclusion

1. Pregnant women who were involved in activities which were carried out by Tapovan research center whose mental health was better than pregnant women who were not involved in it. It means that the activities are carried out by Tapovan research center was effective for mental health.

2. No significant difference was found between below and above graduate pregnant women's mental health. So that it was concluded that educational qualification has no impact on mention health.

3. No significant difference was found between below and above graduate pregnant women's who involved in activities which were carried out by Tapovan research center. So there was no effect of educational qualification on pregnant women's mental health who was involved in activities which were carried out by Tapovan research center.

4. There was no significant difference between below and above graduate pregnant women's who were not involved in activities which were

carried out by Tapovan research center. So there was no effect of educational qualification on pregnant women's mental health who was not involved in activities which were carried out by Tapovan research center.

5. Significant difference was found between involved and not involved pregnant. Women's those who were below graduate qualification and participating in Tapovan research center were higher in mental health.

6. Pregnant women who were involved and had above graduate qualification and participating activities which were carried out by Tapovan research center whose mental health was better than pregnant women who were not involved in it. It means that the activities are carried out by Tapovan research center was effective for mental health.

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SOCIAL SKILLS OF ADOLESCENT OF GANDHINAGAR DISTRICT

Nilesh Pandya[*]

Assistant Professor, Children's University, Gandhinagar
Email: shrinile1976@gmail.com

ABSTRACT
Human beings are inherently social. Developing competencies in this domain enhance a person's ability to succeed in life as well as positively influence mental health, increase perfromance level at work place, and help one become a good citizen most suited for the democracratic society. This paper discusses the relation of social skills of adolescents in the context of gender, intelligence, area, level of education and their physiological problems. The results revealed that there was a significant difference of mean score of social skills inventory in relation to gender, IQ, level of education of parents and level of psychological problems. Whereas there was no significant difference in relation to the area. Further, the results show negative correlation between level of social skills and intensity of psychological problems. It suggests that socially competent adolescents have less psychological problems.
Keywords: Social skills, psychological problems
* Author for correspondence

INTRODUCTION

Adolescence is a period of transition when the individual changes- physically and psychologically- from a child to an adult. It is a period when rapid physiological and psychological changes demand for new social roles to take place. The adolescents, due to these changes often face a number of crises and dilemmas. It is the period when the child moves from dependency to autonomy. It demands significant adjustment to the physical and social changes. The adolescence period in the Indian social system comes under Brahmacharya (apprenticeship).This is the first ashram (stage of life) of development stages. In this stage, the child learns the basic skills in relation to his future role as a responsible adult. It is a fact that all living beings pass through specific stages or phases of development. Erikson believed that each stage of life is marked by a specific crisis or conflict between competing tendencies. Only if

individuals negotiate each of these hurdles successfully they can develop in a normal and healthy manner. During this phase adolescents must integrate various roles into a consistent self- identity. If they fail to do so, they may experience confusion over who they are.

The students feel difficult to cope up with such changes. So many questions arise in their minds. Unanswered questions produce mental conflict. The behavior of students has been adversely affected by this mental conflict. To provide necessary guidance for their behavioral problems, it is essential to understand the root causes of this situation. Due to ignorance and misinterpretation of such behavioral problems, it interrupts social and family harmony. This situation became painful, for parents and students as well. To understand the causes and factors affecting this problem we have to analyze various situations which are responsible

for it. With the help of such remedies found through scientific inquiry, we can help adolescent students.

Significance of Study

Children's University is concerned with holistic development of children from womb to 18 years. The area of research coveres a very wide spectrum. It includes formal and informal education. It covere prenatal education, pre-primary, primary, secondary and higher secondary education. The various projects related to parenting and extension services will be greatly supported by this type of researches. With the help of such need based research studies the university can prepare its future roadmap for holistic development of children. This is the primary study in this direction. On the basis of this study major extensive research work will be planned in future. So the study is closely concerned with functions of Children's University.

The main objective of this study was to find out the Psychological problems and social skill of adolescent students in the context of area, gender, IQ and level of education of their parents. The psychological problems pertained to various factors which are closely related to each others. The analysis of this interrelation we can find the thrust area of problems. This diagnosis can help parents and academicians to handle behavioral problems of students of this age group. This stage of age is very crucial for every individual. This stage can decide the future direction of development. At this stage proper diagnosis and remedial guidance- counselling can help them to shape up their life in a positive direction. The pattern of problems and its

interrelation help us to find out real and basic causes for society and family related issues. This study can help the parents and teachers in dealing with student of this age group. In this study the psychological problems and social skill of adolescent students are analyzed in relation to area, IQ, gender and level of education of parents so it will help to customize the guidance and counseling program according to variables.

Theoretical Background

Meaning of importance of Adolescence

Adolescence means, "To emerge" or "achieve" identity. This is a relatively new concept, especially in development thinking. Adolescence is a developmental transition between childhood and adulthood. It is generally considered to begin at about age ten and to end in; the late teens i.e.10-19 years as per the WHO guidelines.

There are two most important factors for studying adolescents. This is the period of growth spurt where maximum changes can be observed in an individual as compared to the other phases of life and as stated by Barbarian and Ganja (2000) a group of adolescents is a distinct group with their own unique needs and concerns. The increase in attention towards adolescents is due to the recognition of this group as a significant proportion of the total population and also as the future leaders and guardians of the nation's development. The first factor in understanding and studying adolescents is the rapid changes that occur during this period and the influence that have on the growth and development of adolescents. This stage of life is

called 26 critical period and also as the stage of growth spurt. Adolescence is also an emotional and social process and so it is said, adolescence begins in biology and ends in culture."(Conger and Peterson 1984) The storm and stress often associated with the teenage years have been called adolescent rebellion-rebellion that may encompass not only conflict within the family but a general alienation from adult society and hostility towards the values.

Concept and Importance of Social skills

The domain of social intelligence and development is a critical component of descriptions of human ability and behavior (Albrecht, 2006; Gardner, 1983/1993, 2006). Social skills are important for preparing young people to mature and succeed in their adult roles within the family, workplace, and community. Those involved in guiding children and youth should pay special attention to this domain: social skills allow people to succeed not only in their social lives, but also in their academic, personal, and future professional activities. For educators, it is increasingly obvious that learning is ultimately a social process (Bandura, 1986; Dewey, 1916; Vygotsky, 1978). While people may initially learn something independently, eventually that learning will be modified in interaction with others.

Bierman (2004) defined social skill as the "capacity to coordinate adaptive responses flexibly to various interpersonal demands, and to organize social behavior in different social contexts in a manner beneficial to oneself and consistent with social conventions and morals" (p. 141). Broderick and Blewitt (2010) identified four categories of foundational social competencies as below :

1. Affective processes (including empathy, valuing relationships, and sense of belonging)

2. Cognitive processes (including cognitive ability, perspective taking, and making moral judgments)

3. Social skills (including making eye contact, using appropriate language, and asking appropriate questions)

4. high social self-concept.

The Collaborative for Academic, Social, and Emotional Learning (CASEL, 2003, 2007), one of the leaders in the development of social-emotional learning (SEL), identified five teachable competencies that they believe provide a foundation for effective personal development:

1. **Self-awareness:** knowing what one is feeling and thinking; having a realistic assessment of one's own abilities and a well-grounded sense of self-confidence

2. **Social awareness:** understanding what others are feeling and thinking; appreciating and interacting positively with diverse groups.

3. **Self-management:** handling one's emotions so they facilitate rather than interfere with task achievement; setting and accomplishing goals; persevering in the face of setbacks and frustration.

4. **Relationship skills:** establishing and maintaining healthy and rewarding relationships based on clear communication, cooperation, resistance to inappropriate social pressure, negotiating solutions to conflict, and seeking help when needed.

5. **Responsible decision making:** making choices based on an accurate consideration of all relevant factors and the likely consequences of alternative courses of action, respecting others, and taking responsibility for one's decisions.

Further another classification of Social skills can be described as follows (2002, Child Trends: Washington, D.C.)

Interpersonal Skills

Conflict Resolution

Intimacy

Prosocial Behaviors

Individual Attributes

Self-Control and Behavior Regulation

Social Confidenc

Empathy

Based on the discussion above, a comprehensive definition of social competence would include a person's knowledge, attitudes, and skills related to at least six components:

1. Being aware of one's own and others' emotions

2. Managing impulses and behaving appropriately

3. Communicating effectively

4. Forming healthy and meaningful relationships

5. Working well with others

6. resolving conflict

Research Evidences related to Social Development

Researchers have been studying the connection between social development and academic achievement for decades and have come to a startling conclusion: the single best predictor of adult adaptation is not academic achievement or intelligence, but rather the ability of the child to get along with other children (Hartup, 1992). Additionally, Wentzel (1993) found that prosocial and antisocial behavior are significantly related to grade point average and standardized test scores, as well as teachers' preferences for the student. These studies indicate that a socially adjusted child is more likely to be the academically successful child. As an explanation for why social development is important to the academic learning process, Caprara, Barbanelli, Pastorelli, Bandura and Zimbardo (2000) noted that aggression and other maladaptive behaviors detract from academic success by 'undermining academic pursuits and creating socially alienating conditions' for the aggressive child. Studies show also that if children are delayed in social development in early childhood they are more likely to be at-risk for maladaptive behaviors such as antisocial behavior, criminality, and drug use later in life (Greer-Chase, Rhodes, & Kellam, 2002). In fact, Kazdin (1985) noted that the correlations between preschool-aged aggression and aggression at age 10 is higher than the correlation between IQ and aggression. Studies done with students at the ages of middle childhood and adolescence support the notion that those social skills acquired in early education are related to social skills and academic performance throughout school-aged years. One such longitudinal study done with third- and fourth-grade students found that social skills were predictive of both current and future academic performance (Malecki & Elliot, 2002). Mitchell and

Elias (as cited in Elias, Zins, Graczyk, & Weissberg, 2003) found similar results; they showed that academic achievement in the third grade was most strongly related to social competence, rather than academic achievement, in the second grade. Similarly, Capara, Barbanelli, Pastorelli, Bandura, and Zimbardo (2000) found that changes in achievement in the eighth grade could be predicted from gauging children's social competence in third grade. These findings support the view that a broad focus on social and emotional development promotes academic achievement throughout middle and high school. A study completed by Herbert-Myers, Guttentag, Swank, Smith, and Landry (2006) provided a glimpse into the complexity and multidimensionality of developing social competence. They found that "social connectedness, compliance, and noncompliance with peer requests were predicted by concurrent language skills, whereas concurrent impulsivity and inattentiveness were important for understanding frustration tolerance/flexibility with peers" (p. 174). They also found that language and skills used in toy play at age three were directly related to language competence and attention skills at age eight. Their conclusion was that early social and language skills influenced later social competence through both direct and indirect means.

Related to the problems that affect youths and which are presented, sometimes as causes, sometimes as consequences, or as both, are the so-called psychological disorders, many of which are clearly associated with behavioral problems that start in childhood (Patterson & Yoerger, 2002)

A good repertoire of social skills has also been included among protective factors against psychological disorders and problems (Campos, Del Prette & Del Prette, 2000; Del Prette & Del Prette, 2002, 2005; Gresham, 2009; Walker & Severson, 2002). This repertoire is important because it also favors the other protective factors, for example, participating in extracurricular activities, improving self-esteem, making friends, and even scholastic achievement. On the other hand, deficits in social skills are acknowledged to be correlated with a wide range of psychological disorders and different types of psycho-social maladjustment (Walker & Severson, 2002).

Discussion on above researches can lead our attention towards the fact that the social competences are basic requirement for not only adaptation of adult with society but also for academic achievement. In the present study the researcher has tried to find out social skill of adolescents in relation to gender, intelligence, area, gender and level of education of their parents. On the basis of its finding further research can be done on case studies of particular adolescent student having low social skills and low achievement in light of his early childhood.

Objectives

1. To study the social skill of adolescent students in relation to Gender, IQ, area, Level of Education of parents.

2. To find out the correlation between psychological problems and social skills of the adolescents.

Variables

Independent Variables

1. Gender	Male and Female	
2. Intelligence	Male	High - More than 90
		Low - Less than 90
	Female	High - More than 120
		Medium-Between 90 to 120
		Low - Less than 90
3. Area	Urban and Rural	
4. Level of Education of Parents	High - More than graduate	
	Low - Less than graduate	
5. Psychological Problem Index	High Psychological problems	
	Low Psychological problems	

Dependent Variables

1. Social skill

Hypothesis

1. There will be no significant difference between mean scores of Social Skill of female and male adolescents.

2. There will be no significant difference between mean scores of Social Skill of male adolescents having low IQ and high IQ.

3. There will be no significant difference between mean scores of Social Skill of female adolescents having low and medium IQ.

4. There will be no significant difference between mean scores of Social Skill of female adolescents having low and high IQ.

5. There will be no significant difference between mean scores of Social Skill of female adolescents having medium and high IQ.

6. There will be no significant difference between mean scores of Social Skill of rural and urban adolescents.

7. There will be no significant difference between mean scores of Social Skill of adolescents who have low and high level of education of parents.

8. There will be no significant difference between mean scores of Social Skill of adolescents who have low and high level of psychological problems.

9. There will be relationship between psychological problem and social skills of adolescents.

Research Method

The present study was survey. In this study the students of Gandhinagar district was covered.

