Dear Readers!

An element of successful life for any person, especially for the adolescent youth is considered to be the measure of emotional competence or emotional intelligence which is the buzz word of business and educational campuses today; it basically denotes the personal and social skills which will enable a person 'to recognize, interpret, and respond constructively to emotions in oneself and others'. To say in other words, the ability to face the psycho-socio-economic- political challenges and sustain a smooth relationship with others has become major tasks among the youth, in the context of rapid growth of technology. The impact of media including print and electronic on the adolescents and early adults is immeasurable;

According to a recent survey, "22% of teenagers log on to their favourite social media site more than 10 times a day, and more than half of adolescents log on to a social media site more than once a day. Seventy-five percent of teenagers now own cell phones, and 25% use them for social media, 54% use them for texting, and 24% use them for instant messaging". Thus, it is amply evident that younger generation's social and emotional development is occurring while on the Internet and on cell phones (Gwenn Schurgin O'Keeffe, Kathleen Clarke-Pearson and Council on Communications and Media Pediatrics April 2011, 127 (4) 800-804; DOI: https://doi.org/10.1542/peds.2011-0054). A study done in 2019 among 12 to 15-year-olds found that those who spent more than three hours a day using social media are at heightened risk for mental health problems. Another study found that using social media more than three times a day predicted poor mental health and well-being in teens (https://www.mayoclinic.org/healthy-lifestyle/tween-and-teen-health/in-depth/teens-and-social-media-use/art-20474437).

While lamenting on the adverse attitude and distressing behaviour of the youth, the parents fail to understand and acknowledge the vital truth that they are the original causes for the same; those far-reaching consequences could be exterminated provided, parents begin the initiation for rectification in their homes. What do they have to do? Don't allow the bedroom to be converted into TV- viewing, video-gaming and internet-chatting spaces; rather redesign the daily schedule in such a way to increase space and time for the common or family recreation. This will enable the person to observe emotions and behaviours of others and the self, read the emotions and expectations of family members,and finally to construct new attitude, knowledge and behaviour pattern to be displayed in common.The competence to manage the emotions of self and others is well developed only when the opportunities are created to interact with humans in group whereas during the use of media, the person becomes more individualistic and closed in his or her thought pattern. Similarly the teacher has to organise the pedagogy of teaching-learning to accommodate the group activity so as to nurture listening, discussing and communicating and eventually strengthening the emotional competence. This is the need of the hour in all our educational institutions.

Wishing you a happy reading of the articles and papers of this issue of RRE and as usual we await your feedback.

With Regards
Editorial Board.

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CONTENT

ASSESSMENT OF EMOTIONAL STABILITY IN STUDENTS OF GOVERNMENT SCHOOL– A CASE STUDY

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ABSTRACT

Anxiety, agitation, fear, anger, pleasure, love, envy, and competition are the attributes of emotional transformation during the adolescent phase. This paper reports the outcome of the analysis of Emotional Stability (ES) of adolescent students. This survey-based study was conducted on students of science and social science streams of Senior Secondary (SS) schools in Delhi. The objectives of the study were to identify the differences in emotional behaviour of adolescent boys and girls as well as differences in ES of students of two streams of a government running SS school in Delhi Metropolitan City. The tool Emotional Stability Test for Children (ESTC) by Sen Gupta and Singh was used in this study. There were only three variables i.e., emotional stability, gender, and streams of study, and 6 hypotheses related to this problem. The study provides insight that there is no significant difference between the students of science and social science disciplines. Further gender has a negligible effect on the emotional attitude of students.

Keywords : *Adolescence, Emotions Stability (ES), Gender, Stream.*

Introduction

Students at adolescent stage live through a variety of emotions like anger, joy, sadness, love, happiness, fear, depression, hope and anxiety, instability, mood swings and fluctuation of feeling egotism. Curbing such emotions leads to emotional stability and a firm mental state. It is a kind of skill to control emotions pertinently and offers significant educational growth and development. Love, care, motivation, and support of parents to their children can enhance emotional stability (Arora and Kaur 2014). Parents, teachers, and other faculty members should make appropriate efforts like good teaching strategies, sympathetic attitude towards students so that they can easily cope up with academic stress (Monika 2017).

Related Literature Review

Self-motivation provides positive results in the study whereas a depressive state of mind performed poorly in academic pursuits (Jain et al., 2017). Nadaf (2019) concluded that a significant difference exists between emotional intelligence and gender, geographical location, socio-economic status, and birth order of the students. Nilsson (2017) observed that boys offend more than girls which are correlated with family variables. Further, the family variables cannot explain gender differences in offending.

Pandey (2017) elucidated that a range of emotions appears during the adolescent stage of life. The role of parents and friends is crucial to assimilate those emotions in life and adjust to situations (Rachel et al 2016). An external environment such as a type of school has the least influence on the emotional stability of students. However, an internal condition such as the socioeconomic status or home environment of students stimulates emotional behaviour (Sharma and Pal 2017; Jain and Mohta 2019)).

Objectives

Ongoing discussion underlines the significance of the study of emotional stability (ES) of adolescents' boys and girls who have been studying in a Government School of Delhi Metropolitan city. The key objectives and corresponding hypothesis of the study are as follows.

1. To study the difference, if any, in emotional stability of girls and boys of government schools (H1);
2. To study the difference, if any, in emotional stability of children of science stream and Arts (social science) stream (H2);

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3. To study the difference, if any, in emotional stability of girls and boys of science stream (H3);
4. To study the difference, if any, in emotional stability of girls and boys of arts (social science) stream (H4);
5. To study the difference, if any, in emotional stability of girls of science and arts (social science) stream (H5);
6. To study the difference, if any, in emotional stability of boys of science and arts (social science) stream stream (H6).

Methodology

In this survey-based study120 students (60 boys and 60 girls) of SS School, located in Delhi Metropolitan city were selected randomly. The tool containing 15 questions framed by Sengupta and Singh (1985) on the Emotional Stability (ES) Test for Children was modified and used. The majority of students come from lower socio-economic or middle-class social stratum. All positive items which were endorsed by the students as "Yes" and the negative items, were endorsed as "No" were given a score of +1 and 0 respectively. The mean, standard deviation (SD), and 't' test were used to assess the significant differences to accept/reject the null hypotheses.

Results and discussion

Table 1

Magnitude of the emotional stability of children

ES Score	Magnitude of ES	N=120			
		F	M	%	SD
Up to 5	High	60	4.25	50	0.91
>5	Low	60	7.32	50	1.3

The score of emotional stability has been calculated which has been ranged from 1 to 11. Accordingly, the attribute has been categorized as the high magnitude of ES of (up to 5 ES score), and low magnitude (>5) (table 1). The mean lowest ES score has been 4.25 (±0.91) and the mean highest has been 7.32 (±1.30). The attribute is 50 % in each category that is 60 students have been <5 ES and the remaining 50% of students have ES >5.

Hypothesis 1 : There is no significant difference between the emotional stability of boys and girls of government schools.

Table 2

Statistical analysis of the emotional stability of boys and girls.

Category	No. of students	Mean	SD	Calculated 't' value	Remark
Boys	60	5.8	1.74	0.095	NS
Girls	60	5.77	2.06		

The table 2 shows the gender-wise mean and SD of boy and girl students. The mean (±SD) for the two genders have been 5.80 (±1.74) and 5.77 (±2.06) for boys and girls respectively. The student 't' value calculated was 0.095 (df=118) and it is not significant at 5% level. It indicates that there is no significant difference in the degree of emotions of boys and girls and accordingly the proposed hypothesis is accepted.

Hypothesis 2 : There is no significant difference between the emotional stability of students of science and arts (Social Science) stream.

Table 3

Statistical analysis of emotional stability of students of science and social science

Stream of study	N	Mean	SD	Calculated 't' value	Remark
Science	60	5.9	1.87	0.67	NS
Social Science	60	5.67	1.95		

The table 3 indicates that the mean and SD of ES of science students were 5.9 and 1.87 and the mean and SD of ES of social science stream were 5.67 and 1.95. The 't'–value obtained was 0.670 (df=118) which is not significant at the 5% level. It is concluded that the proposed hypothesis is true. There is no alternate hypothesis to validate the result.

Hypothesis 3 : There is no significant difference between the emotional stability of boys and girls of science stream.

Table 4

Statistical analysis of emotional stability of boys and girls of science stream

Category	No. of students	Mean	SD	Calculated 't' value	Remark
Boys	30	5.73	1.62	0.689	NS
Girls	30	6.07	2.1		

The table 4 indicates that the mean and SD of ES boys and girls of the science stream were 5.73 and 6.07 and SD were 1.62 and 2.10. The 't' value obtained was 0.689 which is not significant at 5% levels of significance. It indicates that the proposed hypothesis is accepted and the emotional state of boys and girls studying science stream are alike.

Hypothesis 4 : There is no significant difference between the emotional stability of boys and girls of arts (social science) stream.

Table 5

Statistical analysis of the emotional stability of boys and girls of the social science stream

Category	No. of students	Mean	SD	Calculated 't'-value	Remark
Boys	30	5.87	1.89	0.793	NS
Girls	30	5.47	2.01		

Table-5 depicts the mean and SD of the ES level of boys and girls of social science discipline. The mean and SD of ES boys and girls of social science stream were 5.87 and 5.47 and 1.89 and 2.01 respectively, which has not been happened to be significant at 0.05 level (t=0.793 at 58 df) and accepts the proposed hypothesis accordingly.

Hypothesis 5 : There is no significant difference between the emotional stability of girls of science and arts (social science) stream.

Table 6

Statistical analysis of the emotional stability of girls of science and social science stream

Category	No. of students	Mean	SD	Calculated 't'-value	Remark
Science	30	6.07	2.1	1.129	NS
Social Science	30	5.47	2		

The mean and SD of girls of science and social science streams are given in table - 6. The mean and SD of Girls of two disciplines were 6.07 and 5.47 and SD was 2.10 and 2.01 respectively. The 't' value obtained was 1.129. The statistical analysis revealed that the result is not significant at $p < .05$. It indicates that the proposed hypothesis is accepted.

Hypothesis 6 : There is no significant difference between the emotional stability of boys of science and arts (social science) stream.

Table 7

Statistical analysis of the emotional stability of boys of science and social science stream

Category	No. of students	Mean	SD	Calculated 't'-value	Remark
Science	30	5.73	1.62	0.29	NS
Social Science	30	5.87	1.89		

The mean and SD of boys of the science stream were 5.73 and 1.62 and the mean and SD of boys studying social science streams were 5.87 and 1.89 (Table 7). The 't' value obtained was 0.29 (df = 58), which is not significant at 5% level. It indicates that the proposed hypothesis is accepted. It is evident that boys and girls are equal in emotional behaviour.

Conclusion

The study provides a unique glimpse into the emotional strength of adolescents in senior secondary school. High the score of tests poor emotional strength and the vice-versa. In this study, half of the students were had high emotional strength (4.25±0.91) corresponds to an average high ES score of 7.32 which is coincidental, and there is no role of the variables such as gender and stream of study. No significant difference between the emotional status of boys and girls in this study has been supported by Ajhar and Wahed (2016). However, Kaur (2019) reported a significant difference in terms of emotional maturity between male and female college-going students. The medium of the study of students has a direct influence on developing self-concept and emotional stability (Sarvaiya 2019). Strong emotional strength reinforces the self-concept, self-constructivism, individuality, emotional stability, increases self-concept in individuals (Li and Ahlstrom 2015; Chavda and Jogsan 2018).

Parental interaction and teacher involvement promote the social growth of children and motivate them to perform better in their study and yield long term academic achievement (Monika 2017). A multi-dimensional approach

such as counselling, anger management, meditation, regular exercise, mental support, education, guidance counselling, and so on may help in promoting the emotional health of children (Ajhar and Wahed 2016, Patrani and Bhakre 2019, Joan Guerra et. al. 2019).

Emotional health is a vital component of overall health. Emotional stability contributes to a sense of well-being of students (Joy and Mathew 2018). Meagre emotional control leads to anxiety, inferiority feeling, and guilt in persons. The family environment plays an important role in reinforcing the personality of children, especially during the adolescent phase. Positive family ecosystem support in developing emotional security and emotional stability and vice-versa (Jain and Mohta 2019).

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MEASURING OBSERVABILITY & CREATIVITY OF HIGHER SECONDARY STUDENTS WITH RESPECT TO MATHEMATICAL ACTIVITIES

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ABSTRACT

Successful creativity in any school teaching process is based on the effective implementation of mathematical activity. Recently the school educational system in India and abroad ignored the importance of mathematical activities in their teaching process and gave no place in their curriculum. In the present study, the investigator applied stratified random sampling and selected 145 higher secondary students as sample. The investigator formulated two hypotheses connecting observability as well as mathematical activity, and examined the relationship between the two variables, by using regression analysis (SPSS). The result demonstrates that the two variables are significantly related. This implies the implementation of mathematical activities in the school teaching methods was not successful.

Keywords : *Curriculum, Mathematical Activities, Creativity.*

Introduction

Recently the schools worldwide ignored the importance of mathematical practices among the higher secondary students and gave them no place in the school curriculum. They ignored the critical input of mathematical knowledge which is ultimately the key agent for conceptualizing and planning to make a breakthrough. While ideally, this radical departure from the linear approach should have had a negative impact on higher secondary students' practices and technical viability of the teaching process, it nevertheless enjoyed significant success.

The application of mathematical techniques becomes a major problem in today's teaching methodology. The investigator was concerned with the lack of mathematical modelling techniques and tried to identify factors in order to improve the application of mathematical

Significance of the study

The immediate commitment of any school system is that all the higher secondary students must develop, sharpen and deepen their understanding of mathematical modelling technique and its process (Cassady, J.2010). For this to occur a rigorous mathematical curriculum must be recognized, taught, and assessed in a problem-solving environment (Leaderman, N., & Niess, 2000).

The higher secondary system in India is viewed as the driving force in development of our country (Flick,L., & Bell, R,2000).Mathematical practices may have an impact on major methodology such as observability and creativity (Mohamed Ismail, S.N, 2004).Creation of knowledge based technological innovation and their commercialization through technology incubation would boot students' participation in knowledge creation and transfer process (Burkman, E,2013). Hence the investigator made an attempt to measure observability and creativity of higher secondary students with respect to mathematical activities.

Operational definitions

The investigator adopted the following operational definitions for the terms used in this title.

Observability

It is operationalized as higher secondary students' exposure to mathematical activities and their ability to demonstrate this to the community.

Creativity

It is operationalized as higher secondary students' logical thinking and imagination of mathematical activities.

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Mathematical activities

Mathematical activities is the process of creating a mathematical representation of some phenomenon in order to gain a better understanding of that phenomenon.

Higher secondary students

By higher secondary school students, the investigator means those who are studying in XI and XII standard in Namakkal Educational District.

Objectives

1. To find out the relationship between observability and mathematical activities of higher secondary students.
2. To find out the relationship between creativity and mathematical activities of higher secondary students

Null hypotheses

1. There is no significant relationship between observability and mathematical activities of higher secondary students.
2. There is no significant relationship between creativity and mathematical activities of higher secondary students.

Methodology

Sample

By using stratified random sampling technique 145 higher secondary students from Namakkal district were selected as sample. Data was collected using a research tool developed by Rao (1993), which is specially prepared to measure observability and creativity characteristics.

Statistical technique used

The data were analyzed using the SPSS-12 version. Multiple regression tests were used to ascertain how much observability and creativity are related to mathematical activities.

Analysis and Interpretation

Hypothesis 1 There is no significant relationship between observability and mathematical activities of higher secondary students.

Table 1
Relationship between mathematical activities with some selected observability variables

Dependent Variable	Independent Variables	Correlation Value (γ)	Significant value
Mathematical activities	Exposure	0.529	P>0.05
	Demonstration ability	0.432	P>0.05

Table 1, shows the Spearman's correlation coefficient for exposure, demonstration ability with mathematical activities. It is inferred from the above table that if the exposure of the higher secondary students increases, then the mathematical activities increases, if the demonstration ability increases, then the mathematical activities increases and if the observability increases, then the mathematical activities increases. Hence it is concluded that there is a significant relationship between observability and mathematical activities of higher secondary students.

Hypothesis 2 There is no significant relationship between creativity and mathematical activities of higher secondary students.