Population

In present study students of the Gandhinagar district having age between 15 to 17 years was population of study.

Sample

In this study student of five school was covered as sample. The five schools were selected through randomised sampling method. All students who were studying in class XI and XII were selected for sample. The table no : shows the sample of this study

Table:1 Sample of the study

Boys	Girls	Total
19	21	40
16	18	34
26	26	52
33	17	50
13	9	22
107	**91**	**198**

Tools for the study

The following tools were used for data collection

1. Social Skill Inventory

3. Desai- Bhatt Group Intelligence test

4. General Information sheet

Delimitation of the Study

1. The present study was undertaken as a pilot study for major research project so the sample was limited. The study covered only adolescents of Gandhinagar district. On the basis of the findings of the present study further research work will be undertaken.

2. The tool used for data collection of Social skills Inventory was not standardized.

Data Collection

The students of selected five schools were given tools for data collection, personally by a researcher. The students were instructed and given proper time to give their responses.

Analysis and Interpretation of data

The students were instructed to respond Social skill inventory in five point rating scale i. e. Always, Many times, Not Sure, Sometimes and Never. The inventory contains 60 statements in which 32 statements were positive and 28 statements were negative. The scoring was done as per 4,3,2,1,0 for positive statement and 0,1,2,3,4 for negative statements.

The data collected was entered in excel sheet of a computer. The analysis was done through an excel program of a computer. To test null hypothesis T-test was calculated.

Table:2 Comparison of Social Skill in relation to Gender

Variable	No	Mean	SD	SED	T-Value	Significance
Female	92	164.73	15.76	2.82	6.53	S
Male	107	146.30	23.72			

Data Analysis

Table No-2 reveals that the average mean score of Social Skill in relation to female and male adolescents was 164.73 and 146.30 respectively. The SD of female and male adolescents was 15.76 and 23.72 respectively. T-value was 6.53 which shows significant difference in mean scores at 0.01 level.

Thus, the null hypothesis "There will be no significant difference between mean scores of Social Skill of adolescents in relation to gender." was not accepted.

Table:3 Comparison of Social Skill of boys in relation to IQ

Variable	No	Mean	SD	SED	T-Value	Significance
Less then 90	43	140.12	20.93	4.15	3.09	S
More then 90	6l	152.93	20.75			

Table No-3 reveals that the average mean score of social skill in relation to low IQ and High IQ male Adolescents was 140.12 and 152.93 respectively. The SD of male adolescents was 20.93 and 20.75 respectively. T-value was 3.09 which shown significant difference in mean scores at 0.01 level.

Thus, the null hypothesis, "There will be no significant difference between mean scores of Social Skill of adolescent male students in relation to IQ," was not accepted.

Table:4 Comparison of Social Skill of girls in relation to IQ

Variable	No	Mean	SD	SED	T-Value	Significance
Less then 90	19	160.79	14.94	3.93	0.82	NS
Between 90 to 120	63	164.01	15.31			

Table No-4 reveals that the average mean score of Social skill in raltion to low IQ and medium IQ female adolescents was 160.79 and 164.01 respectively. The SD of female adolescents was 14.94 and 15.31 respectively. T-value was 0.82 which shows no significant difference in mean scores. Thus, the null hypothesis "There will be no significant difference between mean scores of Social Skill of adolescent female students having low and medium IQ," was accepted.

Table:5 Comparison of Social Skill of girls in relation to IQ

Variable	No	Mean	SD	SED	T-Value	Significance
Less then 90	19	160.79	14.94	5.70	2.79	S
More then 120	10	176.70	14.42			

Table No-5 reveals that the average mean score of Social skill in relation to low IQ and high IQ female adolescents was 160.79 and 176.70 respectively. The SD of female adolescents was 14.94 and 14.42 respectively. T-value was 2.79 which shows significant difference in mean scores 0.01 level.

Thus, the null hypothesis, "There will be no significant difference between mean scores of Social Skill of adolescent female students having low and high IQ." was accepted.

Table:6 Comparison of Social Skill of girls in relation to IQ

Variable	No	Mean	SD	SED	T-Value	Significance
Between 90 to 120	63	164.02	15.31	2.73	4.65	S
More then 120	10	176.70	14.42			

Table No-6 reveals that the average mean score of Social skill in relation to medium IQ and high IQ female adolescents was 164.02 and 176.70 respectively. The SD of female adolescents was 15.31 and 14.42 respectively. T-value was 4.65 which shows significant difference in mean scores 0.01 level.

Thus, the null hypothesis, "There will be no significant difference between mean scores of Social Skill of adolescent female students having medium and high IQ," was accepted.

Table:7 Comparison of Social Skill in relation to Area

Variable	No	Mean	SD	SED	T-Value	Significance
Rural	62	152.95	16.62	2.84	0.96	NS
Urban	137	155.66	22.17			

Table No-7 reveals that the average mean score of Social Skill of rural and urban adolescents was 152.95 and 155.66 respectively. The SD of rural and urban adolescents was 16.62 and 22.17 respectively. T-value was 0.96 which shows no significant difference in mean scores.

Thus, the null hypothesis, "There will be no significant difference between mean scores of Social Skill of rural and urban adolescents," was accepted.

Table:8 Comparison of Social Skill in rlation to Level of Education of Parents

Variable	No	Mean	SD	SED	T-Value	Significance
Below Graduate	122	151.23	21.57	3.22	2.87	S
Above Graduation	77	160.49	22.51			

Table No-8 reveals that the average mean score of Social Skill of adolescents who have low level and high of education of parents was 151.23 and 160.49 respectively. The SD of adolescents was 21.57 and 22.51 respectively. T-value was 2.87 which shows significant difference in mean scores 0.01 level.

Thus, the null hypothesis, "There will be no significant difference between mean scores of Social Skill of adolescents who have low and high level of education of parents," was accepted.

Table:9 Comparison of Social Skills of Groups having Low and High Psychological Problems

Variable	No	Mean	SD	SED	T-Value	Significance
Low Psychological Problems	102	159.07	19.9	2.97	2.7	S
High Psychological Problems	94	151.96	21.5			

Table No-9 reveals that the average mean score of Psychological Problem Index of low social skill group and high social skill group was 60.57 and 49.48 respectively. The SD of group was 30.60 and 31.45 respectively. T-value was 3.58 which shows significant difference in mean scores 0.01 level.

Thus, the null hypothesis "There will be no significant difference between mean scores of Psychological Problem Index of low social skill group and high social skill group." was not accepted.

Table:10 Corelation between Psychological problems and Social skills of Adolescents

Variable	Corelation
Psychological Problems Social Skills	-0.25

p=-0.25<0.01

Table No.10 shows the correlation between Psychological problems and social skills of adolescents. The correlation was -0.25. It shows moderate negative corelation between the two variables at 0.01 level. Thus the directional hypothesis No-9 is not rejected.It means that higher psychological problems have lower level of social skill and vice versa.

Major Findings

1. There was a significant difference in mean scores of male and female adolescents of Gandhinagar district. Female adolescents have more social skill as compared to male adolescents.

2. So far as social skill is concerned IQ is a very effective factor for both male and female adolescents. The measurement was done for male students in two levels of IQ, i.e. below

90 and above 90. The male adolescents having a more than 90 IQ shown higher social skill than others. Female adolescents having IQ blow 90 and between 90 to 120 have no significant difference in social skill. It means that they have almost equal social skills. But female adolescents having an IQ above 120 shown higher social skills as compared to female adolescents having an IQ below 90 and between 90 to 120. It means that high intelligent female adolescents have more social skills than low intelligence.

3. There was no significant difference found in rural and urban adolescents so far social skills is concerned. It means that in the present study area is not found effective factor for social skills

4. The adolescents having highly educated parents found more social skill than adolescents having low educated parents. It is found that parent's education effects social skill of adolescents.

5. The social skill of adolescents found effective factor on psychological problems. The adolescents having low psychological problems were found socially more competent compared to high level of psychological problem group.

6. The correlation between psychological problems and social skills of adolescents was found negative. It means that adolescents having low level of social skills have more psychological problems compared to

adolescents having high level social skills. Further it can be assumed that the education of social skills can reduce psychological problems to certain extent.

Conclusion

Social competence of adolescents is a very important factor to determine their adjustment in life and profession. The present study has tried to find out the psycho-social profile of adolescents of Gandhinagar District. Further study in this area and direction will throw more light on reality. On the basis of these findings and its analysis we can say that psychological problems and social skills are closely connected. Further, the study also revealed that there should be tailor made programs of guidance and counselling for different groups of adolescents.

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FEMINIST CYBERPUNK: GENDER AND RACE

Foram Chandarana[*]

Temporary Assistant Professor (English), Baroda Sanskrit Mahavidyalaya, The Maharaja Sayajirao
University of Baroda, Vadodara, Gujarat, India
Email: foram.msu@gmail.com

ABSTRACT

Feminist cyberpunk, a second wave of the classic cyberpunk of the 1980s, was marked by a prominent presence of gender/sexuality in an otherwise masculine narrative mode, as well as a sudden removal of Japan as the evil force of the future that would dominate the inhuman technological future. Japan was replaced by a random variety of baffling places, and classic cyberpunk, which was accused of heavy neo-orientalizing tendencies in its ideological portrayal of Japan, also known as Techno-Orientalism, had seemingly moved away from this trend with its second feminist wave. However, my analysis suggests that the move is far from innocent, and is a reiteration of Techno-Orientalism, only this time, replacing Japan with other countries to eventually justify the narrative of the indispensability of America in the future.
Keywords: *Cyberpunk, Techno-Orientalism, Capitalism, Ideology, Japan, America*
* Author for correspondence

INTRODUCTION

Considerable amount of critical attention has been directed at classic cyberpunk, fairly accusing its "counter-culture revolutionary zeal" that celebrated the "high-tech, low-life" (Sterling xii) narratives to represent the loner, marginalized low-brow hacker heroes fighting ugly powerful multinational corps, of being unmistakably quiet on the burgeoning social narratives of gender, sexuality and race. While the classic cyberpunk wave was dying out in the late 1980s, after a brief spurt that lasted less than a decade, a new set of critics and authors simultaneously were rewriting these narratives: critics like Donna Haraway posited critical cyborg and posthuman theories that situated cyberpunk outside the realm of the humanistic horror, probing the unnecessary paranoia projected by classic cyberpunk, while a slew of new authors such as Marge Piercy, Maureen F. McHugh, Linda Nagata, Laura Mixon and Nicola Griffith, among many others, penned fictional narratives that brought gender and sexuality to the fore.

Along with that, this new second wave that revived the cyberpunk mode of narrative in terms of gender, also broke away from another unwritten rule of classic cyberpunk: that the Japanese must always be the villains. While also significantly altering some premises about the plot that were taken for granted, feminist cyberpunk, as this new wave was called, also unwittingly reinforced a stance that it had apparently rejected. Classic cyberpunk has been accused of empowering women only to a slight degree, by giving them a role necessary to the success of the hero - however, she is always also an eye-candy, a sexually-charged figure who seemed to only become more alluring both for the protagonist and the readers by this combination of skill, power and sex, emptied of its emotional, sentimental baggage.

Feminist cyberpunk attacked this mode of representation of women to not only make them central characters without being subjected to the male gaze or catered to the male audience, but also to open up a discourse that discussed gender and sexuality, a feminist and queer writing and reading of cyberpunk fiction.

Wolmark, in noting cyberpunk's aforesaid reluctance, remarks:

Characters like Molly Millions or even Laura, Bruce Sterling's heroine from the 'professional'-management class in his novel *Islands in the Net* (1988) are indicative of the presence and influence of feminist SF, but they cannot be said to be an expression of cyberpunk's own willingness to tackle questions of gender identity and subjectivity (121).

However, a second charge levied upon classic cyberpunk was that of Techno-Orientalism. America was gripped in a paranoia at the possibility of the Japanese overtaking them on the global stage, both in cultural and economic terms in near future, creating a further imminent threat of political domination of Japan by gradually displacing the USA in the credible near future. Fuelled by the 60s and 70s' rise of Japan (without any help from America, more importantly) as a nation that flourished economically and scientifically, while creating a global market for its cultural products, namely anime and manga, that almost gave Disney and American comics market a run for its money, as well as the overturning the American propaganda about the permanency of damage it had caused its enemies, pushed classic cyberpunk in a wave of fear that led it to stereotype the Japanese as uncivilized and inhuman, a species that rose by ruthless ambition and rejected the idea of democracy and civilization.

The cyberpunk "credible" future, then, was marked by chaos and autocracy, led by Japanese *zaibatsus* and waiting to be saved by the American soul. Feminist cyberpunk, curiously, broke away from this model, and sought new geographical settings as its base. Consequently, a large number of texts employed varied locations, causing the genre to be diluted, since some taken-for-granted markers of cyberpunk went missing, like the universally-in the American sensibility-hated Japanese, and replaced with seemingly innocent and less controversial random places such as China, South-East Asia or the Middle East. While some novels heavily critique the "Western" presence in their fictional settings, such as Nagata's The Bohr Maker or Paolo Bacigalupi's The Windup Girl, some novels simply reiterate the necessity of America as the saviour of civilized hence, the future. While it seems random and baffling to note such an erratic randomness of approaches, it is noteworthy that the pattern now lies in examining current American interests, rather than impulsive paranoia, as was the case with classic cyberpunk.

Techno-orientalism seemed to have been swept away in the apparently progressive wave. However, while there is little to be offended by in these texts individually, taking together a body of the feminist cyberpunk works, it reiterates the Orientalist idea of the necessity of the West (here, America), for the democratic and peaceful, if flawed, planet to inhabit.

Maureen F. McHugh's two novels - China Mountain Zhang and Nekropolis - have charted cyberpunk on two different lands. The former is set in China that has now become the most important nation in the futuristic world and is also an autocratic state, the latter in the theologically fundamentalist futuristic Morocco.

In China Mountain Zhang, the parallels between the villainous Japan and the villainous Chinese are difficult to miss - In 22nd century, China has replaced America as the world's dominant political, economic and cultural capital, following a political revolution in America that has displaced its capitalistic economy and brought in an era of socialism – the latter becomes akin to a third-world dump following a financial crisis, while China rises in economic importance, and consequently, in cultural importance. Chinese phrases, Mandarin itself, Chinese dress and cuisine and Chinese genes suddenly become the next-gen cool things, the way everything symbolizing America/the West is hip now. With the Great Cleansing Winds in the US, followed by a Second American Revolution and a Second Civil War, the status-quo is changed.

Quite akin to classic cyberpunk where everything and everyone non-Japanese is marginalized by the ruling Japanese, in China Mountain Zhang, everything non-Chinese, non-straight, non-beautiful is frowned upon. Relegated to the minority, three characters struggle to survive in a rigid, ruthless state. Zhang Zhong Shan (Rafael), the protagonist, is a young gay man of mixed heritage, a Chinese father and Hispanic mother – born in Brooklyn and having

undergone gene splicing in infancy in order to look more 'Chinese' (the reverse of what the Chinese are doing today – double eyelid surgery, for instance, to look more 'Western') and therefore attempting to gain social leverage as well as possible opportunity to study and live in China, his life takes a series of unexpected turns as he navigates through the turmoil of sexuality, cosmetically altered genes, identity and cultural legacy in and out of America, China and the Arctic.

His partner Haobai, a Chinese man cursed with homosexuality in a future that punishes it by death, meets his logical end, while San-Xiang, a young Chinese girl in the US struggles to come to terms with her own marginalization on account of her ugly face, and then with the consequences of her cosmetically-enhanced beauty in the form of rape. All characters not living in accordance with the Chinese definition of normal end up in a space where minority is not simply a number, but rather one's position, and hence, their value, and anything on the lower side of the valuable ladder is disposable, and all three marginalized characters meet fitting ends.

In Nekropolis, Morocco is represented as an ultra-conservative technologically-equipped state where people are *jessed*, or permanently chemically indentured, and socially discarded as sub-humans, with no escape but death. Hariba, a jessed human elopes with a *harni*, a bio-engineered being, essentially an android, and therefore also condemned to be sub-human, to seek her freedom, and struggles to escape to Spain, a "Western" democratic and tolerant, secular land.

While her family and the state spurns her, she is "rescued" by the kind-hearted West to be smuggled into Spain, but the process fails since the Moroccan regime is "too" inflexible and dangerous.

In both these narratives, the only fault of the protagonists was that they were subjected not to technology, but ideology - technology merely becomes a weapon in the hands of the oppressive regime, much like Orwell's 1984, to contain potentially dangerous elements. The texts examine marginalization from the perspective of the LGBTs, straight women and androids, but unlike classic cyberpunk that probes the impact of technology on the concept of life, hardly even glances upon the aspect. The protagonists try to escape their fates but are brutally persecuted, while America, now weakened, can only stand back and watch helplessly.

While it is highly commendable that the victims are no longer working-class straight white Christian male figures, but classless non-white, non-Christian, often non-straight, non-male people, it is necessary to note that neither gender, nor sexuality are looked at from the lens of technology, and race is simply used for the sake of variety rather than a serious examination of how technology would impact non-Western lives. These are not Japanese, or Chinese or Moroccan futures, but essentially non-American futures that would push back humanity as it hurtled forward into technology.

However, there was also a simultaneous contradictory strain presenting itself. Fiction such as Paolo Bacigalupi's The Windup Girl and Linda Nagata's The Bohr Maker are symptomatic of doing away with techno-Orientalism, and despite employing a variety of locations, condemning not the local governments, but vested American interests, for the chaos and disorder, while also simultaneously engaging into feminist and queer discourses.

The Windup Girl is a Nebula and Hugo Award-winning futuristic bio-punk novel is set in the 23rd century Thailand, when global warming has depleted all natural energy sources and overturned all remnants of the past, familiar world. While Thailand has escaped that fate and managed to evolve a system whereby it has decreased substantially American dependence and thus, interference in its sustenance, it is in throes of internal political turmoil, of which American biotech corporation AgriGen tries to take advantage with the intention of invading local farming to promote mutant diseases through crop-based bio-terrorism to keep American economy alive.

While it examines the conditions of the poor locals caught up in trying times from a class-framework, it is simultaneously feminist in its leanings by examining Emiko, a gynoid with consciousness, who is abused as a prostitute, one of the few options open to women for survival in a chaotic land. However, it is not the Thai government that is the oppressor; rather, it is the American model of political hypocrisy that is so prevalent today that is being fiercely and openly critiqued.

With The Bohr Maker, it is set in an unidentified location somewhere is Asia, where half of the land is under the control of the Commonwealth, with a white Christian woman for its head, which strictly

controls biotechnology and ensures the new systems are registered and do not exceed its stringent specifications – in order to stay in power and do away with potential better programs that may usurp its dominance. The other part is Spill, that has decided to remain independent of the coalition, but which is nevertheless governed by Commonwealth laws on bio-tech, making it a ripe place for all illegal bio-tech and their Makers to indulge in black-marketing. A slum-infested, poverty-ridden, ugly place, the under-belly of the squeaky- clean Commonwealth is what the Spill looks like. While the world's first posthuman Nikko, a string of programming about to expire tries to steal a powerful program called the Bohr Maker to survive, the program escapes into Phousita's mind, a native prostitute who understands nothing and struggles to simply survive in the Spill, while the Commonwealth authorities try to hunt her down to retrieve the Bohr Maker she unwittingly carries in her brain.

In Archangel Protocol by Lyda Morehouse, the year is 2076 but the setting is the Western world itself. A quarter century before, the dropping of Medusa bombs in a global world caused havoc - followed by a resurgence in religious beliefs and aversion to secular science. A new world where most people in the world are linked by the LINK systems embedded in their skulls, but which resents a government favoring science over religion, and thus, in their eyes, war over peace.

Deidrei, an ex-cop suspended from her job and excommunicated by the Catholics for her possible involvement in the assassination of the Pope is now hired just before election time by Archangel Michael to expose to the world that Archangels, who appear only on LINK, are but technical constructs. The plot treads the delicate religious issue of whether angels have adapted to technology or whether technology is masquerading God. However, despite being set in America, and the prominent suspects being the oppressive Catholics, the novel has a complex set of characters, some Muslims, some Jewish, and with no clear protagonists or antagonists - rather, it is a Christian theocratic state with a diverse set of questionable characters, beliefs, religions and motives.

It is striking that there is no chronological pattern to these works that could explain the shift in attitudes: While China Mountain Zhang was written in 1992, Nekropolis was penned as late as 2001. The Bohr Maker was published in 1995, while The Windup Girl was published in 2009 and Archangel Protocol in 2001. All four are American authors, and yet diverse in their approaches. While McHugh's universe makes American presence at the global centre stage not only pleasant but necessary, Nagata and Bacigalupi almost hold the USA responsible for the chaotic condition of the future, while being unnervingly close to what American forces are doing today all over the world. Morehouse sets the future in America, but one ruled by their own Christian theocrats, but still plagued by their trademark hypocrisy and hidden motives for power and dominance.

A key to explaining this could lie in the fact that America tried to systematically sully Japan's reputation in the world through the 60s and the 70s through popular imagination, since Japan was a real-

life threat, and not simply a fictional threat. A Japanese future could very well be the fate of Earth, where Japan would displace the USA to gain a place that the USA currently holds and hopes to retain for the future. With the early 90s, Japan became a lesser threat to USA's position, as China and the Middle East surged as economic threats.

More critically, Roger Luckhurst situates cyberpunk within the realm of the American obsession with militaristic development and the 1980s Star Wars program, saying:

It is important to convey that SF was as ideologically driven as any other field of cultural production in the 1980s. Whilst most critical commentary has been on the postmodern/SF convergence, cyberpunk was formulated in the way it was precisely because of the prominence of the SF megatext in the fantasy life of the American New Right. (202)

With its market for cheap goods, China overtook the manufacturing economy and posited a sudden and very real threat to the American economy. While capitalism was celebrated as the best possible solution to a civilized life, China, despite following the rigid communist model, effectively brought economic prosperity, and removed destitution, though it has its fair share of poor people. Chinese citizens, even the poorest of them, enjoyed a basic decent lifestyle that was denied to the poorest in the world's most developed capitalist economies. China suddenly rose into prominence on the political global stage, then effectively gaining seats in various Western international councils such as G8+5 and G20, and also participating in international non-Western councils such as BRICS, SAARC, indicative of a real threat it was posing to the USA as a strong contender.

To Terence Whalen, it is symptomatic of wider American sentiments, particularly "Reagen's America":

Emerging as it does in the context of late capitalism, cyberpunk is both inspired and stunted by the social process which enables thought to be alienated from its producer and exchanged as a commodity. The grimmest cyberpunk is haunted by the suspicion that information is not merely the socially average form of knowledge, but rather the form taken by capital in the signifying environment (79).

With the Middle East, clashes with the Islamic religion as a culture propagating hatred and ultra-conservativeness are used as part of US policy as a part of its continuing trend of mudslinging. The most effective way of countering and controlling the Middle East for its massive oil reserves is to highlight the necessity of American involvement in the area, easily argued by its claims to gender equality, human rights, democracy and secularism. By highlighting a future that could result in the loss of these four American values if the Middle East was visited by invasive technology, America almost justifies its widely criticized armed incursions in the region.

Cyberpunk fiction produced by America, whether Classic cyberpunk or American feminist cyberpunk, seems to be motivated primarily, in its political aim of disturbing the popular sentiment in

favor of American political strategies, regardless of how extreme American measures may be. Carrying ahead the idea of Orientalism as Said put it, AC seems to have indulged into Techno-Orientalism, in the words of David Morley and Kevin Robbins who have argued in their influential book *The Space of Identity* that "Western stereotypes of the Japanese hold them to be sub-human, as if they have no feeling, no emotion, no humanity" (172). Naoki Sakai says on this point,

> The Orient does not connote any internal com monalty among the names subsumed under it; it ranges from region in the Middle East to those in the Far East. One can hardly find anything reli gious, linguistic or cultural that is common among these varied areas. The Orient is neither a cul tural, religious or linguistic unity. The principle of its identity lies outside itself: what endows it with some vague sense of unity is that Orient is that which is excluded and objectified by the West, in the service of its historical progress. From the outset the Orient is a shadow of the West. (198)

Essentially, it is a magnification of the issues that the USA faces with each of the countries it has taken up. With China it is a triangle of economics, capitalism/communism and human rights, while with Morocco, it is a combination of gender equality, human rights, democracy and secularism. With Japan, it used to be economics, democracy and human rights. A common thread running through them all, then, is that the removal of America from the centre stage would ultimately result in a loss of human rights, with the modus operandi of reaching this end would differ from country to country,

depending on which nation ascended the seat of power. In such case, feminist cyberpunk has done nothing more than replacing an earlier enemy with a current adversary, by superficially engaging a few popular cultural markers of the new country in question.

If the Orient was invented by the West, then the Techno-Orient also was invented by the world of information capitalism. In "Techno-Orientalism", Japan not only is located geographically, but also is projected chronologically. Jean Baudrillard once called Japan a satellite in orbit. Now Japan has been located in the future of technology. Morley and Robbins say,

If the future is technological, and if technology has become 'Japanised', then the syllogism would suggest that the future is now Japanese, too. The postmodern era will be the Pacific era. Japan is the future, and it is a future that seems to be transcending and displacing Western modernity.

What the American psyche projects through its cultural productions, including cyberpunk, is its paranoia of the Japanese taking over the charge of the world, and turning it into a bleak place, ridding it of all humanity that American has striven to keep alive since its inception as a democratic nation. What comes across then, is a heavily technologized Orient, in place of the Saidian "backward" Orient, with the recurrence of brutality, lack of civilization, and unbridled ambition.

This very idea that the Americans extend to the Japanese, is then also applicable to the other countries it uses as its settings. It is not the setting

that makes any real difference, since it is a political project and not an examination into the future.

Fredric Jameson too, in discussing cyberpunk's links to postmodernism and political reality, remarks that cyberpunk is "the supreme literary expression if not of postmodernism, then of late capitalism itself" (Cultural Logic 157).

With researches such as Leonard Patrick Sanders' doing rounds in the academic circuit exposing the hidden agendas of classic cyberpunk in portraying Japan as the ruthless, evil stepmother of futuristic dark mechanical lands, feminist cyberpunk apparently overcame the obsession with the Japanese, replacing the latter with a number of random, pattern-less places, it has only reiterated its stand more cleverly and ambiguously, and with less obvious paranoia.