Table 2
Relationship between mathematical activities with some selected creativity variables

Dependent Variable	Independent Variables	Correlation Value (γ)	Significant value
Mathematical activities	Logical thinking	0.496	P>0.05
	Imagination	0.423	P>0.05

Table 2, shows the spearman's correlation the coefficient for logical thinking, imagination with mathematical activities. It is found that there is a positive significant relationship between mathematical activity and logical thinking and imagination. This inference points out that if the logical thinking of the higher secondary students increases, then the mathematical activities increases and also if the imagination of the students' increases, then the mathematical activities increases. Therefore, it is concluded that if the observability increases, then the mathematical activities increases.

Findings of the study

The study shows that the percentage of members in any mathematical practising institution or user group is very low. The observability of higher secondary students was generally positive towards mathematical activity. They believe that the mathematical activity is a potential teaching tool, that can bridge the educational gap and bring about a better way of life for average students.

The data showed that students need to be assured that mathematical activities do not pose a threat to their research skills. Students had a positive perception of creativity compared to traditional methods of instruction. Mathematical techniques could enable quicker access to teaching administrative skills.

Educational implications of the study

On the basis of the results the investigator presents the following educational implications.

a) Schools could organize a workshop/seminar on using skills in mathematical activities. The curriculum for higher secondary students showed issues related to rapid changes in modelling technology.

b) Additional exposure to mathematical modelling techniques is recommended. Students must be provided with adequate opportunity to practice mathematical skills.

c) Universities with mathematical modelling, facilities should collaborate with those that lack to afford students the opportunities to learn from successful mathematical modelling related experiments. The higher secondary curriculum should make guidelines for the effective use of mathematical activity.

d) It is critically important that mathematically trained and technologically competent educational experts should be utilized as resources in the curriculum decision-making bodies.

e) Strong commitment from students to embrace mathematical activity is essential in attaining the country's goals of mathematical modelling use. Active involvement of students who are users and non-users is a practical means of moving the mathematical techniques initiative forward. A cadre of students motivated by the potential of mathematical techniques can ignite the interest of others to become users.

Conclusion

Consequently, the goal of this study was to identify the factors which lead to the successful implementation of mathematical activity by higher secondary students. Finally the shared involvement and leadership quality of teachers, as well as students, facilitate a 'buy in' element that will guarantee the successful implementation of mathematical practices throughout higher secondary education in India and the teaching community at large.

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EFFECTIVENESS OF MULTIMEDIA PACKAGE IN LEARNING COMPUTER SCIENCE AMONG HIGHER SECONDARY STUDENTS

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ABSTRACT

In this study, 60 students were selected randomly from the higher secondary school and segregated into two groups such as control group and experimental group. Each group consist of 30 students. In this research, two research tools named multimedia package and achievement test were used to test the student's learning ability on programming languages. Based on the findings of this research, it is found that there is a significant mean score difference between pre-test and post-test among the higher secondary school students for learning computer science. The research findings show clearly that the teaching computer science for higher secondary students through multimedia package tool increases the students' knowledge in learning programming languages effectively.

Keywords : *Experimental group, Control group, Multimedia package, Computer science, Achievement test.*

Introduction

Educational technology is a term widely used in the field of Education, but it is often used with different meanings. The educational technology properly refers to a particular approach to achieving the ends of education. Instructional technology refers to the use of such technological processes specifically for teaching and learning. Higher Secondary is an essential stage of school education because at this stage is specialized, discipline based, content oriented course is introduced. Students who reach this stage after 10 years of general education choose subjects that would enable them to pursue their career. "The Computer Science students of today are tomorrow's scientists, engineers, and teachers at the secondary and tertiary levels" Subashini V.K (2016).

Multimedia technology has the potential and functionality to hold enjoyment for users compared to that of a standard textbook. Multimedia helps students to learn the content in a given discipline. It allows the content in a given discipline. It allows for self-pacing and discovery. Students can takes the time the need and choose the path of learning, making learning meaningful and pleasurable. Multimedia simplified the work of teachers and will be help in better understanding of concept otherwise taught by traditional methods Kuttiammal, et al. (2016).

Review of Related Studies

Ranjit kaur et al., (2015) investigated the Effectiveness of Multimedia Approach on the academic achievement of class 8th students in English. The results of the study revealed that the academic achievement scores of boys students taught English through multimedia was better than the boys students taught English through conventional method. The academic achievement scores of rural students taught English through multimedia was better than the rural students taught English through conventional method.

Umesh Chandra Kapri (2017) examined Impact of Multimedia in teaching of Science. The results of the study were that the teaching by multimedia approach of teaching science subject as of experimental group scored better at post-test in achievement test in science in comparison to the students of controlled group who taught by conventional methods of teaching.

Sunita Arya et al., (2018) revealed that Multimedia Technology had paved the new avenues for implementation of instructional and educational ideas. The results of t-test analysis of the Pre-test and Post-test Mean Achievement

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test scores revealed that there was a statistically significant difference between Achievement level of Biology students of Control Group and Experimental Group. The findings of the study suggested that Multimedia Instructional Package could be considered as a better alternative to the Traditional method for teaching Biology.

Rationale of the study

At the moment, the teaching and learning process are performed through traditional system only, but not important for sensory teaching. The traditional system is not appropriate for students, because programming language in computer science is difficult to understand by the students. It will be an easiest way to remove the difficulties in learning programming language in computer science, so the students can understand the programming language on the computer very easily. Higher secondary students are at the stage of reaching higher education, and so the use of technology may improve the educational opportunities for the students.

Statement of the problem

The environment of the traditional classroom plays a vital factor in encouraging the students to learn but it is missing in many schools. Students need to be encouraged to express their opinions and to solve problems together. It becomes very difficult to teach lessons. Higher Secondary is an essential stage of school education because at this stage they select higher study and occupation of life of students. So that monitoring and feedback of individual students is possible. The computer programming is a language should be kept in memory forever. The problem selected for the study is entitled as "Effectiveness of Multimedia Package in Learning Computer Science among Higher Secondary Students".

Objectives of the study

1. To develop the multimedia package for learning computer science subjects.
2. To find out the significant difference between the post-test score of rural and urban students in Experimental group.
3. To find out the significant difference between the post test score of Experimental group and Control group for Rural and Urban students.

Hypotheses of the study

1. There is no significant difference between the post test score of Experimental and Control group.
2. There is no significant difference between the post test score of Rural and Urban students in Experimental group.
3. There is no significant difference between the post test score of Experimental and Control group for rural students.
4. There is no significant difference between the post test score of Experimental and Control group for urban students.

Sample

Sixty students from Sri Swamy higher secondary school were selected as sample for this study.

Methodology

It is an experimental study. Parallel-group design was found suitable and adapted.

Instrumentation for the study

The following tools were in this study.

a) Achievement test.

b) Multimedia Package Tool. (MPT)

The MPT contains 50 objective type questions of C++ Programming Language prepared from the chapters in Computer text book prescribed by state board of Tamil Nadu. The validity of the tool is 0.79.

Analysis and Interpretation

Hypothesis 1 : There is no significant difference between the post-test score of control group and experimental group.

Table 1

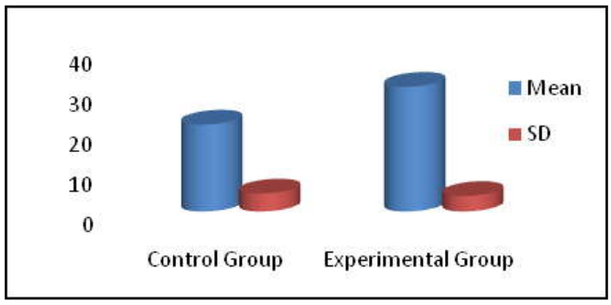
Comparison of Post-test score of students in the control group and experimental group

Group	N	Mean	S.D	Calculated 't'-value	Remark
Control Group	30	21.8	4.54	3.24	Significant
Experimental Group	30	31.29	3.8		

(At 5% level of significance the table value of 't' is 1.96)

The above table 1 shows that the mean score of the control group students has a slight variation from that of experimental group students. 21.80 and 31.29 are calculated mean scores of the control group and experimental group students respectively. The S.D scores of the control group and experimental group students are 4.54 and 3.80. The 't' value has been calculated as 3.24 at 0.05 level of significance, the table value (1.96) is lesser than the calculated 't' value (3.24). The post-test scores of the rural and urban students of experimental group which have been calculated by taking into account their group bring out significant difference between the two. It can thus be concluded that the hypothesis is rejected.

Figure1. Analysis of Post-test Scores for Control Groups and Experimental Groups



The above figure 1 shows clearly that the mean scores and standard deviation scores of the post-test of control group and experimental group is not similar. Hence there is significant difference in the post-test means scores of computer science students of control group and experimental group.

Hypothesis 2 : There is no significant difference between the post test score of rural and urban students in experimental group.

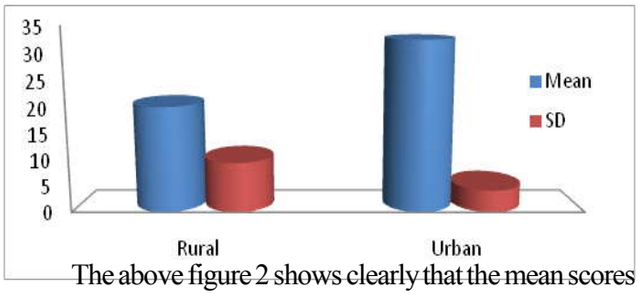
Table 2
Comparison of Post-test score of Rural and Urban students in Experimental group

Experimental Group	N	Mean	S.D	Calculated 't'-value	Remark
Rural	13	20.15	9.8	2.8	Significant
Urban	17	32.55	4.4		

(At 5% level of significance the table value of 't' is 1.96)

The above table 2 shows that the mean score of the rural students has a slight variation from that of the urban students. 20.15 and 32.55 are calculated mean scores of the Rural and Urban students respectively. The S.D scores of the Rural and Urban students are 9.8 and 4.4. The 't' value has been calculated as 2.80. At 0.05 level of significance, the table value (1.96) is less than the calculated 't' value (2.80). The post-test scores of the rural and urban students of experimental group which have been calculated by taking into account their locality bring out significant difference between the two. It can thus be concluded that the hypothesis is rejected.

Figure 2 Analysis of post test Score of Rural and Urban in Experimental Group



The above figure 2 shows clearly that the mean scores and standard deviation scores of the post-test are not similar. Hence there is a significant difference in the post-test mean scores of rural and urban students of experimental group. The urban students are using multimedia package to get high achievement of learning better than the rural students.

Hypothesis 3 : There is no significant difference between the post-test score of rural students in experimental and control group.

Table 3
Comparison of Post-test scores of rural students in experimental and control group.

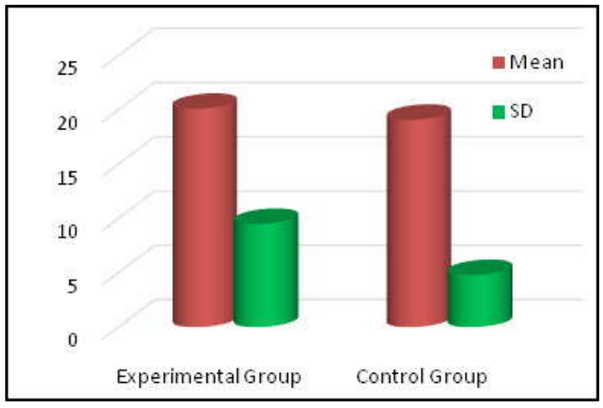
Group	N	Mean	S.D	Calculated 't'-value	Remark
Experimental	13	20.15	9.7	0.77	Not Significant
Control	11	19.15	4.9		

(At 5% level of significance the table value of 't' is 1.96)

The above table 3 shows that the mean score of the rural students in the experimental group has a slight variation from that of the control group. 20.15 and 19.15 are

calculated mean scores of the rural students in experimental and control group respectively. The S.D scores of the rural students in experimental and control group are 9.7 and 4.9. The 't' value has been calculated as 0.77. At 0.05 level of significance, the table value (1.96) is greater than the calculated 't' value (0.77). The post-test scores of the rural students in experimental group and control group which have been calculated by taking into account their locality do not bring out significant difference between the experimental group and control group. It can thus be concluded that the hypothesis is accepted.

Figure 3: Analysis of Post-test of rural in Experimental Group and Control Group



The above figure 3, shows clearly that the mean scores of post-test of experimental and control group of rural students are likely similar, hence there is no significant difference between the post-test scores of control and experimental group computer science students.

Hypothesis 4 : There is no significant difference between the post-test score of urban students in experimental and control group.

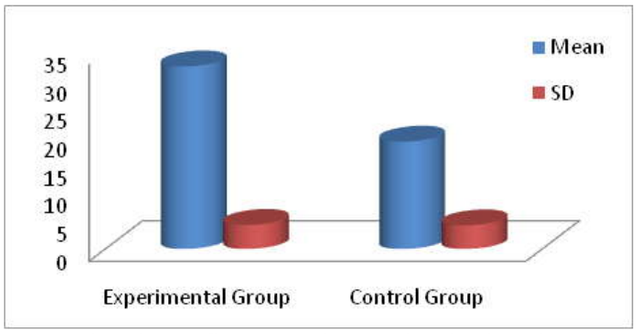
Table 4
Comparison of Post-test score of students in experimental and control group for urban

Group	N	Mean	S.D	Calculated 't'-value	Remark
Experimental	17	32.54	4.25	8.9	Significant
Control	19	19.14	4.22		

(At 5% level of significance the table value of 't' is 1.96)

The above table 4 shows that the mean score of the urban students in the experimental group has a slight variation from that of the control group. 32.54 and 19.14 are the calculated mean scores of the urban students in experimental and control group respectively. The S.D scores of the urban students in experimental and control group are 4.25 and 4.22. The 't' value has been calculated as 8.90. At 0.05 level of significance, the table value (1.96) is less than the calculated 't' value (8.90). The post-test scores of the urban students in experimental group and control group which have been calculated by taking into account their locality bring out significant difference between the experimental group and control group.

Figure 4: Analysis of Post-test of Urban in Experimental Group and Control Group



The above figure 4, shows clearly that the mean scores and standard deviation scores of post-test of experimental and control group of urban students is not similar, hence there is a significant difference between the post-test of control and experimental of urban students.

Findings of the study

a) A significant difference was found between Computer Science students of control group and experimental group in their Post-test Mean Achievement scores

b) A significant difference was found in the rural and urban of post-test Mean Achievement scores of computer science students in programming language of experimental Group after the experimental treatment.

c) No significant difference was found in the post-test scores of control and experimental group of rural students.

Continued on Page 16

IMPACT OF PARENT-CHILD RELATIONSHIP ON EMOTIONAL COMPETENCE AND ADJUSTMENT OF ADOLESCENT STUDENTS

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ABSTRACT

In the present study, the researcher has attempted to assess the impact of the parent-child relationship on emotional competence and adjustment of IXth grade adolescent students. The findings of the study showed that there was no significant relationship between the parent-child relationship and the emotional competence of adolescent students except with the loving dimension of the parent-child relationship. The study also revealed that the parent-child relationship has directly influenced the adjustment of adolescent students. Also, there was no significant difference exists between the emotional competence of adolescent students having a favourable and unfavourable parent-child relationship. No significant difference exists between the adjustment of adolescent students having a favourable and unfavourable parent-child relationship.

Keywords : *Adjustment, Adolescence, emotional competence, Parent-child relationship.*

Introduction

In-home, Parents are most important from the point of view of the child's own personality development in every field. So, there is a need to understand the unique relationship between each parent and their children and it is a matter of concern in today's complex world. Adolescent demands a fairly good and guiding relationship from his nearest people, the father and the mother so that he could learn new competencies. The healthy and warm relation of parents with their adolescent children can have profound effects on the emotions of the adolescents. Emotional learning skills play an important part in the life of adolescents. Maintaining better parents' relationship with adolescents leads to better adjustment in life. A positive relationship of parents with child fosters optimum development and good adjustment in life. So, the present study was undertaken to search out the impact of the parent-child relationship on emotional competence and adjustment of adolescent students.

Hypotheses

1. There is no significant relationship between dimensions of parent-child relationship and emotional competence of adolescent students.
2. There is no significant relationship between dimensions of parent-child relationship and adjustment of adolescent students.
3. There is no significant difference in mean scores of emotional competence of adolescent students having a favourable and unfavourable parent-child relationship.
4. There is no significant difference in mean scores of an adjustment having a favourable and unfavourable parent-child relationship.

Design of the study

The present study falls under the domain of descriptive research, involved a sample of 200 adolescent (boys and girls) students of IXth grade randomly selected from CBSE secondary schools of Amritsar. The total number of schools was five.

Tools used

The tools used were; Parent-Child Relationship Scale by Nalini Rao (1971), Emotional Competence Scale Bhardwaj and Sharma (1995) and Adjustment Inventory by Sinha and Singh (1984).

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Results and Discussions

The collected data were scored, tabulated and their descriptive statistics were calculated.

Table 1

Numerical determinants of normalcy for the parent-child relationship, emotional competence and adjustment of adolescent students (N=200)

Variable	Mean	Median	Mode	S.D.	Skewness	Kurtosis
Parent-child relationship	630.34	628	623.3	62.13	0.157	2.4
Emotional competence	91.5	91	90	11.42	0.061	0.115
Adjustment	19.07	19	18.8	7.49	0.354	-0.336

The measures of central tendency for parent-child relationship are not equal. The distribution of scores of the parent-child relationship is positively skewed and platykurtic. Table 1 clearly shows that the measures of central tendency for emotional competence scores are almost the same and distribution is positively skewed and leptokurtic. The measures of central tendency for adjustment are approximately the same. The coefficient of skewness is 0.354 which shows that distribution is positively skewed and leptokurtic.

Hypotheses

Hypothesis 1 : There is no significant relationship between dimensions of parent-child relationship and emotional competence of adolescent students.

Table 2

Correlation between parent-child relationship and emotional competence of the total sample

Dimensions of parent-child relationship	Calculated value of 'γ'	Degree of freedom	Table value of γ	Remarks at 5% level
Protecting	0.092	198	0.138	NS
Symbolic Punishment	0.013			NS
Rejecting	0.087			NS
Object	0.005			NS
Demanding	0.045			NS
Indifferent	0.125			NS
Symbolic Reward	0.096			NS
Loving	0.145			NS
Object Reward	0.092			NS
Neglecting	0.113			NS

From the result of table 2, the obtained value of 'γ' for the dimensions of parent child relationship such as protecting, symbolic punishment, rejecting object punishment, demanding, indifferent, symbolic reward, object reward and neglecting of adolescent students are insignificant. It means, out of ten dimensions, only one dimension shows significant results 0.05 level i.e. the loving dimension of the parent-child relationship and its value is 0.145. There is a positive relationship between the loving dimension of the parent-child relationship and the emotional competence of adolescent students. The positive sign of correlation indicates that the more is the loving nature of the parent-child relationship; the more is the emotional competence among adolescent students. The other nine dimensions of the parent-child relationship have not shown significant correlation with emotional competence at 0.05 level of significance.

Hypothesis 2 : There is no significant relationship between dimensions of parent-child relationship and adjustment of adolescent students.

Table 3

Correlation between parent-child relationship and adjustment of the total sample

Dimensions of parent-child relationship	Calculated value of 'γ'	Degree of freedom	Table value of γ	Remarks
Protecting	0.208	198	0.138	S
Symbolic Punishment	0.091			NS
Rejecting	0.278			S
Object	0.327			S
Demanding	0.11			NS
Indifferent	0.016			NS
Symbolic Reward	0.181			S
Loving	0.278			S
Object Reward	0.146			S
Neglecting	0.231			S

Table 3 shows that out of the ten dimensions of parent child relationship seven dimensions such as protecting, rejecting, object punishment, symbolic reward, loving, object reward and neglecting show significant results at 0.05 level, where as the three dimensions such as symbolic

punishment, demanding and indifferent show insignificant results at 0.05 level of significance. There is a negative relationship between protecting, symbolic reward, loving and object reward dimension of the parent-child relationship and lack of adjustment scores. It means that more protecting nature of parents results in a better adjustment of adolescent students. There is a positive relationship between rejecting, object punishment and neglected dimension of the parent-child relationship and lack of adjustment scores. It means children with rejecting parents face more adjustment problems. As object punishment increases in behavior of parents, lack of adjustment also increases in adolescents. The obtained value of 'γ' for symbolic punishment demanding, the indifferent dimension of parent-child relationship with lack of adjustment scores is insignificant at 0.05 level of significance.

Hypothesis 3 : There is no significant difference in mean scores of emotional competence of adolescent students having a favourable and unfavourable parent-child relationship.

Table 4
Mean scores of emotional competence of adolescent students having a favourable and unfavourable parent-child relationship

Parent-child relationship	N	Mean	S.D	SE_d	df	Calculated 't' value	Remark
Favourable	23	90.13	13.51	3.93	49	0.13	NS
Unfavourable	28	90.64	14.53				

The obtained value of the 't'-ratio is 0.13. The table value of 't' at the .05 level is 2.01. By comparing the table value of 't', the result comes out to be insignificant at a 0.05 level of significance. Thus, the hypothesis "There is no significant difference in the mean scores of emotional competence of adolescent students having a favourable and unfavourable parent-child relationship", is accepted.

Hypothesis 4 : There is no significant difference in mean scores of an adjustment having a favourable and unfavourable parent-child relationship.

Table 5
Mean scores of lack of adjustment of adolescent students having a favourable and unfavourable parent-child relationship

Parent-child relationship	N	Mean	S.D	SE_d	df	Calculated 't'-value	Remark
Favourable	23	20.52	9.05	2.26	49	1.26	NS
Unfavourable	28	17.68	6.57				

The value of the 't'-ratio is 1.26 which is insignificant at 0.05 level of significance by comparing it with table value of 't' which is 2.01 at .05 level. Thus, this leads to the confirmation of the hypothesis, "There is no significant difference in mean scores of an adjustment having a favourable and unfavourable parent-child relationship".

Educational implications

The dimension named as a loving dimension of the parent-child relationship shows the significant result with emotional competence of adolescent students. If parents are able to enhance their children's emotional competence, then teachers' competence also acts as the source of improvement in the emotional competence of the students. Apart from the above, we can also guide the parents to provide a healthy relationship to their children along with a loving and caring atmosphere. That will help the children to perform like stars in the future in any kind of field. The present study also depicts that there exists a significant relationship between parent-child relationship and adjustment of adolescent students. A student with high parent-child relationship is able to reduce maladjustment issues Parents and teachers should train the students to set realistic goals based on their desires and passions as it will help the students in adjusting to the environment. On the other hand, Teachers should also train during B.Ed and M.Ed courses to develop emotional competent skills among students so as to enable the students to manage and regulate their emotions well.

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EFFECTIVENESS OF MULTIMEDIA

d) A significant difference was found in the post-test scores of control and experimental group of urban students.

Conclusion

On the basis of the above findings of this study, it is concluded that the computer science students of experimental group who were taught through the multimedia package having better achievement in computer science as compared to control group who were through the traditional method of teaching. The post-test scores of urban students in experimental group having better learning achievement than the rural students in experimental group. So the academic achievement and active participation in classroom teaching and learning is increased by using the multimedia package for students. Multimedia empowers the teachers of computer science to provide the students with the knowledge's of variable difficulty, randomness and simulating nature. Students would have developed self-esteem at the completion of computer science courses than at the beginning. Proper experiences on multimedia package may help one to empower people and develop their self-esteem.

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EFFECT OF PROBLEM SOLVING STRATEGIES ON ACHIEVEMENT IN MATHEMATICS IN RELATION TO CRITICAL THINKING

UGC CARE APPROVED

ABSTRACT

The present study investigated class 9th mathematics students of English medium private co-educational schools of Amritsar (Punjab), affiliated to CBSE, New Delhi The random sample consisted of 200 students of class 9th selected from three different schools of Amritsar (Punjab). Instructional material based on problem-solving strategies was prepared and utilized to teach the experimental group and the control group was taught through a traditional teaching strategy by the investigators. The tools used for data collection were on achievement in mathematics developed by the investigators and the critical thinking scale developed by Murthy (2015) was also administered. After pre-testing and post-testing on all the students, gain scores were computed. The critical thinking scale was also administered. Mean, SD and Analysis of Variance (2×3) were used to arrive at the conclusions: (i) The performance of the experimental group was found significantly higher as compared to the control group. (ii)The performance of the high critical thinking group was higher than that of the average and low critical thinking group. (iii)A significant interaction effect was found between the problem-solving strategy and critical thinking group.

Keywords : *Problem Solving Strategies, Achievement in Mathematics, Critical Thinking.*

Introduction

Mathematical talent is most often measured by the speed and accuracy of a student's computation with little emphasis on problem-solving and pattern finding and no opportunities for students to work on rich mathematical tasks that require divergent thinking. Doing so causes many children's natural curiosity and enthusiasm for mathematics to disappear as they get older. Keeping students interested and engaged in mathematics by recognizing and valuing their critical thinking may reverse this tendency (Mann, 2005).

Problem-solving methodologies are the means that one would use to discover the problem(s) that are standing out to getting to one's particular objective; it alludes to the 'problem-solving cycle'. In this cycle, one will perceive the problem, characterize the problem, build up a procedure to settle the problem, arrange the learning of the problem cycle, make sense of the assets at the client's transfer, screen one's advance, and assess the answer for precision. Even though it is called a cycle, one doesn't need to do each progression to settle the problem; in truth the individuals who don't are generally better at problem-solving. The reason it is known as a cycle is that once one is finished with a problem another normally will fly up (Bransford & Stein, 1993).

Critical thinking is an analytical process of arriving at judgments that are directed by a specific end purpose to arrive at a logical, rational, and reasonable problem solution. Some authors explain that critical thinking is the process of an individual taught to reason in improving the solution (Paul & Elder, 2003). According to Facione (2006), critical thinking is thinking with a purpose. The more contemporary view is that critical thinking is a process that includes both cognitive and affective domains of reasoning. Thus, critical thinking is not just an intellectual exercise in problem-solving but has a value base that aims to improve human functioning, safety, health and emotional well-being (Mason, 2007). Mathematics achievement plays a very important role in

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the attainment of the ideal of the harmonious development of a student.

With the growing advancement in science and technology, mathematics has become so important that every parent today sets high goals for the students to achieve. Torres (1993) characterized achievement as the achieved capacity or level of capability in school undertakings for the most part as estimated by state-administered tests and communicated in age as review units in light of standards got from as wide examining of students' execution.

Need and Significance of the Study

Mathematics is observed to be the most mind-boggling and troublesome subject in the students' environment. Most students consider the subject as one that is exhausting, subsequently, making an absence of enthusiasm for the points. This present study is proposed to use problem-solving strategies as a teaching strategy. Students procure diverse approaches to reach their coveted objective. Here, faculty interact with students by discussing points of confusion, providing real-life examples relevant to course content, challenging students to think more deeply about complex processes, and monitoring peer-to-peer, team-based learning activities (Shafique & Robinson, 2015). Thus, the practical value of this study lies in the fact that it is set to explore problem-solving strategies, specifically in mathematics subjects, which could be a contribution to the field of education.

Objectives

1. To study the achievement in mathematics of groups taught through problem-solving strategies and traditional teaching strategy.
2. To compare the groups having high, average and low critical thinking on achievement in mathematics.
3. To examine the interaction effect of instructional strategies and critical thinking on achievement in mathematics.

Hypotheses

1. There is no significant difference between the groups taught through problem-solving strategies and traditional teaching strategy on achievement in mathematics.
2. There is no significant difference between the groups having high, average and low critical thinking on achievement in mathematics.

3. There is no significant interaction effect of instructional strategies and critical thinking on achievement in mathematics.

Sample

The present study was conducted on English medium public schools of Amritsar City affiliated to Central Board of Secondary Education, New Delhi. The three schools were randomly selected from the total school of Amritsar. The random samples of 200 students of 9th class mathematics from the Shri Ram Ashram Public School, Amritsar, DAV Public School, Amritsar, Shri Guru Harkrishan Sr. Sec. Public School, Majitha Bye Pass, Amritsar. It was a random and purposive sample.

Design

For the present investigation, a pre and post-test factorial design were employed. To analyze the data, mean, SD, analysis of variance (2×3) and t-ratio were used for the two independent variables viz. instructional treatment and critical thinking levels. The classification of critical thinking groups was done at three levels viz. high, average and low critical thinking.

Tools used

The following tools were used for the collection of data:

1. Standard Progressive Matrices by Raven, Raven and Court (2000) was used to access the intelligence of the students for matching the groups.
2. Critical Thinking Scale by Murthy (2015) was used.
3. An Achievement Test in Mathematics was prepared by investigators.
4. Instructional material for problem-solving strategies and traditional teaching strategy on selected topics of 9th class mathematics as polynomials, angles and lines, coordinate geometry and areas were prepared by the investigators.

Procedure

After the selection of the sample and allocation of students to the two instructional strategies, the experiment was conducted. The experiment was conducted in five phases. Firstly, students were randomly assigned to a control and experimental group. Secondly, the test of critical thinking was administered in each school. Thirdly, a pre-test was administered to the students of the experimental and control groups. Fourthly, one group was taught through problem-solving strategies and the control group was taught through traditional teaching strategy by the investigators. Fifthly, after the completion of the course, the post-test was administered to the students of both groups. The answer-sheets were scored with the help of scoring keys.

Analysis and Interpretation of the Results

Analysis of Descriptive Statistics

The data were analyzed to determine the nature of the distribution of scores by employing mean and standard deviation. The Analysis of Variance (2×3) was used to test the hypotheses related to problem-solving strategies, traditional teaching strategy and critical thinking levels. The mean and standard deviation of different subgroups have been presented in table- 1 & 2

Table-1
Means and SD of Gain Achievement Scores for the Different Sub Groups

Critical thinking Level	Teaching						Total		
	Problem Solving Strategies			Traditional Teaching Strategy					
	N	Mean	SD	N	Mean	SD	N	Mean	SD
High Critical Thinking	27	16.07	3.57	27	12.52	3.18	54	14.3	3.37
Average Critical Thinking	46	15.78	2.94	46	12.04	1.95	92	13.9	2.44
Low Critical Thinking	27	14.02	2.35	27	11.85	1.78	54	12.9	2.06
Total	100	15.29	2.95	100	12.12	2.29	N=200		

Source : Field Study, 2019

Table-1 observes that the mean gain scores of problem-solving strategies (M=15.29) are higher than the traditional teaching strategy (M=12.12). This shows that problem-solving strategies are more effective than traditional teaching strategy. It is also confirmed that the mean of the three groups' i.e. high, average and low critical thinking group is 14.29, 13.91 and 12.93 respectively. It is concluded that the mean gain scores with problem-solving strategies have shown significant differences for high, average and low critical thinking students. These differences are also found with respect to the different critical thinking group taught through traditional teaching strategy.

Analysis of Variance on Gain Achievement Scores

The mean of different sub-groups, the sum of squares, degree of freedom, mean sum of squares and the F - ratio have been presented in table-2

Table-2
Summary of Analysis of Variance (2×3) Factorial Designs

Source of Variance	Sum of Squares	df	Mean Sum of Squares	F- ratio
Problem Solving Strategies (A)	429.24	1	429.24	52.73**
Critical Thinking (B)	58.24	2	29.12	3.57*
Interaction (A×B)	69.5	2	34.75	4.27*
Error Term	1579.16	194	8.14	

** Significant at 0.05 level* ***Significant at 0.01 level*

Problem Solving Strategies (A)

Table -2 reveals that the F-ratio for the difference in mean gain scores of problem-solving strategies and traditional teaching strategy group is 52.73, which in comparison to the table value (F 0.01 =6.76, df 1/194) was found significant at 0.01 levels of significance. It shows that the groups were not different beyond the contribution of chance. Hence, hypothesis H1: There is no significant difference in gain achievement scores of student taught through problem-solving strategies and traditional teaching strategy on achievement in mathematics, is rejected. The result indicates that the achievement of the group taught through problem-solving strategies is much higher than that of traditional teaching strategy in mathematics.

Critical Thinking Level (B)

Table-2 shows that the F-ratio for the difference in mean gain scores of the three groups of critical thinking is 3.57, which in comparison to the table value (F 0.05 =3.04, df 2/194) was found significant at 0.05 levels of significance. It suggests that the three groups were different with respect to achievement scores. Hence, hypothesis H2; There is no significant difference between the groups having high, average and low critical thinking on achievement in mathematics, is rejected. The result indicates that the mean gain achievement scores of average critical thinking groups were higher than that of high and low critical thinking group.