While it could be argued that the pattern is broken in a number of novels, as mentioned earlier, it is important to note that, these "Damsels-in-distress" nations have no real life fierce conflicts with the USA. Rather, they are developing countries which exhibit signs of gradual progress while not having ends conflicting with American ends directly. While China, Japan and the Middle East are already empowered in some way to have a voice in the system, these countries are still slowly building up a local system that would in the future earn them an upward political mobility.

For such quiet, uncontroversial nations such as Thailand or much of South East Asia, the USA has no easy fault to find – these narratives, then, concentrate on such nations as inherently weak to sustain global leadership, by portraying them as innocent, but incapable of leading the world in the future. American literature simply makes it a chaotic, messy, broken place prone to outside manipulation and governed by instability, uncertainty and corruption.

These places end up as victims in need of rescue, where some kind, ethical, revolutionary Westerner turns up to fight its own nasty, selfish American corporate, and thereby liberate the weak countries in question. These settings ultimately reiterate the traditional fairytale structure where an innocent damsel is rescued by the prince, who fights his own evil stepmother and ends the reign of disorder, thus marginalizing the vicious corporate as only a stray, occasional enemy, which the American citizen himself is both willing to and capable of defeating, and not an American stereotype.

While the Japanese zaibatsus are doomed to represent the entire Japanese race, these American antagonists are simply the proverbial bad apple in an otherwise good bunch, but a bunch strong and conscientious enough to eliminate its own bad apple without any false sentimentality.

Thus, whatever the case, the Americans become the upholders of security and prosperity in the technological future, the defenders of justice and humanity, positing a world that cannot survive the downfall of America. What it really defends, though, is its own power and the capitalistic structure that would enable it to do so.

The only novel to project an American future set on the American soil and governed by ultra-

conservative White Catholic homophobic fundamentalists was Morehouse's Archangel Protocol, wherein the very existence of religion is questioned and suspected to be a charade in the quest for power. The dizzying religious identity of cyber entities only heightened the suspicion that the USA was fooling its own citizens in the name of peace and tradition, and that angels were nothing but codes of programming.

Commendable as it is to dare to portray America as both the victim and the perpetrator, the novel ends on a very tame note, unlike the radical premise on which it began, thereby diluting the possibility of actually opening up a political discourse.

Understandably, the term "feminist cyberpunk" has to be taken quite literally, as one interrogating and negotiating discourses covered under the umbrella term of feminism, while leaving banal nationalism out, since race and gender issues have often been neglected in a combined analysis. It has a lot to do with the fact that most feminists, for very long and in overwhelmingly large numbers, have been Westerners, speaking for themselves, for whom the non-White hardly qualifies as even human, so as to leave out any discourse of gender that comments on race as well. First World Feminism has marginalised race as an inconsequential parameter for examination, rendering them the "Other", the way techno-Orientalists did with males in classic cyberpunk.

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A STUDY OF EFFECTIVENESS OF INQUIRY TRAINING MODEL FOR TEACHING SCIENCE TO STANDARD VIII STUDENTS OF VADODARA CITY

Priti Chaudhari*

Assistant professor, Department of Education [CASE], Faculty of Education and Psychology, The Maharaja Sayajirao University of Baroda, Vadodara
Email: zinki_1980@yahoo.co.in

ABSTRACT

Science forms an integral part of learning. Essentially it has to be learnt mainly through concrete situations related to immediate environment. The main focus of imparting science education is on sharpening the senses of the learners and encouraging them to discover and explore their environment and surroundings. Instead of loading the students with scientific information, efforts should be made to help them learn key concepts which cut across all the disciplines of science. This would generate curiosity and would enhance awareness and understanding. Whenever we come across anything which is unfamiliar, may it be an object, event or situation, our mind is stirred by questions which may help us in knowing more about the object of our curiosity. Nature has gifted us with the tool of curiosity for learning more and more about environment. It is common to observe children asking lot of questions about anything which arouses curiosity. According to Singh (1995), "Whenever we are in a process of finding out or investigating through questions, we are in the process of inquiry. From a simple array of questions, if the inquiry takes the form of disciplined and systematic approach, it becomes the spirit of scientific method". The present study was an attempt to implement the Inquiry Training Model on standard VIII students of Vadodara city to teach science. The programme was found to be effective in terms of the achievement of the students. Also the opinion of the students proved the programme to be effective. It was also a good learning experience for the students. Inquiry Training Model is effective in terms of arising curiosity in students, better retention of the concepts, generating interest in students and provoking them to ask questions and interact in class. The results of the study shows that if regular classroom science teaching is made activity based and interactive then it will definitely positively affect the learning and achievement of the students.
Keywords:
* Author for correspondence

INTRODUCTION

Science forms an integral part of learning. Essentially it has to be learnt mainly through concrete situations related to immediate environment. The main focus of imparting science education is on sharpening the senses of the learners and encouraging them to discover, observe and explore their environment and surroundings. Instead of loading the students with scientific information, efforts should be made to help them learn key concepts which cut across all the disciplines of science. This would generate curiosity and would enhance awareness and understanding.

Whenever we come across anything which is unfamiliar, may it be an object, event or situation, our mind is stirred by questions which may help us in knowing more about the object of our curiosity. Nature has gifted us with the tool of curiosity for

learning more and more about environment. It is common to observe children asking lot of questions about anything which arouses curiosity. According to Singh (1995), "Whenever we are in a process of finding out or investigating through questions, we are in the process of inquiry. From a simple array of questions, if the inquiry takes the form of disciplined and systematic approach, it becomes the spirit of scientific method". Therefore training the learners for investigating and explaining ant type of puzzling problem, phenomena or event can be a way of orienting their minds towards scientific inquiry. The nature of science is such that it demands the spirit of inquiry and science as a school subject has a wide scope of scientific inquiry. There are various methods and models of teaching through which learners can be taught science through the process of inquiry.

Nature of Science

From these definitions three basic principles of nature of science can be defined.

1) An accumulated and systematized body of knowledge.
2) The scientific method of inquiry and
3) The scientific attitudes.

The first point indicates the product of science, while second and third points indicate the process of science. Science is not just a static body of already established knowledge, but a living tradition of never finished exploration into the integrated and unexpected vistas of nature. Science as a body of knowledge characterized by a highly dynamic structure of knowledge, which is founded on numerous bits of information linked with one another into many generalization forming the substantive corpus of science constituting its product dimension. This structure of knowledge interacts actively with the reality. The mode of this active interaction is governed by the logic of the processes of scientific inquiry or the scientific method. This constitutes the process dimension of science. The method of construction of knowledge follows certain systematic logical steps for collecting and processing information, tracing out general trends and constructing theoretical models. This chain of activities mediates between the reality and the structure of knowledge, and constitutes the processes of scientific inquiry or scientific method which as stated earlier forms the process dimension of science. the process of scientific inquiry represents the spirit of science as an activity and is its essence that distinguishes science from other disciplines.

Need Of Teaching Science Through Inquiry

In order to achieve the objectives of teaching science, it is imperative that teaching methods should be modified. According to NCERT (2006), "for any qualitative change from the present situation, science education in India must undergo a paradigm shift. Rote learning should be discouraged and inquiry skills should be strengthened and supported". According to Menon (1986), science teaching should depend on following premises:

> The essence of science is its process of inquiry and not the diverse information that form part of its substantive of product dimension.
>
> Teaching of science should not be taken to constitute merely of presenting the bits of

information, which have already been established as integral part of knowledge structure.

Learning of a concept from learner's point of view and not memorizing the verbal statements of the concept. Hence science is best learnt and taught through an inquiry approach.

Learning is acting upon the environment and solving his or her problems and making his or her own discoveries.

Superficial view of present teaching of science consists of a body of facts, principles and descriptions of our surroundings, demonstrations and laboratory operations. According to Mohapatra and Mahapatra (1999), "In present education system science is taught only as a product. The process part of science is being neglected. As a result pupils may not be able to apply science as a process operating in daily life situations". This view may incorporate limited understandings of the relationships among various aspects of our surroundings of the relationships among various aspects of our surroundings including man's dependence upon and use of his surroundings. The content of science is primarily a record of man's accomplishment. It is a kind of history of what man has achieved. It's major value lies in the use that we can make out of it to improve man's thought and action in future.

Richardson et.al. (1968) " Science as a school subject should be far more than a description and history. Science will not produce its full impact on human life until it permeates thought and action. To produce this impact, science should provide experience far beyond the recapitulation of facts and principles". As the researcher discussed earlier the scientific method and scientific attitude are also the components of nature of science, it is necessary to develop this scientific behavior in students. This behavior is characterized by exploration resulting from lively curiosity and by the careful and critical investigation of problems.

Importance Of Questioning

Questions are the primary tools and basic fundamental necessity of scientific inquiry. Whenever an individual is puzzled about phenomena, the curiosity propels him to ask questions and thus leads to inquiry. According to Menon (1986), "questions recognize the wide possibility of thought and are built around varying forms of thinking". Since each question is directed towards learning and evaluative thinking but unfortunately questions of children are often neglected or marginalized by teachers. According to Anderson (1970), "the activities the students engage in when controlled with instructional tasks are of crucial importance in determining what he will learn". Thus what is learnt largely depends on the activities and questions of the students. The questions are perhaps the primary tools by which the individual processes information regardless of the diversity of his procedure. Questions serve to focus students functioning and to provide a means for determining relevant from irrelevant information and for pointing major relationships among variables, as well as creating new insights and assessing the results of inquiry.

Concept Of Inqiry Training Model (I.T.M.)

The emphasis of I.T.M. is upon making the learners aware of the inquiry process through structuring and re-structuring of questions and sequencing them appropriately. The learners are actively involved in data gathering and hypotheses verification but all this happens through questioning related to the problem presented by the teacher in the beginning. The teacher guide the students to frame such questions which can be answered in 'Yes' or 'No'.

Objectives of I.T.M.

Singh (1995) and Joycee et.al. (2008) gave objectives of I.T.M. in their respective books. Author has presented relevant objectives from both the books. These objectives are as follows.

a) To develop scientific process skills: observing, collecting and organizing data, identifying and controlling variables, formulating and testing hypothesis, explanations and inference.

b) To develop autonomous learning.

c) To develop ability to tolerate ambiguity.

d) To develop logical thinking.

e) To make students understand that all knowledge is tentative.

I.T.M. Chart

Joycee et.al. (2008) summarizes I.T.M. in the following way:

A) Syntax

Phase 1: Presentation of Puzzling event and explanation of inquiry procedure. In this phase the teacher demonstrates through an experiment or narrates a phenomena which seems puzzling for students and triggers their thinking process.

Phase 2: Data gathering and verification

In this phase the students try to find out the variables associated with the given phenomenon and their interrelationship.

Phase 3: Hypotheses and testing

In this phase the students try to find out the probable causes of the phenomenon. They formulate various hypotheses which are subjected to testing in the form of questions. If the answer of the particular question is 'no', then that particular hypotheses is rejected. Thus out of many hypotheses only few are not rejected which stand as the causes of phenomenon.

Phase 4: Formulating an explanation

After testing all hypotheses, students try to form an explanation considering the hypotheses which are not rejected. Thus they try to reason out the occurrence of that particular phenomenon.

Phase 5: Analysis of inquiry process

Finally the teacher concludes by summarizing the concept to be taught. Also teacher analyze the entire process and point out the mistakes made by the students and also discuss the ways to rectify the mistakes.

B) Social System

Co-operation, intellectual freedom and equality is must among students- students and teacher – students. Interaction among students should be encouraged.

C) Principles of Reaction

a) Ensure that questions are phrased so they can be answered in 'yes' or 'no' and that substance does not require the teacher to do the inquiry.

b) Ask the students to rephrase invalid questions.

c) Point out unvalidated points.

d) If necessary, new information can be provided to keep the inquiry moving.

e) Try to provide a free intellectual environment by not evaluating student theories.

f) Encourage interaction among students.

D) Support System

The optimum support is a set of confronting materials, a teacher who has content mastery and understands the strategy of inquiry and resource materials bearing on the problem.

Limitation of I.T.M.

Singh (1995) gave some limitations of I.T.M. which are as follows:

Helps in developing explanations on the basic previous knowledge. So it is very necessary that students have some basic information which will guide them in the inquiry process. New concepts and formulae cannot be taught. As students need some knowledge to start the inquiry process so if the concept is entirely alien to the students then it cannot be taught through I.T.M.

If the puzzling situation is not presented in the form of a problem requiring explanation, the students cannot effectively arrive at generalization through inquiry.

Role of Teacher

Should guide the students during the inquiry process, prevent them from going on wrong track and creating chaos in the class and have content mastery.

Be flexible and provide free environment to the students and manage the time.

Continuously motivate the students so they are inquisitive to know more.

Help in inquiry but should not do inquiry for students.

Before planning and implementation of I.T.M., the teacher should check the previous related knowledge of the students.

After students arrive at generalization, teacher should summarize in such a way that concept clarity is attained by students.

Teacher should have clear knowledge of all the related content matter.

The hypotheses/questions having 'yes' answers should be written on board so that it becomes easy for students to generalize.

If questions are not framed properly, teacher should not ignore that question but ask the students to reframe them properly.