Interaction Effect between Problem Solving Strategies and Critical Thinking (A× B)

Table-2 reveals that the F- ratio for the interaction between treatment and critical thinking groups is 4.27, which in comparison to the table value (F 0.05 =3.04, df 2/194) was found significant at 0.05 levels of significance. It indicates that the two variables interact with each other. Thus, the null hypothesis H3; There is no significant interaction effect of problem-solving strategies and critical thinking on achievement in mathematics, is rejected. The result indicates that there is a significant difference in gain scores on achievement in mathematics due to the interaction effect of teaching strategies and critical thinking groups. Problem-solving strategies and traditional teaching model did not yield equal levels of gain achievement for high, average and low critical thinking for the students.

Discussion

The present study concluded that problem-solving strategies yielded better achievement scores in mathematics than traditional teaching strategy. Hence, hypothesis H1 was rejected. The result is supported by the findings of Gupta, Kavita and Pasrija (2016) and Mehar and Kaur (2018) revealed that problem-solving ability had a significant effect on the academic achievement of the students. Mehar and Krishnamoorthy (2019) found that the performance of the problem-solving strategies group was found significantly higher as compared to the traditional teaching group. The result is contradicted by the findings of Perveen (2010) and VeisiKahre, Imani, Zade, VeisiPour, Moradhaseli and Amiri (2015) revealed no significant role in problem-solving strategies on achievement.

The performance of students in mathematics taught through problem-solving strategies has shown significant differences for high, average and low-level critical thinking groups. Hence, hypothesis H2 was rejected. The results are supported by the findings of Chukwuyenum (2013) found a significant correlation between academic achievement and critical thinking. Gurubasappa (2014) found that there was a significant effect of critical thinking on the academic achievement in science of secondary school students. The result was contradicted by the finding of Azar (2010) concluded that there was no significant difference between high critical thinking dispositions and low critical thinking dispositions. Shirazi and Heidari (2019) found that no relationship between critical thinking and academic achievement was identified.

The performance of the problem-solving strategies group was found interacting with each other at different levels of critical thinking. Hence, hypothesis H3 was rejected. The findings are supported by Gurubasappa (2014) found that there was a significant interaction effect of critical thinking and emotional intelligence on academic achievement in the science of secondary school students. Yu, Lin, Ho and Wang (2015) indicated long-term exposure to B-PBL environments reveal significant interaction towards the usage of critical thinking skills. Sihaloho and Sahyar (2017) showed that there was a significant relationship between problems based learning and critical thinking.

Conclusion

The present study has concluded that through problem-solving strategies, achievement in mathematics is enhanced. Particularly average and lower critical thinking students are more prone to involve problem-solving strategies in mathematics. It proves that this instructional strategy is more effective for average and low critical thinking students. While using traditional teaching strategy, high critical thinkers are more achieved in mathematics.

Educational Implications

The teachers can further help the students to select effective problem-solving strategies and to assist them in effective learning. More attention should be paid to the preparation of workshops and training courses for the training of faculty members at universities. As there was a

significant interaction effect found between problem-solving strategies and critical thinking, the teachers can use problem-solving strategies as a supplement in their teaching-learning process to increase critical thinking among students.

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A COMPARATIVE STUDY OF LEARNING PREFERENCE AND LEARNING TIME OF UNIVERSITY STUDENTS

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ABSTRACT

The present study aimed at finding out the difference in the learning time of various types of learners. Neurologically learners are classified into three categories while based on learning time humans are divided into three groups that are Owl, Lark and Hummingbird. The rationale behind this research is knowing learner and their learning preference time can help teachers, guardians and counsellors to guide the students for better academic performance with lesser efforts and stress. To assess learning Preference, Barsch Learning Style Inventory had been administered to the students while Learning Time was being assessed by administering Morning-Evening Questionnaire. The sample size was 250 out of which (36 visual,28 auditory {and20 kinesthetic were found). Further 15 Visual, 14 Auditory and 11 Kinesthetic learners were selected randomly for the study.

Key Words : *Learning Preference, Learning Time, Visual / Auditory/ Kinesthetic Learners, Owl/ Lark/ Hummingbird*

Introduction

Various researches indicate that there are at least 20% of students in every classroom, who are facing one or another kind of academic problems. Most of the time teachers or academicians are not even aware of the needs and the profile of the students. All the students are treated the same and are expected to perform in accordance with the typical conventional pattern of academics, irrespective of their individuality. This paper aimed at pointing out two peculiar characteristics of the students which can be utilized in helping out the students to make studies interesting, effortless and more rewarding. These two unique features, any student can have are, their specific 'Learning Preferences' and their 'Learning times'. Furthermore, this paper aimed at comparing the Learning time of different types of learners.

Review of Related Literature

In 1983, Virostko conducted an interesting experiment in a Long Island grade school. She divided the 3rd, 4th, 5th, and 6th grades into two sections for their mathematics instruction and two for English. In the morning, one group was taught English, the other mathematics. This was reversed in the afternoon. After diagnosing the students' time preferences, Virostko could determine which students were matched and which were mismatched for each section of each subject. The students were required to take state-mandated, standardized tests in math and English at the end of the year. Virostko predicted-accurately-that matched students would score significantly higher in the matched subject than in the mismatched subject. The following year, the groups were reversed. When the mandated tests were again given, the same held. Students scored significantly higher in the subject in which they had scored lower the year before, and vice versa.

In 1977, Folkard and colleagues found that children's short- and long-term memory varied significantly with the time of day. Schoolchildren taught at about 3 p.m. retained material longer than those taught in the morning. Moreover, seven days later, those who read a story in the afternoon could recall more details than could students who had read it at 9 in the morning.

Hypotheses

1. There is no significant difference between the learning time of Visual and Auditory learners.
2. There is no significant difference between the learning time of Visual and Kinesthetic learners.
3. There is no significant difference between the learning time of Auditory and Kinesthetic learner.

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Methodology

Variables

a) Independent Variable: Learning Preference

b) Dependent Variable: Learning Time

Sample : 250 university students (out which 36 visual {15 visual},28 Auditory {14 auditory} and 20 kinesthetic {11 kinesthetic} were selected by simple Random sampling technique. They were at the age range of 20 to 25 years.

Sampling Procedure

Tests were administered on the 250 students (mixed gender) between the age of 20 years to 25 years. After scoring it was being observed that out of 250, there were 36 visual learners, 28 Auditory learners and 20 Kinesthetic learners. These were the students who scored relatively high on their respective learning preference groups. Otherwise, the majority of the participants were having mixed type learning preferences (For example 'Auditory Visual ' were those who scored almost equal marks on Visual and Auditory modalities and so on). Since the sample size of the learners of all the modalities were different so 15 participants out of 36 visual learners, 14 out of 28 Auditory Learners and 11 out of 20 Kinesthetic Learners were selected through the 'Fish Bowl' technique.

Description of tools

Following tools have been used to measure the Learning Preference and Learning time of the participants.

a. Barsch Learning Style Inventory which includes 24 items, Measures the learning preference of the individual and categorize them into three categories i.e. Visual, Auditory and Kinesthetic.

b. Morning-Evening Questionnaire prepared by Sarah Biggs, to assess learning time of the individual, includes 19 items and categorized people on the basis of time preference into five categories i.e. definite evening (16-30), moderate evening (31-41), intermediate (42-57), moderate evening (58-69), definite morning (70-86)

Statistical tool

't' test was used to measure the significant difference between the groups, through SPSS.

Result and discussion

Table 1
Mean and SD of Visual, Auditory and Kinesthetic Learners

Learning Preference	Mean	SD
Visual	41.74	2.6
Auditory	40	1.1
Kinesthetic	41	1.37

The above table 1 shows the mean and SD of visual, auditory and kinesthetic learners.

Hypothesis 1 : There is no significant difference between the learning time of Visual and Auditory learners.

Table 2
Mean, SD and t-test of LT of Visual and Auditory learners

Learning time	Mean	SD	Calculated 't' value	Remarks at 5% level of significance
Visual Learner	35.2	4.87	5.41**	S
Auditory Learners	52.31	9.87		

The above table 2 depicts the means, SD and 't' value of the Learning Times of Visual and Auditory Learners. The mean for the learning time of visual learner is 35.2 which belongs to the moderate evening category, where as the mean for the learning time of auditory learner is 52.31, which belongs to the intermediate category. Thus it can be concluded that there is a significant difference in the learning time of Visual and Auditory learners.

Hypothesis 2 : There is no significant difference between the learning time of Visual and Kinesthetic learners.

Table 3
Mean, SD and t value of LT of Visual and Kinesthetic Learners

Learning Time	Mean	SD	Calculated 't' value	Remarks
Visual learners	35.2	4.87	7.5*	S
Kinesthetic learners	59	9.02		

It is evident from the above table that there is a significant difference between the learning time of visual and kinesthetic learners, thus the null hypothesis is rejected. The mean for the Learning Time of kinesthetic learners is 59, which belongs to the moderate morning category, where as the mean for the learning time of visual learners is 35.20.

Hence it can be concluded that they are more active in the morning as compared to visual learners.

Hypothesis 3 :

There is no significant difference between the learning time of Auditory and Kinesthetic learner.

Table 4
Mean, SD and t-test of Learning time of auditory and kinesthetic learners

Learning time	Mean	SD	Calculated 't' value	Remarks
Auditory Learners	52.31	9.87	2	NS
Kinesthetic Learners	59	9.02		

The above table 4 indicates the Means, SD and t-value of the Learning times of Auditory and Kinesthetic Learners. The mean for the Learning time of Auditory Learners is 52.31 whereas the mean of Kinesthetic Learner is 59. The 't'-value is 2.0 which is not significant at a 0.05 level of confidence. (Though the means of both the groups belong to different categories of Learning Time). Hence the null hypothesis is not rejected.

Findings

The findings of the present study are as follows:

1. The mean for the Learning Time of visual learners is 35.2, which means visual are more alert in the evening and night slot.
2. The auditory learners scored 52.31, which indicates that they belong to the intermediate category.
3. The Kinesthetic learners' Learning Time mean is 59, which means they prefer morning people.
4. The Visuals learners are significantly different in terms of Learning Times than their counterparts.
5. No significant difference was found in the Learning Time of Auditory and Kinesthetic learners, though their average mean belongs to separate categories.

Conclusion

On the basis of the findings of this study it can be concluded that the understanding of one's profile may help in making strategy for exam preparations or general studies. Importance of knowing one's Learning preference and learning time can help and individual to utilize his/her natural tendencies to get better results with lesser efforts. Through this understanding, academicians can help those students who are suffering from one or another kind of academic problems. Though the academic or scholastic aspect seems an area-specific problem it has an impact on a wider range of functioning whether its personal, professional or social areas. So this insight will help psychologists and academicians to help students in protecting their overall mental health. Awareness about our neurological profile makes learning a new experience and this effortless learning will make academics and skill learning a fun activity.

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A STUDY OF AVAILABILITY OF BASIC EDUCATIONAL FACILITIES IN DISTRICT INSTITUTES OF EDUCATION AND TRAINING (DIETs) OF CHHATTISGARH

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ABSTRACT

This study is an attempt to investigate how far the DIETs in Chhattisgarh have been able to provide basic educational facilities to prospective teachers and staff members. Researchers have formulated two objectives: (i) to study the basic infrastructural facilities provided by DIETs; and (ii) to study the problems faced by prospective teachers, teacher educators and principals. The sample includes 120 pre-service teachers, 20 teacher educators and 4 principals from 4 DIETs of Chhattisgarh. The researcher used four self -made tools to collect data from respondents. The data were analyzed by using the percentage analysis technique.

Keywords: - *Educational facilities, District Institutes of Education and Training (DIET).*

Background of the study

Teacher education is the process for the improvement of expertise and skill of teachers which in turn facilitate and enable them for meeting the needs and challenges of the teaching profession in present times. Nowadays a teacher is not only an information dispenser (AnandaKumar, et.al. 2017) rather s/he is a friend, philosopher and guide. Such good teachers are the products of good teacher education program. A good teacher education system is a prerequisite of any nation for its progress. NPE 1986 and its Programme of Action 1992 rightly said that the quality of school education can be improved by the quality of teacher education. (Kumar and Azad, 2016)

It has been shown by the researches that most of the teacher education programmes are facing a lack of professional and necessary infrastructure. AzimPremji Foundation (2010) in its report cited that DIETs have failed to perform their role as they lack basic physical facilities, computer cell and laboratory facility. Gogoi and Khanikor (2016) found a lack of basic facilities like a hostel and residential facility, libraries were not updated and there was a dearth of teaching aids and study materials in DIETs of Assam. Chhattisgarh JRM team (2013) made their report mentioning that the DIETs were lacking in adequate faculty position with poor hostel and library facilities. Sood (2010) identified that most of the DIETs in Haryana do not have adequate faculty position and lacking in basic amenities like toilet, safe drinking water, electricity, canteen and hostel for girls.

Significance of the study

To bring quality to elementary education District Institutes of Education and Training (DIETs) were created by the Ministry of Human Resource Development (MHRD) in the early 90s. Setting up DIETs not only strengthens elementary education but also supports the decentralization of education to the district level. An institute having all the basic educational facilities may perform well to develop more proficient teachers. Spotting the importance of educational facilities in teacher education institutes it becomes necessary to look for these essential facilities in DIETs of Chhattisgarh.

Statement of the problem

The problem of the study is specified "A study of the availability of basic educational facilities in the District Institutes of Education and Training (DIETs) of Chhattisgarh".

Objectives

To conduct this study researchers had formulated some objectives which are as follows:

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1. To study the basic infrastructural facilities available at DIETs in terms of a) Academic and non-academic staff positions. b) Teaching and administrative space c) Laboratory facilities and d) Basic amenities.
2. To study the problems faced by the stakeholders of DIETs.

Delimitation

Due to time constraint the study is delimited to Four DIETs from four divisions of Chhattisgarh namely the Raipur division, Bilaspur division, Durg division and Bastar division.

Methodology

Population

All the prospective teachers enrolled in D.El.Ed. Programme in different DIETs of Chhattisgarh for the session 2018-20, all the teacher educators and principals of DIETs were taken as the population for this study.

Sample and Sampling

One DIET from each Division i.e. DIET Raipur, DIET Pendra, DIET Kabirdham and DIET Bastar were selected purposively as sample institute. A sample of 30 pre-service prospective teachers (second year, session 2018-20), enrolled in D.El.Ed. Programme 5 teacher educators and 1 principal from each DIET were taken as a sample of the study.

Method

The researchers used the descriptive survey method.

Instrument

Four self-made tools were prepared by the researcher to collect data from samples of each DIET: (a) Checklist for DIETs. (b) Questionnaire for trainee teachers of DIETs. (c) Questionnaire for teacher educators of DIETs. (d) Interview schedule for principals of DIETs.The validity of these tools is checked by experts for content validity.

Analysis and Findings of the study

The data obtained by the respondents were analyzed by the percentage analysis technique.

Objective 1 (a) To study basic infrastructural facilities provided by DIETs in terms of Academic and non-academic staff positions.

Table 1

The number of academic and non-academic staff positions in DIETs

Name of Post	DIET Pendra	DIET Raipur	DIET Kabirdham	DIET Bastar
Principal	1	1	1	*NPNJ
Vice-principal	1	Vacant	Vacant	1
Teaching staff	15	24	6	13
Librarian	Nil	Nil	Nil	Nil
Non -academic staff	11	12	5	9

Source : from the interview of DIET principals and questionnaire for DIET teacher educators.

* New Principal Not Joined

From table 1 it is clear that DIET Pendra, DIET Raipur and DIET Kabirdham had principals but the new principal who got his transfer to DIET Bastar had not joined till the date of the visit of the researcher. Similarly, the post of Vice-principal was vacant in DIET Raipur and DIET Kabirdham. The number of teaching staff as per NCTE norms was adequate in DIET Pendra, DIET Raipur and DIET Bastar but inadequate in DIET Kabirdham. No permanent librarian was appointed to any of the four DIETs, whereas several non-academic staff in all the four DIETs was a bit satisfactory.