Rationale Of The Study

The present world is a world of science and technology. Everything or every event happening around us demands some knowledge of simple scientific facts and principles. Looking into the nature of science, it is both process and product and also the objectives of teaching science emphasize on development of scientific attitude. Moreover almost all commissions and committees appointed by govt. of India recommended the development of scientific attitude. According to NCF (2000), "Science education should be such that it helps to generate and promote among the learners scientific temper

characterized by the spirit of inquiry, problem solving, courage to question and objectivity leading to elimination of superstition and fatalism". Thus science education if properly conceived should primarily be concerned with the education of mind rather than the acquisition of violated pieces of scientific knowledge.

An important purpose of science teaching in general education up to secondary stage is to familiarize the learners with various dimensions of scientific literacy. Scientific attitude, a very important attitude should be developed in the children who are the future citizens, if the objectives of teaching science are to be achieved. Science teaching through the use of models of information processing family is to help the students become more powerful learners.

Amin (2011) implemented I.T.M. as one of the activity of science teaching on pre-service student teachers. The findings reflects its effectiveness in terms of understanding, content clarity, attitude development, decision making, achievement and science process skills. Also the main focus of the present study is to make students pass through an inquiry process, which probably will help in development of scientific attitude and better learning. Thus, according to the researcher I.T.M. was apt for the present study. The effectiveness of this model was founded in terms of the achievement of the students as well as the opinion of students regarding the developed programme on I.T.M. One of the reasons to select school students for the present study was that the researcher could not find any study related to implementation of I.T.M. on school students. Also the study of Menon (1986) shows

that there is increase in the process skills of students from std. VIII till std. XII. So std. VIII can be considered as a base for development of process skills. Thus those students must be taught using various methods and models which can initiate the development of scientific attitude and science process skills. Thus the researcher selected std. VIII students for the present study. Science concepts such as combustion, transfer of heat, properties of air, depletion of ozone and static electricity were selected as they are very general concepts and they form a part of science curriculum of std. VIII and the students do have a prior basic knowledge about these concepts which is a very important precondition for implementation of I.T.M.

Statement Of The Study

"A study of Effectiveness of Inquiry Training Model for teaching Science to standard VIII students of Vadodara city"

Objectives Of The Study

1) To develop a programme on inquiry training model to teach concepts of science.

2) To implement the developed programme on std. VIII students.

3) To study the effectiveness of the programme in terms of

   a) achievement of students

   b) opinion of the students regarding the programme

Hypothesis

There will be no significant difference between the mean achievement scores of the experimental group and that of controlled group.

Operationalisation Of The Term

Effectiveness: The difference between the mean achievement scores of the experimental group and that of controlled group as well as opinion of students represented effectiveness of the programme.

Opinion: For the present study the views of the students regarding the programme constituted their opinion. A five point scale opinionnaire was used.

Delimitation Of The Study

The present study is delimited to the students of English medium Schools following Gujarat Secondary and Higher Secondary Education Board (GSHSEB) of Vadodara city during the academic year 2011-12.

Science concepts were delimited to concepts of combustion, properties of air, transfer of heat, depletion of ozone layer and static electricity.

Method Of The Study

The present study was quantitative in nature.

Design Of The Study

Design of the present study was quasi-experimental. Pre-test and post-test was implemented on experimental and controlled groups. Implementation of I.T.M. was independent variable and achievement of the students was dependent variable. Age was the controlled variable. Environmental factors like their motivational level, exposure to other agencies of knowledge gaining etc. were intervening variables which were thought to be equally affecting both groups.

Population

Approximately 3500 students of VIII Std. of 62 English medium schools of Vadodara city following GSHSEB syllabus was the population of the present study.

Sample

Purposive sampling technique was used. Bright Day school (Vasna) was selected as experimental group and Sabari Vidyalaya was selected as controlled group. All std. VIII students of Bright Day school (55) and Sabari Vidyalaya (65) constituted the sample for the present study. Thus the sample size was 120 students.

Phases Of The Programme

Phase 1 – Development Of The Programme: Content analysis was done of science textbook of standard VIII and six concepts were identified which could be taught through Inquiry Training Model. These six concepts were: (i) oxygen is necessary for combustion (ii) ignition temperature is necessary for combustion (iii) transfer of heat (iv) properties of air (v) depletion of ozone layer and (vi) static electricity. The students do have a basic knowledge about these concepts and there is a scope of inquiry for teaching these concepts. Separate experiments were designed for each concept except in depletion of ozone layer were a puzzling phenomena was presented before the students. The programme was validated by the experts of science field. The following table shows the designed experiments.

Table:1 Development of the Programme

Sr. No.	Concept	Experiment
1	Oxygen is necessary for combustion	Light a candle and invert a glass on it. Observe.
2	Ignition temperature is necessary for combustion	Take two balloons. Blow one balloon with air and another balloon with water. Bring both the balloons near a candle flame. Observe.
3	Transfer of heat	Fill one bottle with hot water and put some ink drops in it. Fill another bottle with ice cold water and invert it upon hot water bottle. Observe.
4	Properties of air	Place a funnel on a bottle. Cover the neck of the bottle along with the funnel with clay. Pour some water in the funnel. Observe. Now remove the clay and again pour some water in the funnel. Observe again.
5	Static electricity	Rub a plastic or comb against dry hair and bring it near the copper coil of an electroscope. Observe what happens to the two silver foils inside air tight bottle.
6	Ozone depletion	Puzzling event: Example of Australia recorded highest number of cases suffering from skin cancer was presented to the students in puzzle form.

Phase–2 Administration Of Pre-Test :

An achievement test was administered on both experimental group and control group before implementation of developed programme. Proper sitting arrangement of the students was ensured before administering the test. Two children on one bench were allowed to sit. Stu dents were given 30 minutes for the completion of the test. They had to write the answer in question paper itself.

Phase–3 Implementation Of The Programme :

The developed programme was implemented only on experimental group. The students were asked to observe experiment and then were given time for inquiry and think of the probable causes of the phenomena. Then they had to present the probable causes in the question form which can be answered only in 'yes' and 'No'. Then at the end, suitable explanation was given by the students based on the positive hunches. Finally the researcher summarized the whole process and concept. The same method was used to teach all the concepts.

Phase–4 Administration Of Post – Test :

After intervention program on experimental group, again the same achievement test was administered on both experimental group and controlled group. An opinionnaire was implemented only on experimental group for knowing the reactions of the students regarding the programme.

Tools

Achievement Test: An achievement test was constructed by the researcher. This test contained objective type of questions, covering the concepts of combustion, properties of air, transfer of heat, global warming and static electricity. Each question

was of one mark. The test contained total 30 questions. It was validated by the experts of science education.

Opinionnaire: The opinionnaire was prepared by the researcher and validated by the experts. Only close ended statements and 5 point rating scale was prepared on the effectiveness of the programme after intervention of experiment.

Data Collection

For the purpose of data collection, researcher personally visited both the schools and took permission from the respective principals and explained them the purpose of the research. First pre-test was administered on both the groups. Then I.T.M. was implemented on only experimental group by the researcher. Controlled group followed their regular teaching by lecture method. Investigator ensured that their regular teacher taught them all these concepts through lecture method. Lastly post-test was administered on both the groups. Thus the achievement scores in pre and post tests of the sample is the data for the present study.

Data Analysis

The data obtained was analyzed by using following statistical techniques such as frequency, percentage and t – test.

Major Findings

The major findings of the study were as follow:

t – value calculated > t – value in table at 0.01 level of confidence was 7.50. So the null hypothesis – "there will be no significant difference in the mean achievement scores of experimental group and that of controlled group" is rejected at both the levels of confidence. Thus there is significant difference in the mean achievement scores of the experimental group and controlled group.

Table : t value calculated from the gained scores.

N	MEAN	SD	SEM	t
Experimental group - 43	10.22	2.65	0.41	7.50
Controlled group - 56	4.54	2.50	0.33	

The mean achievement score of experimental group which is 10.22 is significantly high than the mean achievement score of the controlled group which is 4.54. Thus the implementation of Inquiry Training Model (I.T.M.) to teach science to standard VIII students is effective in terms of the achievement of the students. Out of the total 45 students, 88.89 % students liked the new method of teaching and out of that 55.56 % of students were strongly agree to this statement.

91.11 % students had reported that the experiments performed were interesting and 95.55 % students had told that the method used for teaching was the new method having learning with fun.

77.77 % of students had revealed that they had openly asked the questions in the class and also enjoyed asking questions. They also felt that the questions asked by other students were interesting.

93.33 % of students were agreed that this method aroused curiosity in them to know more and they also easily understood the concepts. 86.66 % of the students had agreed that this new method provoked them to think more.

91.11 % students had reported that they are satisfied with this new method and think that they remember more when taught through this new method.

88. 89 % students had told that this new method of teaching is better than the regular lecture method.

Thus as per the analyzed data and the results obtained through opinionnaire, it can be concluded that implementation of Inquiry Training Model is effective in terms of arising curiosity in students, better retention of the concepts, generating interest in students and provoking them to ask questions and interact in class. The principal of the experimental group had observed many class and based on that reported that she was very pleased with the way the whole programme was implemented. Also she was surprised to see that the most notorious class was so much involved in the programme and the most introvert students asked questions and participated in the interaction. Also during the whole span of the programme, researcher observed that almost 85 % of the class participated in questioning.

Conclusion

The present study was an attempt to implement the Inquiry Training Model on standard VIII students of Vadodara city to teach science. The programme was found to be effective in terms of the achievement of the students. Also the opinion of the students proved the programme to be effective. It was also a good learning experience for the students. Inquiry Training Model is effective in terms of arising curiosity in students, better retention of the concepts, generating interest in students and provoking them to ask questions and interact in class. The results of the study shows that if regular classroom science teaching is made activity based and interactive then it will definitely positively affect the learning and achievement of the students.

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ADOLESCENCE: THE STAGE OF TRANSITION

Shikha Kapur[*]

Senior Faculty, Department of Adult and continuing Education & Extension, Jamia Millia Islamia, New Delhi
Email: kapur.shikha@rediffmail.com, skapoor@jmi.ac.in

ABSTRACT

This article examines the important transitory stage in human life i.e. adolescence- a life stage, that lies between childhood and adulthood. Beginning around 10, 11 or 12 years, adolescence concludes between 18-21 years of age. It is a stage, when complete metamorphosis takes place and is akin to a butterfly emerging from its cocoon which in its former stage is a caterpillar! The speed of adolescent changes varies among cultures and societies since they are contingent on the processes of socialization, training and education. Key developmental milestones are achieved during adolescence and in order to understand adolescents it is important to understand their physical, cognitive, psychological, social-emotional, moral, educational and vocational development and the ensuing changes. Sex differences exist between boys and girls when we examine all these factors. The end of this tumultuous period entails physical and sexual maturation, social and economic independence, development of identity, acquisition of skills needed to carry out adult relationships and roles, and the capacity for abstract reasoning. Parents, teachers, peers and the significant others in the adolescent's environment have to be supportive and empathetic of the turmoil that they go through to enable a smooth well adjusted transition into adulthood.

Keywords: *adolescence, adolescents, human development, child development, child, childhood, adulthood, cognitive, social, emotional, moral, development, vocational, late maturer, early maturer, transition.*

* Author for correspondence

INTRODUCTION

Human beings go through many stages of growth and development right from the time of conception till their death. Each of this stage is characterized by distinct and unique characteristics, which set it apart from the previous stage. The stage of development that is marked at the beginning by the onset of puberty and at the end by the attainment of physiological and psychological maturity is called as adolescence. The bit by bit development changes of the childhood are followed by changes of adolescence that erupt as a sudden storm. There is nothing subtle or gradual about the transformation. The individuals' entire body undergoes changes and they look like adult however their emotional and intellectual ability are not at the same level of maturity. Adolescent changes are so profound that they mark the rebirth of human being.

Adolescence is derived from a Latin word *adolescere*, meaning "to grow into maturity". It is a life stage between childhood and adulthood. Adolescents are referred to as teens or teenagers and the period of adolescence is closely associated with teenage years.

Defining Adolescence

Adolescence as per the Dictionary.com is defined as "the transitional period between puberty and adulthood in human development, extending mainly over the teen years and terminating   legally when the age of majority is reached i.e. youth". It also refers to the period or stage of development, as of a society, proceeding maturity. The Merriam Webster Dictionary refers to adolescence as "that period of life when a child develops into an adult". In studying adolescent development adolescence can be defined biologically as the physical transition marked by the onset of puberty and the termination of the physical growth; cognitively it is viewed as changes in the ability to think abstractly and multi-dimensionally; and socially as a period of preparation for adult roles (Arnett, 2007). However it should be noted that the term adolescence is much less precise than it appears since both the onset of puberty and attainment of maturity are effectively impossible to define or specify (Reber, 1985).

Understanding Adolescence

Adolescence begins around 10, 11 or 12 years with variations existing among cultures and societies. However it concludes between 18-21 years of age. A thorough understanding of adolescence in any society depends on information from various viewpoints gathered from history, anthropology, psychology, sociology, the cultural heritage and traditions. However from all the given viewpoints it is apparent that adolescence is the transitional period between childhood and adulthood. This stage gradually prepares and then inducts the human being into taking up adult roles. It is a transitory phase in the life of a human being and is contingent upon the culture of that society, acquisition of education including formal, non formal or informal (all or one as the case maybe), socialization and training for taking on adult roles, preparing for future vocations for employment and adjusting to varying living circumstances also takes place.