Objective 1 (b) To study basic infrastructural facilities provided by DIETs in terms of Academic and non-academic staff positions. Teaching and administrative space

Table 2

The teaching and administrative space

Particulars	DIET Pendra	DIET Raipur	DIET kabirdham	DIET bastar
Principal's room	✔	✔	✔	✔
Teaching staff rooms	✔	✔	✔	✔
Rooms for non-teaching staff		✔		✔
No. of classrooms		2	3	3
Library	✔	✔	✔	✔
Auditorium hall	✔ -3	✔ -2	✔	X
Seminar room	✔ -1	✔ -2	✔	X
Computer lab	✔	✔	✔	✔

Source: from a checklist prepared by the researcher

From table 2, it was observed that principals room, room for teaching staff as well as non-teaching staff were there in all the four DIETs. Except in DIET Raipur (2 classrooms) all the three DIETs i.e. DIET Pendra, DIET kabirdham and DIET Bastar had 3 classrooms for pre-service prospective teachers. All the DIETs had a library and computer lab but in DIET Bastar no auditorium hall and seminar room were available.

Objective 1 (c) To study basic infrastructural facilities provided by DIETs in terms of Laboratory facilities

Table 3

Laboratory facilities

Particulars	DIET Pendra	DIET Raipur	DIET kabirdham	DIET bastar
Science lab	✔	✔	X	X
Mathematics lab	✔	✔	X	X
Social science lab			X	X
Arts and craft resource center		✔	✔	✔
Health and physical education resource center	X	X	X	X

Source : questionnaire for DIET prospective teachers and questionnaire for DIET teacher educators.

From table 3 it was depicted that both DIET Pendra and DIET Raipur had Science and Mathematics lab whereas DIET Kabirdham and DIET Bastar were lacking it. The arts and craft resource centre was present in all the four DIETs but all the DIETs required social science lab and health and physical education resource centre.

Objective 1 : (d) To study basic infrastructural facilities provided by DIETs in terms of Availability of Basic amenities.

Table 4

The availability of basic amenities

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Basic amenities	DIET Pendra	DIET Raipur	DIET kabirdham	DIET Bastar
Water supply	✔	✔	✔	✔
Electricity supply	✔	✔	✔	✔
Internet connectivity	✔	✔	✔	✔
Separate Toilets for male and female students	✔	✔	✔	
Separate toilet for male and female teaching staff		✔		X
Common rooms for girls			✔	✔
Disable friendly building	X	✔	✔	✔
Canteen facility	X	X	X	X
Hostel facility for girls and boys	✔	✔	✔	✔
Residential quarters for teaching and non-teaching staff	✔	✔	✔	✔

Source : Checklist, questionnaire for DIET prospective teachers and questionnaire for DIET teacher educators and interview of DIET principal.

Table no 4 shows that basic amenities like drinking water facility, electricity supply, internet connectivity, separate toilets for male and female students, common room for girls and parking space were present in all the four DIETs. In DIET Kabirdham students and teachers share common toilets and in DIET Bastar female teachers and female students share common toilets. In three DIETs i.e. DIET Raipur, DIET Kabirdham and DIET Bastar buildings were disabled friendly as they have only a ground floor in them, whereas in DIET Pendra, classes run on the first floor where stairs are the only way to go up. None of the DIET has a canteen facility. In all the four DIETs hostel facility and residential quarters for both teaching and non-teaching staff were present.

Analysis of objective 2. To study the problems faced by stakeholders of DIETs.

Views of Prospective teachers:

- No canteen facility (85%)
- Hostels not provided (60%)
- Computers were not in working condition (73.33%)
- Low number of faculty (90%)

Views of Teacher Educators:

- No proper lab facility (80%)
- No separate toilet facility for teachers (40%)
- Library not enriched and updated (60%)

Views of Principals:

- No auditorium and seminar room (Vice-Principal, DIET Bastar)

Conclusion

From this study, a clear portrait of basic educational facilities of these four DIETs from four divisions of Chhattisgarh was obtained and it can be concluded that the basic educational facilities in DIET Raipur are supreme among all four DIETs. The reason for having almost all the basic educational facilities in DIET Raipur is because it is in the capital of the state. But this type of treatment is not received by the DIET Bastar and DIET Kabirdham. In fact, in DIET Kabirdham the faculty position is not sufficient to run the functions of DIET smoothly which is a major problem and must be resolved as soon as possible. So it is required to work on the shortfalls of DIETs to make these institutes the best place for the teachers (both prospective teachers and in-service teachers) to learn and explore and ultimately enhance the achievement of their students.

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ATTITUDE OF HIGHER SECONDARY SCHOOL TEACHERS TOWARDS INCLUSIVE EDUCATION IN BIRBHUM DISTRICT OF WEST BENGAL

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ABSTRACT

Since, teachers are the ones who provide all-round development of the children, it is very important to know their attitude towards a group of heterogenous students rather than a homogenous group or in other words towards Inclusive education. The study also intended to study whether variables such as gender, locality and streams of subjects play any role in the attitude of teachers towards inclusive education. The findings of the study showed that the teachers in Birbhum district had above average favorable attitude towards Inclusive education. Gender, locality and Streams of subjects did not play any significant role in the attitude of teachers towards Inclusive education.

Key words: Inclusive education & attitude.

Introduction

As said by UNESCO, inclusive education is seen as a "a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion from education and from within education."India, through its 86th Constitutional amendment has made way for education as a fundamental right to all including children with disabilities.The government of India is constitutionally committed to ensuring basic education to every child irrespective of individual and social differences.Some of the major initiatives taken for that are -Integrated Education for Disabled Children (IEDC), Sarva Siksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA), The Right to Education Act – 2009 and Rights of Persons with Disabilities (RPWD) Act, 2016.

Need & Significance of the Study

Nowadays, Inclusive education has become a frequently used concept all over the world. One of the main factors influencing the successful implementation of any inclusive policy is the positive attitude of teachers. Teachers are considered to be the most important variable for student's achievement and success. If we want an integrated society in which all people are considered to have equal worth and equal rights, the practice of inclusion could be effective if teachers have favourable attitude towards inclusive education.

Objectives of the Study

1. To find out the level of teachers' attitude towards inclusive education.
2. To find out whether gender play any role in the attitude of teachers towards Inclusive education.
3. To find out whether nature of locality (urban & rural) play any role in the attitude of teachers towards Inclusive education.
4. To find out whether streams of disciplines (Arts & Science) play any role in the attitude of teachers towards Inclusive education.

Delimitations of the Study

This present study is delimited to the Government High Schools in thedistrict of Birbhum.

Methodology of the Study

Descriptive survey type research was used by the researcher to solve the research problem and give a vivid description of the study on the status of Attitude of Higher Secondary School Teachers towards Inclusive Education in Birbhum District.

Population and Sample

All the Higher Secondary school teachers of Birbhum

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District were considered as the population of the study.The sample for the present study consisted of 62 teachers of Higher Secondary schools in Birbhum District. Using Stratified random sampling method, the researcher selected the sample from male and female, rural and urban, and science and arts strata.

Tool used

'Teacher Attitude Scale Towards Inclusive Education' (Constructed and standardized by Vishal Sood and Arati Anand) was used as a tool for collection of necessary data. The TASTIE-SA scale had four areas namely 1. Psychological or Behavioural 2. Social and Parents related 3. Curriculum and Co-curriculum and 4. Administrative. The scale was three points having the responses 'Agree', 'Undecided', and 'Disagree'. This scale consisted of 47 items with 29 favorable items and 18 unfavorable items. The reliability of the scale as given is 0.82.

Analysis and Interpretation

Analysis of data was done with the help of computer using SPSS software.

Hypothesis 1: The level of teachers' attitude towards inclusive education is not favourable

Table 1

Level of teachers' attitude towards inclusive education is not favourable

Group	Mean	Interpretation
Male Teachers	112.38	Above Average Favourable
Female Teachers	108.08	Above Average Favourable
Rural Teachers	111.62	Above Average Favourable
Urban Teachers	109.79	Above Average Favourable
Science Teachers	111.26	Above Average Favourable
Arts teacher	109.89	Above Average Favourable
Total Teachers	**110.64**	**Above Average Favourable**

The above table1 shows the mean scores of the teachers both as a whole and as parts, on the prescribed standardized test. Comparing the scores with the Norm table, it could be understood that both all the teachers and various groups within the teachers had above average favourable attitude towards Inclusive education. Therefore, we can reject our Null hypothesis and can say that the teachers of the district had favourable attitude towards Inclusive education.

Hypothesis 2: There is no significant difference in the attitude of male and female teachers with regard to Inclusive Education.

Table 2

Difference in the attitude of male and female teachers with regard to Inclusive education

Gender	N	Mean	S.D.	Calculated 't' Value	p value	Re mark
Male	37	112.38	14.28	1.293	0.201	NS
Female	25	108.08	10.311			

Since the p value was 0.201 which was higher than either 0.05 or 0.01, we could say that the null hypothesis was not rejected at both 0.05 and 0.01 levels of confidence. Therefore, we could say that there was no significant difference in the attitude of male and female teachers with regard to Inclusive education. In other words, it could be concluded that gender does not play any significant role in the attitude of teachers towards Inclusive education.

Hypothesis 3: There is no significant difference in the attitude of rural and urban school teachers with regard to Inclusive Education.

Table 3

Difference in the attitude of rural and urban school teachers with regard to Inclusive education

Locality	N	Mean	S.D.	Calculated 't' value	p-value	Re mark
Rural	29	111.6	13.697	0.555	0.581	NS
Urban	33	109.8	12.328			

Since the p value was 0.581 which was much higher than either 0.05 or 0.01, we could say that the null hypothesis was not rejected at both 0.05 and 0.01 levels

of confidence. Therefore, we could say that there was no significant difference in the attitude of rural and urban teachers with regard to Inclusive education. So, it could be concluded that locality does not play any significant role in the attitude towards Inclusive education.

Hypothesis 4: There is no significant difference between Arts and Science teachers with regard to attitude towards Inclusive Education.

Table 4

Difference between Arts and Science teachers with regard to attitude towards Inclusive Education

Stream	N	Mean	S.D.	Calculated 't' value	p-value	Remark
Arts	34	111.3	13.431	0.414	0.681	NS
Science	28	109.9	12.452			

Since the p value was 0.681 which was much higher than either 0.05 or 0.01, we could say that the null hypothesis was not rejected at both 0.05 and 0.01 levels of confidence. Therefore, we could say that there was no significant difference in the attitude of Science and Arts teachers with regard to Inclusive education. So, it could be concluded that streams of discipline do not play any significant role in the attitude of teachers towards Inclusive education.

Major findings and their Implications

The findings of the study are; a) the teachers in Birbhum district had above average favorable attitude towards Inclusive education, b) gender does not play any significant role in the attitude of teachers towards Inclusive education, c) locality such as urban or rural areas does not play any significant role in the attitude towards Inclusive education, and d) streams of discipline such as Science and Arts do not play any significant role in the attitude of teachers towards Inclusive education. The study gives valuable information to the government and would help the policy makers to frame sound policy for ensuring inclusive education in India.

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"There's no discovery without a search and there's no rediscovery without a research. Every discovery man ever made has always been concealed. It takes searchers and researchers to unveil them, that's what make an insightful leader."

Benjamin Suulola.

"Do research. Feed your talent. Research not only wins the war on cliche, it's the key to victory over fear and it's cousin, depression."

Robert McKee

"Research is the highest form of adoration"

Pierre Teilhard de Chardin

RIGHT OF CHILDREN TO FREE AND COMPULSORY EDUCATION: A RESEARCH REVIEW

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ABSTRACT

The paper makes a thematic review of the studies carried out on the Right of Children to Free and Compulsory Education Act 2009 following its enforcement from April 2010. Keeping in view the importance accorded to the right of the young masses to education, the paper classifies the studies so far conducted under different research areas. Reviewing the review identifies the research deficiencies and prioritizes awareness of parents about the Act, community participation through SMCs in the functioning of schools, how to address the dependence in private tuition, the curriculum for promoting democratic values among children, quality education for children admitted to age-appropriate classes and parental punishment at home on child's learning for future research. It concludes that undertaking studies in the suggested priority areas are essential for transforming the 'right of young children to education' to their 'right to quality learning'.

Key Words : *Age Appropriate Class, Awareness, No-Detention, Strategies, Reservation, School Management Committee, Community Participation, Quality Education.*

Introduction

Education remained a privilege for a select few in the remote past and became an opportunity for a majority in post-independent India. It took decades to be a fundamental right for the young masses of six to fourteen years with the enactment of the Right of Children to Free and Compulsory Education Act 2009 (2009) with effect from 01 April 2010.

The direction of emphasis from just universal facilities to universal access, universal enrolment, universal participation, universal completion and universal equity; from learning through memorization to learning through activities; from the competitive learning environment to stress-free learning environment; and from quantitative expansion to good quality education at the elementary level are the essence of the Act. This paradigm shift has motivated researchers to accept the Act as one of the most vital areas of research. The present research review is an attempt to explore the type of studies so far conducted and prioritize future research in the area of the RTE Act 2009 since its enforcement.

Related Research Studies

The studies so far conducted are placed under the following research areas.

Awareness of the Act

Following the RTE Act 2009 (i.e. Right of Children to Free and Compulsory Act, 2009), researchers have carried out studies on its awareness among teachers and parents. Some studies reported that there is no significant difference between rural and urban school teachers (Kamath & Shivaswamy, 2013; Thote, Mathew & Rathoure, 2013) and science subject teachers and social science subject teachers across marital status, family types and qualifications (Thote, Mathew & Rathoure, 2013) with respect to the awareness of the Act. The level of awareness about the Act among government school teachers, however, was significantly higher (Kamath & Shivaswamy, 2013) and more (Kumari & Allam, 2014) than private school teachers. However, it remained the same for both as found by Thote, Mathew and Rathoure (2013).

Soni and Rahman (2013) found that the teachers were aware of the provisions of the Act largely. However, the

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awareness level of junior teachers was found higher than their seniors (Dey & Beck, 2011; Thote, Mathew & Rathoure, 2013). Gadam (2013) found a positive impact of teaching experience and academic qualification of teachers on their awareness of the Act.

The level of awareness about the Act was significantly higher for male teachers than their female counterparts (Krishnarao & Mangesh, 2015) and male prospective teachers than the female prospective teachers (Jaseena, 2011; Lal, 2013). In contrast, Malik, Serohi and Tayal (2013) did not find any significant difference between male and female prospective teachers as well as urban and rural prospective teachers. Similarly, no significant difference was found between male and female teachers (Kamath & Shivaswamy, 2013; Thote, Mathew & Rathoure, 2013; Kumari & Allam, 2014).

Unlike teachers, a few studies have examined awareness level among parents. The awareness level of the Act among parents was extremely low (Kumar & Sharma, 2011; Nayak, 2012; Rajput & Aziz, 2013). Parents even were not aware of the Act in Himachal Pradesh (Shing, 2016). However, those parents aware of the Act were educated and linked with some political party or organization (Rajput & Aziz, 2013).

Attitude towards the Act

Senior school teachers were not interested to materialize the Act as the junior teachers (Dey & Beck, 2011). The attitude of secondary school headmasters was neither favourable nor unfavourable but the teachers possessed a favourable attitude towards the Act (Mandal & Barman, 2014).

School Management Committee

School Management Committees (SMCs) were constituted in all schools of Gujarat (Janvikas, n.d.) and Jharkhand (Jharkhand Right To Education Forum, 2012). However, the majority of schools in the top cities of India did not form their respective SMC (Choudhary, 2013). Thapa (2012) and Ojha (2013) found that the functioning of the SMCs was restricted to only monitoring of Mid-Day Meal and teacher's regularity in government schools of Haryana. For the functioning of SMCs attempts are made for the development of training material for SMC members (American India Foundation, 2011).

No-detention and no-banishment policy

"No child admitted in a school shall be held back in any class or expelled from school till the completion of elementary education" (RTE Act 2009, p.11). Dey & Beck's (2011) study revealed that most of the teachers were not in support of the no-detention policy. Some of the top private minority schools even decided to continue with the age-old pass-fail system as they feel if there is no fear of failing, students will not study hard enough (Basu, 2012). No-detention policy was a cause of deteriorating learning outcome of students across the country (Pandey, 2013). Dutt (2014) observed that students became irregular and careless in their studies and some time disrespected there teachers after the enforcement of the no-detention policy.