In many traditional cultures as in our own Indian context, adolescence is akin to adulthood. In the rural India an adolescent is ready to take on the adult roles fully, i.e. with the onset of menstruation the girl is married, although it is not permitted by law and is viewed as child marriage, but this child bride bears children of the groom who is not much older than herself! As the girl bears and rears children, her adolescent partner toils hard to make both ends meet and provides for the upkeep of his family. In contrast, adolescents in the Indian modern urban families are educated like their Western counterparts and construed as undergoing a transitory stage of development. The adolescents attend educational institutes, choose appropriate professions, undergo training in life skills and gradually take on adult roles.

Adolescence is not just related to age alone that signifies the beginning or end of it. In fact adolescence is related to the achievement of key developmental milestones like in any other stage

of development when it has begun or ended. There are a variety of changes that occur between childhood and adulthood and this complete metamorphosis is akin to a butterfly emerging from its cocoon from its former state as a caterpillar!

Developmental Tasks Of Adolescence

According to Robert Havighurst (1972) growth and development occurs in six stages. He emphasized that learning is basic at all these stages of life and it continues throughout life span. The following changes take place during adolescence:

1. Achieving new and more mature relations with age-mates of both sexes.

2. Achieving a masculine or feminine social role.

3. Accepting one's physique and using the body effectively.

4. Achieving emotional independence of parents and other adults.

5. Preparing for marriage and family life.

6. Preparing for an economic career.

7. Acquiring a set of values and an ethical system as a guide to behaviour; developing an ideology.

8. Desiring and achieving socially responsible behaviour.

Developmental Characteristics of Young Adolesecents

It was only during the 20th century that early adolescence was recognised as a period of distinct human growth and development. The eminent American Psychologist G. Stanley Hall (1904) is credited with the identification of early adolescence or preadolescence as a unique stage of growth. This identification captured the attention of both the scholars as well as common people in human life. Havighurst's Developmental Task Theory (1968), Piaget's Developmental stage theory (1952, 1960) and Flavell's (1963) theories of metacognition emphasised and highlighted the importance of early adolescence. It was Donald Eichhorn (1966) who pinpointed that adolescents' developmental characteristics ought to be considered while planning curriculum, instruction and assessment and when structuring the environment of the school. Eichhorn is credited to with the pioneering the middle school movement and went to coin the term "transescence" to identify the transitory stage between elementary schoolers and high schoolers. Subsequently a movement ensued and various professional organizations as the Association for Supervision and Curriculum Development, 1975; National Association of Secondary School Principals, 1989; National Middle School Association, 1982, 1995, 2003, 2010 authored position papers, statements and even gave recommendations that addressed young adolescents' development through various educational programs and practices. Joan Lipsitz (1984), who has done extensive research on middle graders, emphasizes that schools for young adolescents "must be responsive to their developmental needs".

The stage of adolescence is characterized by changes in biological, cognitive, psychological,

social-emotional, moral, educational and vocational developmental changes that set adolescence apart and uniquely distinguishable from the other stages of human development. To understand the characteristics and change during adolescents it is important to understand these changes one by one.

Physical Characteristics Durings Adolescence

The physical changes begin during pubescence. Pubescence is the time that precedes puberty (Helms and Turner, 1995). It connotes the state of being in or reaching puberty. Puberty is derived from Latin word *pubertas* which means adulthood. Puberty takes about four years, typically begins earlier in girls than in boys, and ends when a person can reproduce. During puberty, both boys and girls undergo an adolescent growth spurt. Primary sex characteristics (the reproductive organs) enlarge and mature, and secondary sex characteristics appear. This stage is characterized by accelerated and uneven growth, improved gross and fine motor skills and rapid growth of reproductive functions. The principal signs of sexual maturity are production of sperm (for males) called 'spermarche' that typically occurs at age 13 and first menstruation or occurrence of 'menarche' (for females) between the ages of 12 and 13 in the United States (Papalia, Olds and Feldman, 2006). The sex organs mature and the secondary sex characteristics appear (Table 1 summarizes these changes). The secondary sex characteristics are those characteristics which are not directly tied to reproduction yet distinguish the male from the female of that species. These changes include breast development, facial and body hair and appearance of voice changes.

Table 1: Secondary Sex Characteristics	
Girls	**Boys**
Breasts	Pubic Hair
Pubic Hair	Axillary Hair
Axillary Hair	Facial Hair
Increased width and depth of pelvis	Body Hair
	Voice Change

Source: Lefton (1985)

These phenotypic traits and characteristics, give advantage to an individual over its rival in courtship and aggressive interactions. The adolescent changes are phenomenal and vary between girls and boys.

Adolescent Changes Amongst Girls

● The development of breasts or appearance of breast buds occurs as early as 8 years of age. The breasts are developed fully between 12-18 years. The hips also get rounded.

● The pubic hair, the arm and leg hair usually begin to grow at 9 or 10 years and by 12-18 years reach the adult pattern of hair growth.

● Two years after pubescence (appearance of breast buds; pubic hair) menarche that is first menstrual cycle sets in. Onset of menstruation maybe as early as 9 and it may be as late as 16. Due to factors such as biology, hereditary or nutrition menarche may occur as early as age 9 or as late as 16 years. The average age of menarche around the world is 13 (Shawky and Milaat, 2000), 12.9 in the UK (Hamilton-Fairley, 2004), 12.72 in Canada (Al-Sahab, Ardern, Hamadeh and Tamim, 2010) and in the US it is about 12.5 years (Anderson S.E., Dallal G.E. and Must, A., 2003). The girls are sterile at this stage.

● The peak period in girls growth spurt is around 11.5 years and girls mature two years ahead of boys (Caissy, 2002). Around16 years of age growth spurt reaches its peak and then slows down.

● By the end the adolescent girl becomes capable of conception.

Adolescent Changes Amongst Boys

● Equivalent to the appearance of breast buds in girls is the growth of testicles and scrotum that begins as early as 9 years. The penis lengthens soon after and genitals reach adult size and shape around the age of 17 or 18 years.

● Onset of puberty in boys is marked by nocturnal emissions which are involuntary ejaculation of semen during sleep. Nocturnal emission is common during adolescence and starts between 12 and 16 years once the male reproductive organs are mature. Nocturnal emissions are fairly common at this age and are caused due to sexual excitation during from dreams or even a full bladder or pressure from pyjamas.

● The pubic hair growth starts around the base of penis between 12-14 years. Two years after the beginning of growth of pubic hair, axillary hair- the hair in the armpits, on the leg and the face emerge and by 17-18 years reach the adult pattern of hair growth. Pubic hair growth is caused by hormone androgen, which stimulates or controls the development and maintenance of male characteristics in vertebrates (Rogol, 2002). Chest hair are last to appear and continue growing till late adolescence.

- The sweat glands or apocrine becomes active during puberty due to development of reproductive system.
- While voice change occurs in both boys and girls, it is in boys that voice changes are astonishing and astounding. The voice of boys' cracks, squeaks and makes funny sounds during adolescence. It is due to the fact that the larynx becomes bigger due to testosterone produced in the body. Also the vocal cords become longer and thicker. Hence and at this growing stage that funny sounds are produced and finally the voice becomes deeper once larynx has grown. Once the larynx has grown bigger it turns at an angle and it sticks out of the neck. It is known as the Adams Apple which juts out of the neck in boys.
- Prostrate gland also enlarges.
- The peak period in boys growth spurt is around 13.5 years and around 18 years it slows down.
- Sperm production becomes sufficient for fertility, and the growth rate decreases.
- Physical strength is at its peak at this stage.

The developmental growth in boys and girls includes significant increase in height, weight, internal organs as well as the changes in the skeletal and muscular systems (Kellough & Kellough, 2008). A teenager on an average can grow 12 inches taller during puberty. There is lack of proportion in the growth of an adolescent. Hands and feet grow faster than arms and legs. The arms and legs lengthen before the torso does, and all this creates the impression of "leggy" gawkiness which is common during adolescence.

The changes during puberty are attributable to male and female reproductive hormones. In fact boys and girls have both the male reproductive hormone- the testosterone and female reproductive hormone- the oestrogen. It is the balance of the hormone that changes during puberty, with the girls producing more oestrogen- the female hormone and the boys producing more testosterone- the male hormone.

The brain size remains the same during adolescence but significant internal changes occur within the brain, in the neural circuit and also the gender specific differences appear at this time (Blakemore & Choudhury, 2006; Caskey & Ruben, 2007; Nagel, 2010). The frontal lobes of the brain, which are responsible for judgement, impulse control and planning, are still maturing until early adolescence, hence the adolescents often engage in risk taking behaviours and experience heightened emotions (Casey, Tottenham, Liston and Durston, 2005).

The circulatory and digestive systems undergo rapid phases of growth. The organs of the digestive system reach adult size and shape. Fluctuations in basal metabolism cause these youth to experience periods of restlessness and lassitude. Additionally, young adolescents tend to "have ravenous appetites and peculiar tastes" (Kellough & Kellough, 2008) and have a propensity for improper nutrition. They are often physically vulnerable due to poor physical fitness,

have poor health habits (Scales, 2003) and exhibit high-risk behaviours including the use of alcohol or illicit drugs and experimentation with sexual activity according to National Institute on Drug Abuse (2005).

By the time adolescents reach age 17-18 years the heart is double in size and has grown twelve times heavier as it was at birth (Heald et al., 1963). The vital capacity of the lungs increases rapidly during adolescence. The boys' capacity becomes greater than the girls capacity, this indicates a clear cut sex difference (Helms and Turner, 1976).

Early Maturer Vs the Late Maturer

Adolescence may be a time of crisis in the life of a human being. The variable rate of growth and development among sexes and also amongst the same sex adolescence can have a profound impact on the psychological development of the maturing adolescent. The conflict and anxiety of the bodily changes puts great demand on the emotions and it becomes a source of conflict too. Feelings of self-consciousness, shyness and insecurity get further compounded by the fact whether or not the adolescent is an early maturer or a late mature. Studies indicate that early maturers were more adept at overall social adjustment than the late maturers (Helms and Turner, 1995). Jones and Bayley (1950) found early maturing boys to be more popular and greater capacity of leadership as compared to late maturers.

Early versus late maturation among boys indicates the following differences

● Early-maturers tend to experience the changes in positive ways.

● Late-maturing boys tend to have lower self-esteem than other boys.

● Early maturers are more likely to get involved with antisocial activities, including drug and alcohol abuse.

● However there are advantages for late-maturing boys. They tend to have higher levels of intellectual curiosity, social initiative, and exploratory behavior when compared to early maturers.

● Late maturity gives a longer period of time to "prepare" them for the changes of puberty.

● Longitudinal research conducted during early middle age indicates that late maturers tend to be more responsible, self-controlled, cooperative and more sociable. They were also found to be more conforming, conventional, and humourless.

Recent research shows that early versus late maturation among girls indicates that an earlier rate of pubertal maturation in girls correlates with a number of detrimental outcomes compared with on-time or later maturation (Mendle, Turkheimer, & Emery, 2007). In particular, girls who mature earlier than their peers seem to find pubertal adjustment especially challenging and are more likely to experience detrimental consequences (Caspi & Moffitt, 1991; Ge, Conger & Elder, 1996). Early maturation precipitates a flurry of

social changes for which girls may not be "developmentally ready" (Rierdan & Koff, 1993). This is because maturation aborts the resolution of developmental tasks from the preadolescent girls and they are less equipped to cope with the social changes as compared to the late maturers. Cultural anthropology researches conducted in the Western world indicate pathological outcomes associated with early puberty. However in some cultures, early menarche is considered socially advantageous in India or Kipsigis of Kenya, (Borgerhoff, 1989)

- Studies have found that early maturers take less time to progress from Tanner stage 2, characterized by breast budding and pubic hair development, to menarche than it does for later maturers (Apter and Vihko, 1985). It seems likely that due to restricted period of time of maturation in early maturers the ensuing physical changes might aggravate the feelings of confusion and fear in early maturers.

- Early-maturing girls were less popular, less poised, less expressive, and more submissive and withdrawn than late maturers.

- Early-maturity in girls compounds emotional problems, including problems with self-image, depression, anxiety, eating disorders, and panic attacks. These problems seem to be related to girls' feelings about their weight. However these findings tend not to apply to females in cultures such as Germany, where attitudes toward sexuality and appearance are not as important as they are in the U.S.

- While self-image may suffer, early-maturing girls tend to be very popular.

- Due to behaviour problems linked with early maturation early maturing girls are more likely to exhibit poor academic performance in high school (Dubas, Graber and Peterson, 1991) than on-time or later maturing peers. Studies by Graber et al, 1997; Simmons and Blyth, 1987; Stattin and Magnusson (1990) indicate that early maturers are more likely to get in trouble at school, exhibit absenteeism and truancy. They report less interest in academic subjects and are less likely to pursue college educations (Stattin & Magnusson, 1990). They tend to have lower educational aspirations.

- Early-maturing girls may experience more difficulties because of the pressure they feel in relation to males, especially given the fact that early-maturing girls are more likely to associate with males who are older.

- Stice et al. (2001) observed that early maturing girls were at 1.9 times at risk for depression and 1.8 times at risk for substance use such as drug and alcohol abuse.

- However, early-maturing females who attend all-girl schools do not seem to experience the same difficulties.

- The early-maturing females tend to be more psychologically advanced than other females once they reach adulthood.