Reservation of seats in select schools

'An unaided school, or a school belonging to specified category shall admit, at least 25% of the strength of class I, children belonging to weaker section and disadvantaged group in the neighbourhood' (RTE Act 2009, pp.5-6). However, the reservation of 25% seats for disadvantaged children has been widely challenged by some private schools (Debbarma, 2011). The method for calculation of per-child reimbursement expenditure may yield an inadequate resource (Kamalkar & Bhojanna, 2012) which might have been discouraging private schools to implement the provision. Children from economically weaker sections do aspire to take admission in unaided private schools if they can get a free hostel, transportation and textbooks (Chowdhury, 2013). Despite it, low budget schools located in rural areas were given free admission to disadvantaged children (Nayak, 2012). A recent report by IIM, Ahmadabad and Central Squire Foundation (The Times of India, 2015) reveals that only 29% of total reserved seats for disadvantaged children in private schools are filled-in during the last five years of duration. There was a wide variation across states regarding the fulfilment of seats. While Delhi was on top having fulfilled 98% of reserved seats, Andhra Pradesh had recorded its name at the last having filled only 0.2% of reserved seats.

Disabled friendly learning environment

There has been some progress in respect of enrollment of children suffering from any kind of disability

in schools (Soni & Rahman, 2013; Shinde, 2015). However, infrastructural facilities such as a disabled-friendly ramp, training of teachers and teaching aids in schools found insufficient (Choudhary, 2013)

Obstacles to the implementation of the Act

Karnataka state faced challenges to implementing the RTE Act 2009 due to insufficient infrastructure, regional and social gaps, absence of monitoring system and poor pre-school education (Debbarma, 2011). Inadequate professionally qualified and committed teachers to impart child-centred education were some other hurdles to implement the Act (Kales & Thakur, 2014). The progress in implementation of the Act was found impeded by state governments' apathy, unavailability of infrastructure facilities, unavailability of good teachers, high pupil-teacher ratio, provision of twenty-five per cent seat reservations for disadvantaged children in private schools, lack of coordination between various implementing agencies, lack of awareness of Act among stakeholders (Kaushal, 2012; Ernst &Young, 2012; Kamalkar & Bhojanna, 2012; Centre for Budget and Policy Studies, 2013; Soy, 2013; Joshep, 2013; Ojha, 2013; Chandrappa, 2014; Chaturvedi & Kuldeep, 2015)

Strategies for implementation of the Act

Studies have suggested strategies for effective implementation of the Act. Pre-primary education (Farwaha & Malik, 2010), development of school infrastructure (Debbarma, 2011), the appointment of qualified teachers (Farwaha & Malik, 2010; Debbarma, 2011), review of management functions (Chandrappa, 2014), conducting awareness programmes on the Act for stakeholders (Debbarma, 2011; Chandrappa, 2014; Chaturvedi & Kuldeep, 2015); and provision of sufficient fund and resources to the schools (Debbarma, 2011; Kaushal, 2012; Ernst &Young, 2012; Chandrappa, 2014; Chaturvedi & Kuldeep, 2015) are the essential requirements to transform the Act into practice.

Reviewing the Review

The review of the studies reveals that awareness of the Act among teachers has widely been investigated. The priority of research on awareness of parents is low. While community ownership of schools has been given due weightage through the SMC, researchers have investigated more on its formation than functions. The Act prohibits private tuition by teachers. However, one may notice the increased dependence on private tuition. Why is such dependence? What could be the alternative to stop it?

The curriculum under Clause 29 (2) of the Act as a vital area of research has not drawn the attention of any researchers. One may investigate how far the existing school curriculum explicitly or even implicitly conveys the implications of the values enshrined in the Indian Constitution in the life of the young learners at home and in schools.

As per the Act, the children above six years of age who have not been admitted to any school or could not complete their elementary education shall be admitted in a class appropriate to their age and groomed through special training. How many such children get admission per year? Do these children attend school regularly? Do they get any benefit from such special training? Do they cope up with the school environment, understand lessons delivered in the class and achieve at par with the regular children? How do the teachers and regular students perceive them? How do they perform at the high school level after completion of elementary education? Researchers have not yet focused on these issues.

The Act keeps the provision of equal educational opportunity with barrier-free access in schools for children with disabilities. Are the mainstream schools equipped to provide education to these children at par with their normal counterparts? Research has mostly concentrated on enrolment than 'learning environment' and 'process of learning' for such children with disabilities.

The Act states that no child shall be subjected to physical punishment or mental harassment [Clause 17(1)], and whenever a person contravenes the provisions shall be liable to disciplinary action under the service rules [Clause 17(2)]. Despite such provisions, school teachers continue to punish children (Chinara & Soma, 2014). Does such incidence occur across different states of India? One may too investigate the effects of parental punishment at home on a child's learning as it continues to prevail (Chinara & Soma) and no provision exists to identify and ban such punishment.

Conclusion

The review enumerates certain research deficiencies that may facilitate to carry out practical research problems in different areas of the RTE Act 2009. With the present review as the base, the future research can fasten the journey by concentrating on how to extend the right of the masses to education but not just their 'right to schooling' as argued by Choudhary (2013) and compulsory education but just 'not compulsory schooling' as perceived by Singh (2012), enabling the Act to act as a tool for fostering quality in elementary education, transforming the right to education to the right to quality learning and minimizing the gulf between the Act on paper and the Act in practice.

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DESIGNING INSTRUCTION IN HISTORY: EFFECTIVENESS OF THE SYSTEMS APPROACH MODEL

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ABSTRACT

The purpose of this study is to test the effectiveness of an innovative instructional design - The Systems Approach Model of Designing Instruction on students' academic achievement in History at the secondary level. A total of 70 students selected from two average schools of a district employing purposive sampling were used. The effectiveness ofthe systems approach model on achievement of students is validated by comparing the initial and final scores of two groups, one taught using the experimental teaching method and the other , the prevailing classroom teaching method. An academic achievement test consisting of 30 items was administered to the Experimental Group (EG) and Control Group (CG)as pre–test and post-test. For statistical analysis, Analysis of Covariance (ANCOVA) was used. The results show significant positive results in favour of the EG.

Key Words: *Systems Approach Model of Designing Instruction, Activity Based Classroom Pedagogy, History Learning.*

Introduction

In future at schools, students will learn to educate themselves, focusing not only on acquiring subject-matter but on understanding their own habits, knowledge basis and value systems (Berk.1996). A fundamental purpose of including History in the school curriculum is to transmit appreciation of and commitment to the best of culture we have inherited.(Armeto,1987) The History subject taught in schools is very important in nurturing the spirit of citizenship and aiding in the foundation of nation building.

Challenges in teaching history in schools have been a great concern among teachers, educationist and historians. Students perceive history subject as difficult and very boring because one has to memorize all facts, concepts, dates and historical events in the text book, coupled with the lack of creativity in history teaching. Moreover, 85% of the history teachers preferred to use teacher centered methods and only 15 % of them were in favour of using student centered approaches. (Zin et al, 2009.)

There has been an interest for some time in thematic, integrated and multidisciplinary instructional design which can cluster learning, discover relationships and encourage mastery learning of social sciences Manifold (2001). The need for instructional design planning, an instructional inventory and a material analysis inventory to improve the quality of social science instruction has been stressed by Mohr in (2003). Employing instructional design technique in social sciences is useful for teaching psychomotor skills and has the potential to make abstract concepts more accessible to students, Roach (1997). There are practically no studies which employs instructional design approach in the teaching of history.

Background of the Study

Instructional Design involves organizing and using tools of the mind and tools of learning to improve the conduct of education and training. (Gentry,1994).The Dick and Careys Systems Approach Model is a 'performance-oriented model stressing the identification of skills that students need to learn and the collection of data from students to revise instruction. It involves design, development, implementation and evaluation of instruction - assessment of the effectiveness of the system in bringing about learning and a mechanism to make changes, if learning fails to occur". (Dick &Carey ,1996).

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There are ten steps in this model. 1) Assess Needs to identify Goals 2) Conduct Goal Analysis-.3) Identify subordinate skills and Entry Behavior- .4) Assess Learners and Contexts- 5) Writing Performance Objectives- 6) Developing Assessing Instruments- describe how entry behavior tests, pretests and posttest are to be constructed.7) Develop an Instructional Strategy- Develop an instructional strategy including a) pre-instructional activities b) content presentation c) learner participation, d) assessment, e) follow through activities. 7) Developing Instructional Materials- based on an instructional strategy which includes student models, Instructor guides, video tapes, multimedia formats and web pages. 8) Designing and conducting formative Evaluation – Three types of formative evaluation may be conducted a) One to One evaluation, b) small group evaluation c) field evaluation. 9) Revising Instructional Materials. 10) Design and conduct Summative Evaluation (Dick & Carey, 1996).

Research Method

Objective

The major objective is to find out the Effectiveness of the Systems Approach Model of Designing instruction on achievement in History at the secondary level.

Hypothesis

There is no significant difference between the experimental group of secondary school learners taught History using the Dick and Carey's Systems Approach model of designing instruction and the control group taught the same content using the prevailing Activity Based classroom pedagogy prescribed for teaching History in their mean achievement scores.

Research Design

A quasi-experimental design was adopted for the study by selecting the pre-test post-test non equivalent group experimental design. The experimental group was taught using the system approach model while the control group was given instruction in the prevailing method and their initial and final achievement scores were compared. The study was confined to two average C.B.S.E. schools of Pathanamthitta district, Kerala, selected through purposive sampling method. The schools were identified as average in respect of their performance in the common secondary school examinations conducted by C.B.S.E. The study was conducted with 35 experimental and 35 control group students of IX standard.

Tools used

A Test of Academic Achievement was prepared consisting of 30 items selected from the original pool of 75 items using Item Analysis. The content validity of the test was established with the help of subject teachers. The co-efficient of reliability (split-half) obtained was 0.81, which shows that the test possess a reasonably high degree of reliability.

Instructional Procedures

The unit -India and the Contemporary World, of the NCERT IX standard history text book was selected for the study. The investigator prepared eight instructional units based on the Dick and Carey System Approach Model of designing instruction for teaching the experimental group of students. The teaching strategy used for the CG was also delivered in eight units employing twelve teaching hours, the same instructional time used for teaching the EG. . Students were formed into small groups each of size 4. Each group were provided with a map of India, world map, atlas and printed work sheets to complete activities.

The entire teaching exercise lasted for 6 weeks, 4 weeks for the experimental treatment and two weeks for the testing exercises.

Research Findings

As a first step, the pre-test and post-test scores of the experimental and control groups were compared using Analysis of Variance and the Fx and Fy values were computed. The results of the ANOVA is presented in table 1.

Table 1
Pre-test and Post-test Scores of Students in the Experimental and Control Groups: Data and Results of ANOVA

Source of Variation	df	SSx	SSy	MSx	Msy
Among Means	1	5	1018	4.6	1018.41
Within Groups	68	180	1023	2.6	15.1
Total	69	184	2042		

Fx = 1.75. Fy = 67.67. From table F for df (1,68) F at 0.05 level =4.00. F at 0.01 level=7.08

The 'F' ratios for the two sets of scores (pre-test and post-test) were tested for significance. Since the table value of 'F' for df (1,68) is 4.00 at 0.05 level and 7.08 at 0.01 level, the obtained Fx (Fx= 1.75) value is not significant. The obtained 'Fx' value shows that the experimental and control groups do not differ significantly in their pre-test scores and the random assignment of subjects to the two groups was quite successful. The 'Fy' obtained (Fy = 67.67) is significant at 0.01 level, as it exceeds the table of 7.08. The analysis of variance of the 'y' means (post-test scores) indicate that there exists significant difference between experimental group and control group in their post-test scores. For correcting the final y-scores for the difference in the pre-test scores, the adjusted sum of squares and adjusted mean square variances for post-test scores were computed and F ratio was calculated and given in table 2.

Table 2
Analysis of Co-variance (ANCOVA) of the Pre-test and Post-test Scores of Students in the Experimental and Control Groups

Source of Variation	df	SSx	SSy	SSxy	SSyx	MSyx	SDyx
Among means	1	5	1018	68.7	764	764	2.52
Within groups	67	180	1023	327.7	425.9	6	
Total	68	184	2042	396	1190		

Fy.x = 120.14 . From Table F for df (1,67) F at 0.05 level =4.00.F at 0.01 level=7.08

Since the obtained 'F' ratio (Fy.x = 120.14) is higher than table value at 0.01 level, it is significant at 0.01 level. This significant 'F' ratio for the adjusted post-test scores shows that the two final mean scores of the experimental and control group differ significantly after they have been adjusted for differences in the pre-test scores. The adjusted means for the post-test scores of students in the experimental and control groups were computed using correlation and regression and given in Table 3

Table 3
Adjusted Means for the Post-test Scores of Students in the Experimental and Control Groups

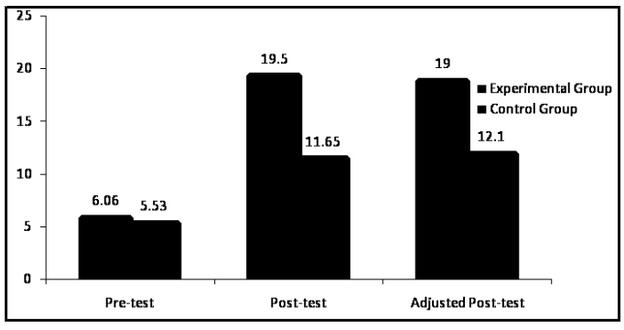
Groups	N	Mx	My	My.x (adjusted)
Experimental Group	35	6.06	19.5	19.00
Control Group	35	5.53	11.65	12.10
General Means		5.79	15.57	15.57

t = 11.43. From Table D, for df 67 t at 0.05 level = 2.00 .t at 0.01 level = 2.66.

Adjusted means for the post-test scores were tested for significance for df 67. The 't' value obtained is 11.43. The 't' value for df 67is 2.00 at 0.05 level and 2.66 at 0.01 level. The obtained 't' value is significant (t = 11.43; $p < 0.01$) since it is greater than the table value at 0.01 level.

As the adjusted mean score for the experimental group (adjusted mean = 19.00) is higher than that of the adjusted mean score of the control group (adjusted mean = 12.10), the experimental group can be said to be superior to control group. Thus, it can be concluded that teaching history employing Dick and Careys Systems Approach Model of designing instructions is more effective in enhancing the achievement of Secondary School Students when compared to the practising Activity based Pedagogy

Fig.1 shows the pre-test, post-test and adjusted mean scores of the experimental and control groups.



Findings

Analysis using statistical technique of Analysis of Covariance it became evident that the Dick and Careys Systems Approach Model of designing instruction in the teaching of history is far more effective than the practising

Activity –Based –Pedagogy. The students who have been taught history using the Dick and Careys Systems Approach Model of designing instruction have found to be far more successful than the students taught by the prevailing instructional strategy.

Implications

1. To make history teaching effective at the secondary level it would be ideal if the instructor develop an 'Instructional Strategy' incorporating the principles of Instructional design as conceived by the Dick and Careys Systems Approach Model .
2. To develop an Instructional strategy, the instructor should begin with an Instructional Design that includes
   a. An Instructional goal and goal analysis.
   b. Sub-skills identification through an instructional analysis.
   c. List of performance objectives.
   d. Learner analysis.
   e. Learning context analysis.
   f. Performance context analysis.
3. For designing history instruction that motivates the learner, four attributes of instruction must be considered viz.- Attention, Relevance, Confidence and Satisfaction.
4. The innovative teaching methodology can be effectivelyapplied to topics such as ancient civilizations, map projections, art and architecture, the sangham age etc.
5. It would be ideal if new innovative approaches in teaching history, like the one outlined in this study are included during curricular revisions at the B.Ed. and M.Ed. levels

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IMPLEMENTATION OF PUBLIC SERVICES GUARANTEE ACT IN JAMMU AND KASHMIR: THE POLITICAL, LEGAL AND ADMINISTRATIVE ASPECTS

UGC CARE APPROVED

ABSTRACT

The most credible tool to assess the government policy is its delivery of quality of services. It must give some political, legal and administrative protections to the citizen to receive the services. Various statutory laws which guarantee time bound delivery of services by the notified departments also provide a mechanism for an official accountability and efficiency. Right to Service legislation has empowered the citizen in the process of delivering the various services. The legislation entitles the citizens to get the corruption free and timely services. Hence in the light of these apprehensions the present piece of research was about to explore the nature, scope and introduction of Public Services Guarantee Act in the state of Jammu and Kashmir. It primarily focuses on the guarantee of different services and its political, legal and administrative dimensions.