Cognitive Changes During Adolesence

Cognitive development refers to the development of the ability to think and reason. The cognitive advancements are both quantitative as well as qualitative in nature. It is during adolescence that acquisition and utilization of knowledge nears it aximum capacity. Improvements in basic thinking abilities generally occur in five areas during adolescence: attention, memory, processing speed, organization, and metacognition. Development at this stage is influenced both by brain maturation and environmental stimulation. Schooling, religious institutions and culture too play an important role in this. The change in cognitive realm help adolescent's personality development (Helms and Turner, 1995).

According to Jean Piaget, adolescence is that stage where major cognitive changes take place-

● **Shift from concrete to abstract mental functioning** that allows the adolescent to think and reason in a wider perspective. In the previous stage of cognitive development i.e. the middle school years, the children's thinking is bound by immediate perception and concrete-empirical experiences, while an adolescents' thinking is not bound by immediate perceptions and hence are able to understand hypothetical relations in complex abstract propositions. They enter into formal operations during adolescence. Not all people become capable of formal operations; and those who are capable do not always use it.

● **Hypothesis testing and flexibility of thought** is the characteristic feature of mature mind that is exhibited by an adolescent at this stage. Piaget (1953) refers this to as hypothetical-deductive reasoning. The adolescent is able to understand purely hypothetical propositions, think systematically and establish all logical relationships within a problem, then generate tentative solutions and then test each of these solutions and accept those that work and discard those which don't. The ability to consider possibilities, as well as facts, may influence decision-making, in either positive or negative ways. Adolescents make deductions on hypothetical basis. This allows the adolescent to think and reason in a wider perspective. Vocabulary and other aspects of language development takes place during adolescence, especially those related to abstract thought. Adolescents enjoy wordplay and create their own "dialect."

● **Explanation of phenomena** occurs during adolescence due to flexibility and maturity rather than merely describing phenomena as middle-aged children do (Peel, 1972). Explanatory thought includes testing of hypothesis, use of imagination and recall of possibilities to explain phenomena.

● Due to mature thought patterns the adolescents attain **insight into and interpretation of literary materials.** They are able to understand the meanings of metaphors, political cartoons, appreciate and comprehend

riddles (Elkind, 1967; Shaffer, 1930; Shultz and Pilon, 1973).

- **Concept of Time**: The ability to conceive past develops in adolescence. By age 8, the children are readily able to distinguish historical periods and eras. By age 11 years they acquire concept of historical chronology and by the age 14 adolescents are able to understand future perspectives.

There is a difference in time orientation of sexes during adolescence. The male adolescents cling to childhood plans as they make plans for adulthood. As far as females are concerned greater time continuity exists throughout life span (Rogers, 1972).

Time perspective is an outcome of the socialisation process (Lamm, Schmidt, & Trommsdorft, 1976). Social class also influences time orientation. The lower class youth are more present-oriented, while middle-class are future oriented, while the upper-class emphasise on traditions and are oriented to past.

- **Adolescent egocentrism** is a phenomena described by Psychologist David Elkind. Drawing upon the work of Piaget's theory of cognitive development, Elkind (1974) contends that adolescents go through a stage of self-absorption that leads to only being able to see the world through one's own perspective. He called this stage egocentrism. Due to egocentrism an adolescent is unable to draw a distinction between their perception what others think about them and what people actually think in real life. Although they are introspective, analytical in their cognitive processing, the physical metamorphosis that they are undergoing leads to mental preoccupations. This compels an adolescent to believe that everybody is preoccupied with their appearance and this belief contributes to the egocentrism of the adolescents. Since they fail to make a distinction between what others are thinking about and his own thoughts about self, this leads to egocentrism.

- **Imaginary Audience** is an outcome of egocentrism when adolescent believes that they are the focus of every one's attention or on a "centre stage" (Elkind, 1967). They create imaginary audience which continually evaluates and judges them. This explains their moodiness, being embarrassed at trivialities and a large number of other typical behaviours exhibited by them.

- **Personal fable** is the belief of an adolescent that they are highly special and very unique and no one like them has ever existed on earth.

- **Metacognition** is thinking about one's thoughts. Metacognition is relevant in social cognition, resulting in increased introspection, self-consciousness, and intellectualization. Adolescents are more likely to question others' assertions and less likely to accept facts as absolute truths.

Psychological, Social, Emotional Development During Adolescence

Adolescence is a stage when human beings (age 11-13 years) start questioning "Who am I?", "What is the purpose of my life?", "What should I do?", "Does God actually exist?", "Why do I have to be under my parents control?" They subject themselves to constant self evaluation and self appraisal. And this makes them very self-conscious. But this is an exercise to define ones sense of self and establish adolescent's identity. Identity formation begins with process of detachment from parents and greater identification with peers. Conflicts arise between parents and children due to detachment during middle adolescence (age 14-15 years). But these conflicts eventually help in establishment of an independent identity. They develop their individual set of beliefs and values. By late adolescence (ages 16 onwards) the adolescents who are able to cope with conflicts with parents develop a 'new sense of self'. Self dependence and a sense of responsibility become apparent. They develop a stable sense of identity and place in the society (Evernerd and VanderWerfforteten, 1983; Harris and Liebert, 1984). They develop an identity distinct from their parents. However, those who are not able to cope with identity crisis end up in 'identity confusion' (Erikson, 1968). The Identity formation during adolescence is influenced by many factors like family and societal values, cultural & ethnic background and the socio-economic status. Family dependence and relationships diminish and they develop a strong need for peer support and acceptance. With greater interactions with peers their social skills are enhanced & social and sexual behaviours refined. They are able to establish relationship with the opposite sex. Greater the adolescents' conflict with their parents, greater the identification with their peers. By the time they are in late adolescence the adolescents are psychologically integrated, have developed a fairly consistent view of the outside world, they have set realistic goal in life and by now have discovered their role in the society.

The social-emotional changes are part of a child's voyage to adulthood. Adolescents are very emotional and receptive to emotions and exhibit the emotions intensely. They are equipped with greater understanding of emotions, expressing it and regulating with growing maturity. Emotions become the key to establishing social relationships, navigating these relationships and functioning effectively in the world and recognizing purpose of life. Major social-emotional changes include:

- Exploring 'Who am I?' and establishing the purpose of life.
- Becoming independent and ability to take on responsibilities. This is a sign of maturity that adolescents are heading towards.
- Become more peer oriented moving away from the family both socially and emotionally. They have frequent arguments. However peers can affect only short term, immediate

decisions e.g. their appearance, their clothes; but it is the parents who shape their long term decisions pertaining to education, career choices, morals and values. Parents hence have to tactfully establish positive dialogue with them as this is just a passing phase.

- Adolescence is the stage of formal operations and adolescents are thinking abstractly and questioning different viewpoints. Hence the teenagers in this stage tend to differ from parents and see things differently.
- They become more sensitive to other people's emotions as they grow older.
- The adolescents exhibit strong feelings and intense emotional ups and downs. They may appear moody, aggressive and withdrawn at times. In a nutshell unpredictable. Adolescents at this stage go through a process of learning and acquiring the skills to control their emotions and express them in a grown-up manner.
- They become more self conscious, especially about their body image and physical appearance. This affects their self-esteem and they might compare their appearance and bodies with those of peers and age mates. Positive feedback from parents and siblings can lead to a healthy social-emotional development.
- Studies show that there is a difference between the sexes in emotional needs during adolescence. Studies by Bolognini et.al. (1996) on self-esteem and mental health in

early adolescence clearly show that girls tend to have lower self esteem than boys. Pollack & Shuster's (2000) studies indicate that boys may need to learn to be more cooperative and that they can express emotions other than anger. Girls on the other hand may require help in learning to be more assertive and express their anger.

- Adolescence is the stage when they look for new experiences and even take risks as they think it's a 'bulletproof' stage and nothing bad can happen. However they have to be made aware of the consequences of their action.

Moral Development During Adolescence

Morality refers to the distinction between right and wrong. Moral development is a process whereby an individual is consciously able to distinguish good from bad and right from wrong and is able to adopt guidelines, standards or principles of right and wrong from infancy to adulthood. A number of theories explain moral development and how the moral values are acquired that will be enacted in later life. Moral development in early childhood begins when certain behaviours are termed as "good" which is rewarded by parents and they are distinguished from behaviours that are "bad" and are hence accompanied by punishment. But as children become older, morality encompasses complex set of ideas, values and belief (Elkind, 1971). Eminent Psychologists Jean Piaget and Lawrence Kohlberg delved into moral development.

Piaget (1932) contends that morality comprises of system of rules handed down from adults to children. Children learn the standards of conduct by training, practice, developing consciousness and by nurturing respect for these standards of conduct. Between 5-9 years is the age of 'hetronomous morality' or 'moral realism' where morality is imposed from outside. Morality for children is strictly obeying rules put forth by the authority figure i.e parent, an adult or God. Any transgression means severe punishment or 'immanent justice' and the punishment is related to severity of wrong-doing i.e. 'expiatory punishment'.

During middle school years the children are capable of understanding intentions behind actions and enter into stage of morality cooperation. Middle schoolers start understanding rules are not absolute; they can be changed with agreement. Since they are older and cognitively developed they understand and appreciate reciprocity of relationship.

During adolescence with the attainment of formal operations, highest stage of moral development that is moral autonomy is reached. Adolescents not only understand the rules by which the games are played, but also generate possible new rules that can make games more challenging.

Inspired by Piaget, Kohlberg (1958) too proposed that moral development through a series of stages. He put forth three levels of moral development. While infants are amoral, very young children exhibit primitive morality. This first level is the Preconventional level when children upto 9 years of age don't have a personal code of morality. They think about morality only in terms of external authority. Moral reasoning is based on person's own needs and perception of right and wrong. When actions are wrong they are punished. And when right they are rewarded. In the second level that is the Conventional morality level, when moral reasoning develops through a set of rules that are put forth by parents or laws of the society. This is the stage when middle schoolers, take into account the expectations of society and law. The moral rules are internalized. Moral thinking is rather inflexible at this stage and they are absolute guidelines for the child that ought to be followed. According to Kohlberg developmentally most adults' in fact are in this level of morality. During adolescence moral development reaches Post Conventional morality stage. The adolescents self define moral principles. They begin to question nature of society and their moralities are based on reason and personal principles and not defined by the society rules.

Keniston (1970) while describing factors in moral development during adolescence emphasizes that it's important that adolescents should continue the search for self and not become prematurely integrated into adult society. He further contends that there are many catalysts that increase Post Conventional morality in adolescents. College bound students have higher levels of moral development than youths not

headed for college. Interactions with Professors and fellow students allow them to abandon simple dualities of right and wrong and enable them to seek relativistic concept of morality and truth. In addition new educational, technological and historical factors promote Post Conventional morality. And finally whether highest stages of moral development leads to bigotry, dogmatism or development of real ethical values, will all be contingent upon extent of development of compassion and empathy for fellow humans.

Educational & Vocational Development During Adolescence

During adolescence school is important as it is so organized to address the changing cognitive, physical, social, emotional, moral development of an adolescent. School transmits knowledge and information and represents adolescent's society where they have their peers, companionship and common interests. School offers valuable group experiences, group discussions, decisions, peer interactions (Kellough & Kellough, 2008), team projects which are all essential for effective and sound communication skills and interpersonal relationships.

Teachers pay a significant role in the lives of adolescents. Teachers provide a space where adolescents can test their emerging ideas, they provide appropriate learning experiences, train them to be sensitive to the needs of self and others and provide an environment so that it fosters active participation and learning on part of adolescents. If classroom experiences can nurture feelings of progress and growth, feelings of dignity and self respect, it can go a long way in drastically reducing school dropout rates among adolescents.

Schools and teachers have another important contribution and that is providing successful vocational and career guidance programs. The adolescents have to be given factual information about various career choices and vocations of specific and pragmatic nature by their teachers and guides. Effective Vocational /occupational planning are contingent on number of factors (Bryant, Zvonkovic and Reynolds 2006) :

- Whether it is based on adolescent's interests?
- Has the adolescent made a realistic appraisal of self?
- Does the adolescent have the requisite potential and ability (physical, intellectual, social etc) to pursue the desired vocation/career?
- What are parental aspirations and expectations?
- Whether the occupational/vocational choice is realistic or distorted perception of certain jobs?
- Whether the essential competencies for the occupational/vocational choice are present?
- Has the socioeconomic background of the student been assessed i.e. is the family in a situation to support and sustain the aspirations?

Vocational guidance in schools offers opportunities for taking informed future decisions about appropriate career choices. It actually can set and steer an adolescent's future course of life in the right direction.

Conclusion

In conclusion adolescence is a tumultuous stage in human life. It is akin to rebirth of a human being, as the adolescence is faced with extreme challenges to cope with the manifold changes in physical, psychological, social, emotional changes that are triggered by the hormonal changes and shaped by the environment. The emerging social and moral values of an adolescent, the sexual adjustments and finally the educational & vocational choices that they make are influenced by the culture and society that they grow up in. Parents, teachers, peers and the significant others in the adolescent's environment have to be supportive and empathetic about the turmoil that they grow through to enable a smooth well adjusted transition into adulthood. According to WHO (2015) "adolescence is a period of preparation for adulthood during which time several key developmental experiences occur. Besides physical and sexual maturation, these experiences include movement toward social and economic independence, and development of identity, the acquisition of skills needed to carry out adult relationships and roles, and the capacity for abstract reasoning. While adolescence is a time of tremendous growth and potential, it is also a time of considerable risk during which social contexts exert powerful influences".