Keywords : *Governance, Public Services and Jammu and Kashmir.*

Introduction

Since the decades, the procedural democracy of free and fair periodic elections might have taken strong roots in India. The substantive part of such it to benefit people is yet to materialize seriously. Despite celebrating the electoral democracy and major success story of democratic experiments, this has not translated into a corresponding improvement of democratic governance benefitting millions of voters. The absence of substantive democracy can be clearly seen in domain of state functioning i.e. public service delivery. Service delivery, a significant aspect of public administration, continues to be a loose point in the largest democratic state. With some exceptions, the state of public service delivery has remained poor and defective. Over the last two decades, a paradigm shift has taken place in governance also, both in process of public service delivery and grievance reddressal mechanism. The new governance model, which initiated in advanced OECD countries like Great Britain during in 1991 focusing citizen-centric governance, is also emerging in India. The past studies also suggested about the concerns for public services delivery and related great dissatisfaction among the people. The New law emphasises about improving the service delivery mechanism across the public departments and organisations.

Before the Public Service Guarantee Act

The public services law in Indian state was adopted from the Citizens' Charter of United Kingdom and provided for timely public services. The citizens' charter based on the belief i.e. services first was extended to India in 1997 voluntarily with the conscious efforts of central ministries and local bodies. An official website namely Department of Administrative Reforms and Public Grievances to visualise the citizen charters was launched subsequently. Regional transport Office, Hyderabad, the Jan Seva Kendras in Ahmadabad and Chennai Metro Water Supply and Sewage Board play a vital role in the implementation of citizen Charters. Later on, the service excellence model "Sevottam" was initiated to implement the charter also. A web based portal namely 'The Centralized Public Grievance Redress and Monitoring System' (CPGRAMS) was put into action to lodge online complaints for easing the services delivery defects.

The Administrative Reforms Commission of Citizen Centric Governance in one of its report also gave the recommendation for making citizens' Charter effective

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through adding into it the reddressal mechanism component and periodic evaluation. The report also provided for accountability of officer's holders and citizen participation.

The Jammu and Kashmir Public Services Guarantee Act, 2011 has come into effect from 10 of August 2011. Under the Act, the designated officers have to give services on time to every eligible citizen. Before this, the charter was a landmark shift in delivering the services. In 1991, the charter was formally implemented to empower the citizens by presenting them as a centre of the administration. It had been an attempt to use the bottom to top approach in the Indian bureaucracy and decrease the gap between officials and the citizens. Following Britain countries all over Europe, America, Asia and Africa also brought out their version of citizens' charter. In fact, a number of countries went several legal strategies further that guarantee public services to citizens.

India's British based bureaucracy aimed at law and order maintenance also was going through a change with it emergence. It was an outcome of the strong demand for accountability and responsiveness in post liberalization. The liberalization had led to competition between private and public agencies for services delivery especially in telecom and electricity. The active role of civil society in enlightening the citizens about various political and environmental issues has led to public activism, also created a context for demand of timely services and good governance. To arrest such growing cynicism among citizens and taking note of changes that public administrations in the entire world were undergoing through to become accountable and responsive, the Indian government also initiated a process in late nineties to make such laws. Among its major steps, the formation of citizens' charter across the various departments at state level was one of the key instruments to bring about drastic changes in public services.

While service guarantees legislations highlight many pro citizen provisions and innovative mechanisms for service delivery, these cannot escape from certain bottlenecks and handicaps. Some of these concerns could be also used to explain the area of the Act adequately. In fact, most of the state legislations do not have any provisions for publishing citizens' charters and making information available in the open sources. The state surveys have revealed the low awareness among the citizens and those of service providers. India's Governance reforms have ignored a very important aspect of citizens' welfare that is implicit in the imposition of services delivery standards and quality marks. While there is a focus on timely delivery of services, there are no provisions that enforce quality standards yet. The shortage of manpower and financial resources, adequate incentives to motivate government officials such as promotions, rewards, performance assessments are yet to receive due weight age in various states.

Unlike RTI 2005, the state legislations lack of availability of Management Information Systems for maintaining the records. In rural areas in particular, lack of awareness and infrastructure, and poor power supply remain key bottlenecks in the implementation of the Acts. In addition, states under review were unable to address the absenteeism amongst public officials, financial and manpower constraints in a bureaucratic setup. The study dealt with questions viz. What are the political and legal dimensions of the J&K Public Services guarantee Act? And what is the administrative structure and procedure of delivering the services under JKPSGA?

Jammu and Kashmir Public Services Guarantee Act, 2011

It is an Act to provide for the timely delivery of public services and for matters connected therewith and incidental thereto. Under the Act the Government may, from time to time, specify the services to be the public services for purposes of the Act and shall specify the time limit within which such services shall be provided to the eligible persons. It also provides for different services designate officers who shall be responsible for providing each of such services. It shall be obligatory on the designated officer to provide public services to the eligible person within the time specified. All applications received by the designated officer or the authorized person shall be duly acknowledged specifying the number, date and time of receipt of such application. The designated officer should provide either timely services or reject the application reasonably.

The Act enshrines first and second appeal mechanism for filing a case against the unaccountable officials delaying services or rejecting the applications unreasonably. The first

appellate authority shall dispose of the appeal within a period of forty-five days from the date of presentation of appeal. The first appellate authority may direct the designated officer to provide the public service within the time as it may specify or to remove the deficiency in the service provided to the appellant or pass such other order, including rejection of the appeal, as it may deem fit. Under Second appeal, Any person aggrieved by the order passed by first appellate authority under section 6, may prefer an appeal to the second appellate authority within 60 days from the date on which the order appealed against has been passed: The second appellate authority may, within forty-five days from the date of presentation of appeal, pass an order directing the designated officer to provide the public service within such time as it may specify or to remove the deficiency in the service provided to the appellant or may pass such other order including the rejection of appeal, as it may deem fit.

Table 1

Various Important Services Initially Covered under JKPSGA, 2011

Services	Time Prescribed	Departments	Issuing Authority
State Subject Certificate	30 Days	Revenue	AC(Rev)/ADC/SDM
RBA Certificate	15 Days	Revenue	Tehsildar
Extract of Girdawari	10 Days	-Do-	NT
Extract of Jamabandi	10 Days	-Do-	NT
Income Certificate	30 Days	-Do-	Tehsildar
Caste Certificate			Tehsildar
Electricity Connection	30 days		AE (concerned)
Water Connection	15 days		Executive engineer Concerned
Learners Driving License	15 Days	Transport	RTO/ARTO
Driving License	30 Days		-Do-
Registration of Vehicle	30 days		-Do-
Ration card	30 days		TSO, CAPD in Rural areas & AD in Urban areas
Issue of Surrender /duplicate Ration Certificate	7 days		-Do-
Inclusion of a new born child in the ration card	Do		-Do-
Birth/Death Certificate	30 days		Registrar/Health Officer Concerned
No Objection Certificate for construction of house	30 days		Executive engineer
Marriage Certificate	5 days		Tehsildar Registrar) concerned
Copy Of Voter List	5 days		Tehsildar (AERO) Concerned/Election NT of the District
Copy of FIR, Verification report	1/3 days		SHO Concerned

Source : GAD Official Site

Designation of Appellate authorities and their powers

The Government may by notification in the Government Gazette, designate officers who shall be first appellate authorities and second appellate authorities in respect of each public service. The appellate authorities shall, while deciding an appeal under the Act, have the same powers as are vested in Civil Court while trying a suit under the Code of Civil Procedure, in respect of the matters viz. Requiring the production and inspection of documents, Issuing summons for hearing to the designated officer and appellant and any other matter which may be prescribed. If the officers do not comply with the orders or directions given to him under prescribed rules the person aggrieved may file an application before the second appellate authority and the second appellate authority shall direct the designated officer to show cause, within specified time, for not complying, with 'the aforementioned orders or directions. The Act also mentions about imposing the fine from 2500-500 on the designated officer for their failure in delivering the services for no reason.

Political Dimensions, Legal Dimensions and Administrative Dimensions

While working on the implementation of the JKSGA, 2011, there is need to locate its political legal and administrative dimensions. Like right to service, all rights are not natural but politically and legally acquired and administratively protected. The purpose of dimensions is to highlight how the Act has been politically evolved, legally

framed and administratively implemented. The JKPSGA has provided certain rights to the citizens. The stakeholder or citizen has access to the public services within stipulated time and in transparent manner. Broadly, the rights can be also categorised as under:

a) Right to Compensation : under section 11 or section 12, the citizen may get compensation through an application before second appellate authority for not receiving the services on time. Though the amount should not exceed the prescribed limit.

b) Disciplinary Action : In addition to imposition of fine, the second appellate authority in case of its satisfaction about the case, may recommend a disciplinary action against unaccountable officials for delaying the service unreasonably.

c) Revision : If the first appellate authority is aggrieved by any order of second appellate authority in respect of imposition of fine under the Act, he or it may make an application for revision to the Special Tribunal within a period of 60 days from the date of passing of such order, which shall dispose of the application according to such procedure as may be prescribed.

d) Protection of action taken in good faith : the transparent and accountable officials should be protected from any suit, prosecution or other legal proceeding for their good faith done or intended to be done under the Act.

e) Rule Making : The Government is responsible for making rules to carry out the provisions of the Act. It has to eradicate every difficulty in giving effect to the Act. Though the rules should confirm the basic guidelines of the Act.

f) Right to Quality Services : While the JKPSGA emphasis on time-bound delivery of goods and services, quality standards should be adequately addressed. Denial of this can itself create adequate and compelling reasons for filing grievances. Implementation of benchmark or standards has to be a priority for the administration and should not depend on the whims and fancies of the officials.

g) High Standard of Proof : Further, like all state service guarantee Acts, the Centre's proposed legislation to provide adequate timelines for disciplinary proceedings and the standard of proof for imposing penalties. But it would be virtually impossible (logically and legally) for a poor and illiterate person to prove that a defaulting officer has acted mala fide or in bad faith.

Application of ICT The future of governance in India can well be found in the concept of e-governance. The existing model of the BRTPS Act is a step in the right direction with extensive use of Informational and Communication Technology tools such as Adhikar and Samadhan. Similar models can be found in Kerala which are extremely efficient and have revolutionized the concept of governance in India. The Rajiv Gandhi Sewa Kendras could be used in each one of the 6000 blocks at the district level as the single window system instead of creating new infrastructures.

• Compulsory display of all relevant information related to the notified services at a prominent place of the office in Urdu and in English highlighting the list of nodal officers for each districts. It should also highlight notified list of services and departments under the Act. For instance, a total of eighty (180) services of thirteen (15) departments had been notified when the current research was initiated. The relevant information about the PSGA and its Rules is available on the website of the General Administration Department i.e. (jkgad.nic.in).

Grievances Reddressal Mechanism and Penal Provisions under the Act

First Appellate Authority and Second Appellate Authority are designated/ notified in respect of each public service. First Appellate Authority and the Second Appellate Authority enjoy the powers of a Civil Court while trying a suit under the Code of Civil Procedure in respect of viz. requiring the production and inspection of documents, Issuing summons for hearing to the designated officer and to appellant. The first appeal can be filed within 30 days of rejection or expiry of specified time limit for the particular service. It is to be disposed off within 45 days of receipt. The second appeal can be filed by aggrieved party within 60 days of disposal of First Appeal and has to be disposed off within 45 days of receipt. In case of penalty, only Second Appellate Authority is empowered to impose a fine ranging from Rs.250 to Rs.5000 on the First Appellate Authority or the Designated Officer for failure to discharge the duties under the Act/rules. Disciplinary action can be taken against the Designated Officer or the First Appellate Authority in addition to the fine imposed or compensation given.

J & K Public Services Management Cell

In addition to various political, legal and administrative provisions, there is a 'Public Services Management Cell' in Jammu and Kashmir which also strengthens the implementation of PSGA at ground level. It monitors the implementation of the Act through establishing the

coordination among different departments. It organises capacity building programmes for Designated Officers/ Appellate Authorities independently. It acts as feedback centre through coordinating quarterly reviews and evolving mechanism for third party monitoring. Moreover, it coordinates the public awareness camps at district level through engaging the administrative staff and giving wide publicity. It also deals with resource commitments and capacity Building measures. Therefore, it is imperative that the states has to address capacity of service providers by strengthening human resources, financial and infrastructural support. Resource commitments have to be made to ensure that delivery of services is not hampered due to difficulties faced by the service providers. Most significantly, it has to train public officials in the functioning of grievance reddressal mechanisms, ICT tools and equipments to effectively handle the grievance reddressal mechanisms.

Conclusion

Despite socio-political disturbances in the state, the Act is implemented in its every district. Six-monthly review of the services mentioned under the Act, is also in the practice has widen the scope of the Act drastically in the region. In certain cases, compulsory display of all relevant information related to the notified services at a prominent place of the office in Urdu and in English has become a norm. The relevant information about the Public Services Guarantee Act and its Rules on the website of the General Administration Department (jkgad.nic.in) plays a vital role in enlightening the stakeholders to exercise their right to services. Lacking of widespread publicity at regular intervals through the print and electronic media though is absent and unaddressed. For instance, no attempt has been made to publicise the information about penalty provision for delaying the services. As a result, there is no record found that highlights about the disciplinary action taken against the Designated Officer or the First Appellate Authority for delaying the services. Therefore, the awareness among the stakeholders about the public services guarantee Act will definitely achieve the set targets and make its implementation effective and successful. Social audits like done in MGNREGA can also be an effective measure of ensuring accountability and transparency in the public offices. However, social audits have been relatively inconspicuous in most states. The outcome of social audits has been quite illuminating. About 33,800 field level functionaries have been implicated, 3,842 functionaries have been dismissed based on the findings of social audit, and 1,430 65 suspended. In Andhra Pradesh, 66 social audits of MGNREGA have recovered Rs 33 crore can be also utilized for assessing the JKPSGA. Though, the experiences from the implementation of the Right to Information Act, 2005 clearly indicate that state departments do not fulfill their obligation of pro-active disclosure of information. This will ensure that citizens will be unable to procure information beyond what is stipulated in the Guarantee Acts any denial/failure to do so would qualify as a grievance in itself.

Future prospects

There is a need to replicate the tatkal services of Bihar, Single Window System/ Shop Centre of Madhya Pradesh and SAAKLA of Karnataka in Jammu and Kashmir to improve the service delivery system. The list of all applicants and beneficiaries should be uploaded on the official sites of all the departments covered under the Act. The data should also cover the various related information like cases highlighting the deficiency and delay in delivering the services. The GAD as a nodal department should prepare report after every six months to highlight the progress of implementation of the PSGA. The report should be holistic in depicting the different aspects of the delivery of public services i.e. demand of the services, mechanism of the delivering the services, grievances reddressal mechanism etc. Each department and service should be covered under the ICT for fast service delivery. The general population should be able to access the list of services demanded and provided, grievances submitted and redressed to assess the working of the system in personal.

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Continued on Page 49

INTEGRATION OF ARTIFICIAL INTELLIGENCE IN EDUCATIONAL TECHNOLOGY

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ABSTRACT

In education sector, Artificial Intelligence (AI) holds a lot of potential. Major challenges like availability of trained teachers give rise to the requirement of AI in education, which acts like private teachers to the students. Like any other new technology its accessibility is linked to scalability, but then existing AI models in other fields suggests it is achievable. While Intelligent Tutoring Systems (ITS) have existed since 1970's, the personalization drive is being pushed by AI. This paper tries to explore the scope of AI in educating the students as well as the Teachers. It also provides guidelines to the school authorities how AI can be integrated in education and how AI is beneficial as a modern-day teaching aid or technology. The paper further discusses the challenges that are being faced in the implementation of the AI technology.

Key words : *Artificial Intelligence, Digitization, Online tutorials, Integration of Technology.*

Introduction

According to the definition mentioned in the Webster dictionary, "Artificial intelligence (AI) is the capability of a machine to imitate intelligent human behavior." In the last few years, AI has made its presence felt in many areas specially in the field of Education. India is a young country in terms of demography, as almost more than half of the population consists of youth below the age of 25. Thus, a requirement for a developed and digitized education sector exists in our country. The issue that grips education sector in India is that of poor employability standard of trained teachers. In rural areas specially the lack of trained teachers results in poor scores of the students. The contract or Para teachers employed to overcome these shortcomings are more disastrous to the students as untrained teachers do not impart correct form of education. AI can help in skilling& enhancing the knowledge of such teachers, thereby addressing this pressing concern.