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CONSTRUCTION AND STANDARDIZATION OF ADJUSTMENT INVENTORY FOR SECONDARY SCHOOL STUDENTS

Paresha Thakar*
Research Associate, GCERT, Gandhinagar.
E-mail : phthakar80@gmail.com

ABSTRACT

The present study aims at constructing and standardizing an adjustment inventory for the measurement of capacity of adaptability of Gujarati medium secondary students. During the preparation of this inventory, five factors are taken into consideration which influences more on the adaptability of students. To verify the reliability and validity of Adjustment Inventory constructed for Secondary School Students, to verify the standardization of Adjustment Inventory constructed for Secondary School Students and to establish the norms are the main objectives of this research. In this research, the effectiveness of three most influential variables i.e. caste, area and standard are studied and fixed the criterion for making these norms fixed accordingly. Hence, the students of standards – 8, 9 and 10 of the academic year 2010 – 2011 in Gujarati medium government approved schools located at North Gujarat are the population of the research. According to the variables of this research, 3000 students have been selected as a sample. The reliability index of this adjustment inventory is in between 0.49 to 0.91 hence the adjustment inventory is reliable. The validity of this adjustment inventory is between 0.51 to 0.88 that possesses high correlation; hence the adjustment inventory is significant. The norms of standard and gender are established.
Key-words: adaptability, caste, Adjustment Inventory

* Author for correspondence

INTRODUCTION

"Ask me my three main Priorities for Government and I tell you: education, education and education."

On the occasion of "Labour Party Conference" on 1st October, 1996 Tony Blaire stated the above statement which of course reveals the importance of education.

Today, in India as well as around the globe, efforts have been made for improving quality and the spread of education in primary, secondary, higher secondary and various higher education levels. Despite these efforts by governments and so many educationists, the achieved success is not up to the expected levels. Why does this happen? In reply to this question, one may say that there are many factors which affect this issue. Out of which if we consider psychological reason, there are so many factors i.e. students' interest, inspiration, appropriation, adaptability, intelligence quotient which has a lot of influence

over their education. Researcher has frequently experienced that these factors influence a lot especially over secondary students and hence they perform badly in their education. Hence, if these problems regarding the adaptability of students are properly identified at right point of time, proper actions may be taken to rectify these problems; the efforts of students as well as teachers may be fruitful to all. The researcher has taken this subject as her study for the simple reason that the adaptability research is required for students to get proper guidance so that their educational and social life can become consistent.

Aims of Research

The aims of the present research are :-

To construct an Adjustment Inventory for students of secondary school.

To verify the reliability of Adjustment Inventory meant for Secondary School Students.

To verify the validity of Adjustment Inventory meant for Secondary School Students.

To establish the norms of Adjustment Inventory meant for Secondary School Students.

To check the effect of various variable characteristics based on marks obtained for Adjustment inventory by the students of secondary school.

Understanding of Technical Terms

The understanding of Technical Terms in this research is as below :

Secondary School :

The institution which offers education for standards – 8, 9 and 10 is known as Secondary school.

Secondary School means the school approved by the government which offers the education for standards 8, 9 and 10.

Secondary School Students :

Since standard – 8 has been included in higher primary level in many schools in Gujarat state from the academic year 2010 – 2011, the students who study in standard 8 in these schools are considered as higher primary school students. But the researcher has not included such schools in the present study, and hence the students who have completed their primary education from primary schools and who study in standards 8,9 and 10 in government approved secondary schools are considered as secondary school students only.

Adjustment :

"Adjustment is the process by which a living organism maintains a balance between the needs and circumstances that influences the satisfaction of these needs."

-      Boring, Langfield and Weld

Adjustment Inventory :

'The list of statements, which helps to measure the adjustment capability of personnel, is known as Adjustment Inventory.'

Standardization :

"A Standardized test is one in which the procedure, apparatus and scoring are fixed, so that precisely the same test can be given at different times and places."

The researcher is followed the following steps to standardize the test papers:

1.   The test paper is prepared by expert opinion and analyzed by pre- piloting and piloting implementation .

2.   The guideline for time line and necessary instructions are decided.

3.   The reliability, validity and norms of this inventory are established .

Area :

In this research, two areas i.e. Rural and Urban are covered.

1.   Rural Area : The area which has population up to 15000 and the area except district and sub-district head quarter, villages are considered as Rural Area.

2.   Urban Area : The area which has population more than 15000 and the City area including district and sub-district headquarters, except village area is considered as Urban Area.

Variables of research

In this research, considered variables are mentioned below:

Table – 1 Variable considered in research

Sr.No.	Variables	Type of Variable	Level of Variable Level	Understanding of variable	Tool for measuring
1.	Gender	Independent	2	Boys Girls Information	According to Primary
2.	Area	Independent	2	Rural Urban	According to Primary Information
3.	Standard	Independent	3	Standard – 8, 9 and 10	According to Primary Information

Delimitation and Limitations of research

● Students studying in standards – 8, 9 and 10 at various government approved Guajarati medium secondary schools situated at North Gujarat are included in this research.

· This adjustment inventory is in verbal form, not in the form of non-verbal.

· This adjustment inventory is prepared and standardized on a study undertaken over 3000 students who studied in standards 8,9,and 10 during the academic year 2010- 2011.

Field of Research

The field of this research is as follows :

Educational Level :	Secondary Level
Subject :	Educational Psychology
Measurement and Evaluation :	Psychological Measurement

Types of Research

The main aim of this research is to practically apply the adjustment inventory to the students of secondary school level. Adjustment inventory constructed during this research will be highly useful to provide direction for the adjustment related issues of students in their education. Hence, this research has utility for practical teaching.

Research Methodology

Standard wise Survey Research System is selected asr research methodology is opted for performing this research.

Population and Samples of Research

In this research, adjustment inventory is constructed and standardized for secondary school students. Hence, the students studying in standards – 8, 9 and 10 during the academic year of 2010 – 2011 in Gujarati medium government approved school located at North Gujarat are covered. There are so many methods available for sample selection, out of which researcher has opted Level wise Arbitrary Sample Selection Method. In this level wise Stratified Random Sample Selection Method, from 4 Districts of North Gujarat 4 – 4 sub-districts are selected randomly, hence from the 16 sub-districts randomly 22 secondary schools have been selected by draw system. From all the selected 22 secondary schools, girls and boys who studied in standards – 8, 9 and 10 were selected randomly from each school. Considering the variable, 3000 students have been selected as a sample.

Construction of Tool

● **Aim of Construction of Tool :**

The significant of aim of construction of adjustment inventory is to measure the adjustment capability of secondary school students, hence researcher of this research has constructed adjustment inventory.

● **Factor of Inventory :**

Five significant factors have been selected depending upon Bell Adjustment Inventory (Converted), Desai Adjustment Inventory and Dr. J. B. Asodiya constructed adjustment inventory and also adjustment inventory which was used in prior researches for this research.

1. Family Adjustment.

2. Economic Adjustment.

3. Social Adjustment.

4. Emotional Adjustment

5. Educational Adjustment.

● **Construction of Columns and Options :**

Factors related circumstantial items have been constructed for adjustment inventory. Factors related items are set in Yes – No (Logical) type format, in which positive and negative both items are included.

● **Pre-piloting Experimentation :**

There were 151 items constructed for pre-primary experimentation. According to experts' suggestions and response received from 30 students on adjustment inventory 27 items out of 151 items were cancelled and adjustment inventory is constructed with remaining 124 items for primary experimentation.

● **Piloting Experimentation :**

For the purpose of getting response for Primary Experimentation in respect to adjustment inventory, the sample of 370 students was selected and subsequently item wise analysis performed as per t-ratio and co-relation coefficient. The items have been selected whose t-ratio is more than 3.51. As per each and every factor Co-relation coefficient of each items were ordered in descending order. Items which are having more than 0.20 co-relation coefficient values were selected. After the selection, each item was assigned new index numbers. Thus, depending upon t-ratio and co-relation coefficient; finally 100 out of 124 items are selected for adjustment inventory.

● **Construction of final adjustment inventory :**

20 items of each factor are included in final adjustment inventory, which are having 100 items. Answer paper is not constructed separately. Against each and every item, the logical response (Yes / No) is to be given in circle. On the cover page of inventory, the primary information of students as well as instructions for giving answers is given.

● **Reliability, Validity and Norms establishment :**

■ **Reliability:**

Various methods have been applied for the calculation of reliability in co-relation coefficient for adjustment inventory. Hence, limitation can be avoided in any of the method and thus the precision in obtained result may be increased. Reliability index, correlation coefficient and error ratio obtained through applying various methods are describe in table-2.

Table – 2 Reliability index and error ratio obtained through various methods

Sr.No.	Test Reliability Methods	Numbers of Students	Reliability Index	Reliability Standard	Error Ratio
1.	Test – Re-Test Method	200	0.87	0.93	± 0.017
2.	Spilt Half Method	200	0.77	0.88	± 0.029
	As per Spearman Brown formula	200	0.87	0.93	± 0.017
	As per Roolon formula		0.49	0.70	± 0.054
	As per Flannagan formula		0.64	0.80	± 0.042
3.	KR_{21} Method	3000	0.91	0.95	± 0.0031

We can see from table-2 that the Reliability index obtained through various methods for adjustment inventory is from 0.49 to 0.91, which is having very close correlation coefficient. Hence, we can conclude that, the reliability of this adjustment inventory is considerably high.

● **Validity :**

The calculation of validity correlation coefficient is performed through various methods for this adjustment inventory. Hence, limitation in any one method may be neglected and precision of obtained result may be increased. Validity of this adjustment inventory obtained through various methods is described in Table – 3.

Table – 3 Validity of Adjustment Inventory through various methods

Sr.No.	Method for testing significance	Numbers of students	Correlation coefficient / Details
1.	Face Validity	-	Adjustment inventory is obviously meaningful
2.	Co-current Validity		
	1. There is correlation between this adjacent inventory constructed by researcher of this research and Dr. K. G. Desai constructed adjustment inventory.	80	0.81
	2. There is correlation between this adjacent inventory constructed by researcher of this research and Dr. J. B. Asodia constructed adjustment inventory.	100	0.51
3.	Construct Validity	3000	0.76 to 0.88

We can conclude through table – 3 that, the exactness of adjustment inventory obtained through various methods is in between 0.51 to 0.88; hence we can say that this adjustment inventory is more precise.

● **Establishment of Norms   :**

In this adjustment inventory, standardization is done gender wise and standard wise. In which norms index with percentile rank, T-Score and stanine number is obtained. In this adjustment inventory area, difference does not exist, hence the establishment of standardization for percentile is not required.

Data Collection and analysis of information

1   Data Collection :-

For the sake of accumulation of information in this research, adjustment inventory containing 100 items filled by 3072 students studying in standards – 8, 9 and 10 in various 22 secondary schools situated in 4 various districts in North Gujarat. For the management of adjustment inventory, at pre-decided time students were taken in full confidence to promote light mood and well-instructed for giving their answers. At the time of data entry, 72 incomplete answer sheets were neglected and remaining 3000 answer sheets were considered as final sample.

2 Analysis of Information :-

In this research, for the frequency distribution of each group, calculations for average, standard deviation, mean value, quartile, skewness, etc. have been performed. Same way, critical ratio, t-value (CR) for the difference of average on the basis of gender, area and standard has been tested.   In addition to these, for the reliability test of adjustment inventory has been calculated by re-test, split half, and KR – 21 methods. Validity has been calculated by three methods i.e. face validity, co-current validity and construct validity. Gender and standard norms have been established by method of percentile rank, T- score and stanine number. For the sake of simplicity for information, various charts have been prepared and information represented in various chart forms.

Findings of research

The significance of any research highly depends upon its conclusions and findings. Precision, quality and successfulness of research or result can be decided by its conclusions. The major conclusions of this research are as follows. :-

● The reliability index of this adjustment inventory is in between 0.49 to 0.91; hence the adjustment inventory is reliable.

● The validity of this adjustment inventory is in between 0.51 to 0.88, which possesses high correlation; hence the adjustment inventory is significant.

● The adjustment capabilities of girls is higher than that of the adjustment capabilities of boys, we can conclude that the gender influences over adjustment capabilities.

● The adjustment capabilities of students of rural and urban areas are equal, we can conclude that the region do not influence over adjustment capabilities of students.

● There is significant difference between the obtained average percentile of standards – 8, 9 and 10 students; hence we can conclude that, the standard influence over adjustment capabilities of students.

Educational Conclusions

The researcher has come to the below mentioned educational conclusions which are the result of this study:

1. Students studying in standards – 8 to 10 will be the useful tool for this adjustment inventory for their adjustment capability measurement.

2. This adjustment inventory will be helpful to reveal the adjustment capabilities of students studying in standard – 8 to 10 and will also be helpful to guide them for increasing their necessary adjustment capabilities.

3. For the future researches, this research and adjustment inventory will be helpful to act as reference material.

Summary

Now a days, a lot of discussion goes on among educationists regarding personal differences for education of students. The researcher is of the opinion that the true service of the educationists, teachers, and other learned people in the educational field towards the nation will be considered worthy only when they will utilize such a psychological test for studying students' adjustment capabilities, their

capacity and limitations and when they will make some serious endeavors for   the upliftment of education of students. This is the only possible way to proceed to build a nation full of morality and to make its future generation full of humanity.

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