An updated curriculum or a research-oriented curriculum or skill oriented curriculum can be put in place using AI which relies on big data created by experts keeping in mind global education.Exercise sheets and model papers for each subjects can be created for students who can practice on them and self-analyze their progress.

In case of higher education AI can also help streamline and bring to track a research culture that is sparse. Most of the research these days is done due to professional pressure and does not further any knowledge or cause. Researchers work in areas mostly due to external factors guiding them into it rather than personal interest.AI canhelp researchers do their SWOT analysis and can provide feasible ways to explore and do valuable research in relevant areas.

Training of teachers in AI can be of great assistance to them.Technology-based education is set to become a mainstay despite the opposition and resistance from the old educational institutions. Though the current government in India is ensuring rapid growth of digitization in education even at the remotest corner of the country, still it will take time to cover all students and teachers from primary to higher education. The World Economic Forum has predicted that automation will drive 50 lakh people out of jobs by 2020, AI replacing teachers might be a reality anytime soon.This apparently seems a drawback but skilling in AI-governed pedagogy may provide new kind of opportunity to teachers at all level.

AI can bring about collaboration like no other. Artificial intelligence systems are on way to bring together

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teachers, psychologists, social psychologists, educationists, human computer interaction experts and software professionals among others. With the transformation brought by AI, the role as a teacher is going to the background and is being replaced by the role as a mentor.

Research to make teaching learning process effective, is going on in the field of AI. Currently in AI, natural language processing with speech recognition technology and other cutting-edge technology like developing a 'human mind' that mimics our complex neural system is on. However, its application in education is in infancy, work on which will usher the AI era in education.

The main area of concern is whether the, educational institutions, teachers , students and Parents are prepared to accept and understand Artificial Intelligence. Some research has been done in this Area, but a lot is left to be done.This paper tries to explore the scope of AI in educating students as well as Teachers .The researchers have tried to analyze what are the possible areas in the field of education that can benefit out of AI and what is the scope of AI in educational institutions.

Literature review

Sambit Dash (2016) observes that in education, especially higher education AI holds a lot of potential to address some key concerns that have plagued it. Firstly, at the crux of education lies the fact that ideal learning happens on a one-to-one basis. While it may be desirable, it is not feasible. Acute shortage and poor quality of available teachers are well known problems, especially in a country like India.

Amit Paul Chodhary (2017) suggests ten areas in the field of Artificial Intelligence, which has the potential of growth in future. Education being one of the major field, which has great scope especially in higher education. Digital education in school & colleges are slowly finding a significant requirement amongst the students as well as academicians.

ZishaanHayath (2018) is of the opinion that large number of researchers are predicting about the evils of artificial intelligence. According to themAI is helping in transforming the way education is crafted, used and analyzed. Current research predicts that the use of AI in the education sector will grow 47.5% by this year itself.The major focus was on three areas concerning students: Using AI to personalize learning speeds, Using AI to personalize questions, Using AI to solve doubts.

Arnab Kumar, Punit Shukla, Aalekh Sharan, TanayMahindru(2018) in a discussion paper published under NITI AYOG, describes in details the plans of the government in the integration of AI in various fields along with education in schools as well as colleges. It also compares the usage of AI in other countries and the various big developers of AI. The action plan of the government is discussed and the guidelines are minutely studied.

Scope of artificial intelligence for students

a) Provides private tuitions to the students.

b) Ensures that all students are building the same conceptual foundation.

c) Students get immediate feedback.

d) AI helps to frame curriculum that are tailoredas per their requirement.

e) AI programs helps students in realizing their potential. It helps students to choose subjects based on areas where they succeed and struggle.

f) Repetition in listening to the lectures offers students to learn in a judgment-free environment.

g) Finally, all time availability of a teacher makes learning easier and convenient.

Scope of artificial intelligence for teachers

a) Grading homework and assignmentshas become simpler for teachers (eg. OMR sheets).This gives time to teachers to focus more on in-class activities and student interaction.

b) AI shifts the role of the teacher to that of facilitator.

c) AI tools can be used to design customized professional development training content for the teacher based on their performance.

d) AI tools that can be used to develop automated teacher posting and transfer systems. This would help in plugging of gaps in teacher distribution more effectively.

Scope of artificial intelligence for schools

a) Smart data gathering, is already making changes to how schools interact with prospective and current students.

b) AI is making school experience more customized to student needs.

c) AI-guided training eases the transition between school and university.

d) Digitized education in any school helps in the Brand building. Schools offering such facilities are popular and considered elite.

e) AI may just replace class room teachers& provide lectures digitally from the teachers all over the world.

f) Predictive tools are developed to inform pre-emptive action for students predicted to drop out of school.

g) Analysis of test results and attendance records using AI can be used to predict probable student activities.

Challenges

The real challenge is, are the students, Teachers, Parents ready for this change in the education system. Do the Parents approve of such learning process? Are the schools prepared with a digital infrastructure? Are the teachers efficient & trained with the modern style of class room teaching?To find answers to all these questions a survey was conducted which took a feedback from school going students, trained teachers and parents.

Objective

To find out whether Students, Teachers and Parents are aware of Online courses and are they willing to learn through AI.

Methodology

The research was exploratory. Focused questions were asked directly and the responses were noted. Similar questions were asked from the Teachers as well as Parents. The sample comprised of 426 students, 74 parents and 86 teachers.

Quantitative analysis

a) Students survey

1. The students were asked to choose how they studied at home?

(i) Study on their own

(ii) Online classes

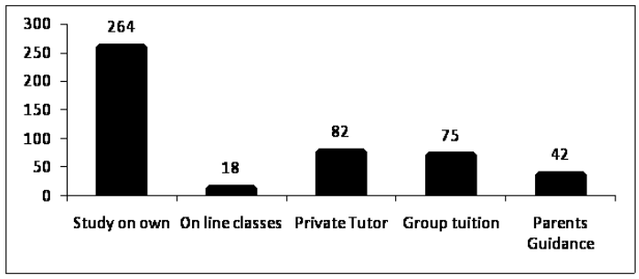
(iii) Private Tutor

(iv) Group Tuition

(v) Parents Guidance

Maximum number of students almost 62% choose the method of studying on their own when they were at home. Least number of students choose the option of online classes.

Fig 1 : Primary Source : Students Response



b) Teachers Survey

The teachers were asked through which mode they would like to upgrade their skill and knowledge. The options given to them were:

(i) On job training

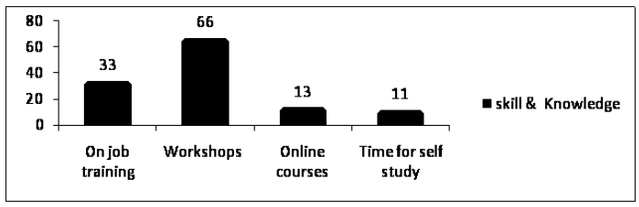
(ii) Workshops

(iii) Online courses

(iv) Time for self-study

Maximum number of teachers chooses the option of workshop to learn new teaching methods. Whereas the least points were given to the option of getting time for self-study and very few gave the option of upgrading through online course.

Fig 2 Primary Source : Teachers Response



c) Parents Survey

The Parents with the following options were asked how would they prefer their child to study at home?

(i) Parent's guidance

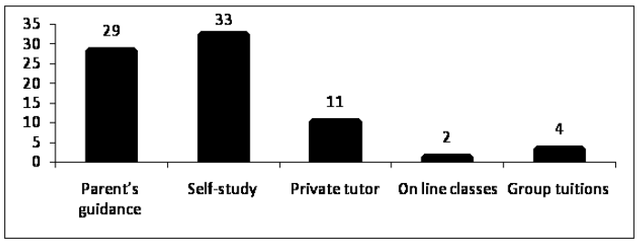
(ii) Self-study

(iii) Private tutors

(iv) Online classes

(v) Group tuitions. Maximum number of Parents chose the option of Self-Study. On-Line classes was the last preference of parents.

Fig 3 : Primary Source: Parents Response



Result analysis and suggestions

The above analysis brings into light that online mode of education is preferred neither by school going children, nor by students from higher education, nor by parents nor by teachers. It stands the last preference for them. This draws attention towards lack of awareness of importance of AI in education, among the main stakeholders. The accessibility to technology to a large number of students may be a hurdle. This raises a big question –Is all talk about Digitization just a hype? Is only a small percentage of people availing the facility and advantages of technology?

Thus, Online education, though very popular in western countries lacks its foothold in the Indian Schooling System. It should be encouraged and implemented speedily and at mass level to keep pace with time and global trends.

Conclusion

Artificial Intelligence is progressing by leaps and bounds in every field of life and profession. For advancement its inclusion in the education sector is the foremost need of the time. Though, today the integration of AI in education sector seems a dream difficult to achieve to a large number of educational institutes in India, its need and importance cannot be put on the shelf. Rather, serious efforts are required in this direction because soon the time may come or rather, thanks to COVID -19, the time has come when it has become inevitable even in the nursery and primary level schools. As regards application of AI in education, the scene in higher educational institutes is better. With the continuous efforts and support of the government in this field, the future of AI in education sector in India seems bright.

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ONLINE PEDAGOGICAL PRACTICES OF HIGHER EDUCATION TEACHERS OF TAMIL NADU DURING THE PANDEMIC

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ABSTRACT

This paper is based on an investigation into the Online Pedagogical Practices of Higher Education Teachers of Tamil Nadu. The investigation was carried out as a descriptive and quantitative research, involving a normative survey. The key variable under study was the 'Online Pedagogical Practices' of the sample. The sample consisted of 145 Higher Education Teachers of Tamil Nadu. The tool used for the survey was an Online Pedagogical Practices Assessment Scale (OPPAS), developed by the investigators. The data collected through the administration of the tool online were subjected to suitable statistical analyses. The findings and conclusion of the study present a status report of the Online Pedagogical Practices of Higher Education Teachers during the pandemic, when all the higher education institutions remained closed. The conclusion and recommendations would be of immense value to educational technologists and trainers of higher education teachers and educational administrators for evolving Online Education policies and implementation strategies for the same.

Key words : *Online Pedagogical Practices, Higher Education Teachers, Pandemic*

Introduction

Online learning has shown significant growth over the last decade, as the internet and education combine to provide people with the opportunity to gain new skills. Since the COVID-19 outbreak, online learning has become more centric in people's lives. As the pandemic has disrupted the normal lifestyle of people across the globe, the virtual world has come to the rescue. Like any other industries, educational institutions have also shifted their base to virtual platforms to conduct classes online. Consequently, catering to the needs of all stages of education from pre-primary to university level, online education has emerged as an alternative to ordinary face to face classes. With this sudden shift away from the classroom in many parts of the globe, some are wondering whether the adoption of online learning will continue to persist post-pandemic, and how such a shift would impact the worldwide education market. Research suggests that online learning has been shown to increase retention of information, and take less time, meaning the changes corona virus have caused might be here to stay. While some believe that the unplanned and rapid move to online learning – with no training, insufficient bandwidth, and little preparation – will result in a poor user experience that is not well-suited to sustained growth, others believe that a new hybrid model of education will emerge, with significant benefits.

Statement of the Problem, Objectives and Hypotheses

Digital transformation is not a novel phenomenon, and it has been accompanying higher education institutions

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for some years now (Kopp et al., 2019; Leszczynski et al., 2018). The contemporary transformation are bringing in revolutionary modifications in the specifications of higher education as a process, because the transformation has moved the face-to-face instructional pedagogies of the class room, using objectivist, teacher-centered teaching method, to online and hybrid learning environments, applying digital technologies in enhancing constructivist, learner-centered, cooperative pedagogy. As such online pedagogy is a class apart. In this context, it becomes imperative to ascertain how effective are the online pedagogical practices of the Indian teachers, who have largely been working in offline environment. This would provide deeper insights into the ground realities and would lead to policy decisions at the national, local and institutional levels for enhancing the effectiveness of online learning in India, a country with a wide geographic and cultural diversity and also a huge socio-economic divide. In this backdrop, the study has been undertaken to find out the different ICT-based instructional practices of the teachers of Arts and Science Colleges in the state of Tamil Nadu, while handling classes online in the newly-emerged LFH 'learning-from-home' environment. Hence, the problem of the study is stated as "Online Pedagogical Practices of Higher Education Teachers of Tamil Nadu".

The objectives of the study were :

1. To find out the level of Online Pedagogical Practices of the Higher Education Teachers of Tamil Nadu.
2. To find out the significance of difference, if any in the Online Pedagogical Practices of the Higher Education Teachers of Tamil Nadu with respect to certain select variables.

In the light of the above objectives, the following null hypotheses were formulated :

1. The Higher Education Teachers of Tamil Nadu do not have any Online Pedagogical Practices.
2. There is no significant difference in the Online Pedagogical Practices of the Higher Education Teachers of Tamil Nadu with respect to certain variables viz., Gender, Age, Research Qualifications, Category, Type and Locality of the Institutions, etc.

Research Method, Sample and Tools

The present study is a quantitative and descriptive one, involving normative survey technique. In this study, purposive sampling technique was used to select the sample. As many as 145 participants of the Faculty Induction Programmes and Refresher Courses, conducted at the UGC-Human Resource Development Centre of Bharathidasan University formed the sample. The Higher Education Teachers, who formed the sample were from Government and Government-Aided Arts and Science Colleges, representing different districts of Tamil Nadu and a wide range of disciplines such as Arts, Humanities, Sciences and Social Sciences. The tools used for data collection are General Information Questionnaire and Online Pedagogical Practices Assessment Scale (OPPAS). The scale consists of 30 statements related to the target group's Online Pedagogical Practices such as use of web tools, multimedia, interactive apps, Open Educational Resources, games and puzzles in terms of their frequency viz., Very Often, Often, Occasionally and Never. The scores ranged from 0 for Never to 4 for Very Often, thus leading to the minimum and maximum obtainable scores as 0 and 120 respectively.

Analysis of Data and Discussion

The analyses of data collected through the online administration of the tools are presented as tables along with interpretation. The following table presents the distribution of the Higher Education Teachers who formed the sample in terms of their Gender, Age, Research Qualifications, Category of Institution, Nature of Institution and Locality of Institution.

Table 1 : Distribution of the Sample in terms of Demographic Variables

Variables	Sub-Variables	No. of Teachers	Percentage
Gender	Male	71	48.96
	Female	74	51.03
Age	Below 40 Years	51	35.17
	Above 40 Years	94	64.82
Research Qualification	With Ph.D	129	88.96
	Without Ph.D	16	11.04
Category of Institution	Govt.	53	36.55
	Govt. Aided	92	63.44
Nature of Institution	Autonomous	80	55.17
	Non-Autonomous	65	64.82
Locality of Institution	Urban	69	47.58
	Rural	76	52.41

Hypothesis Testing

Hypothesis 1 : (H01)

The Higher Education Teachers of Tamil Nadu do not have any Online Pedagogical Practices.Hypothesis Testing.

Hypothesis 1 : (H01)

The Higher Education Teachers of Tamil Nadu do not have any Online Pedagogical Practices.

Table 2
Mean Online Pedagogical Practices Score of the Whole Sample

Variable	No. of Teachers	Maximum Obtainable Score	Mean
Online Pedagogical Practices	145	120	71.21

As seen in the above table, the mean Online Pedagogical Practices score of the whole sample is 71.21, out of the maximum obtainable score of 120. It is above the median, which indicates that the Higher Education Teachers of Tamil Nadu have an above-average level of Online Pedagogical Practices. Hence, the hypothesis, "The Higher Education Teachers of Tamil Nadu do not have any Online Pedagogical Practices" is not accepted and it is concluded that Higher Education Teachers have a desirable level of Online Pedagogical Practices. Further analysis revealed that the levels of Online Pedagogical Practices of Higher Education Teachers of Tamil Nadu range from low to high; as many as 22 teachers (15.2%) have a low level of Online Pedagogical Practices, 101 teachers (69.7%) have an average level of Online Pedagogical Practices and 22 teachers (15.2%) have a high level of Online Pedagogical Practices. It is important to note that a only minimum number of 22 teachers (15.2%) involve themselves in low levels of online pedagogical practices.

Hypothesis 2 : (H02)

There is no significant difference in the Online Pedagogical Practices levels of the Higher Education Teachers of Tamil Nadu, sub-grouped on the basis of demographic variables.

In order to find out whether there is any significant difference between the mean Online Pedagogical Practices scores of the Higher Education Teachers of Tamil Nadu, sub-grouped on the basis of certain demographic variables, the above null hypothesis was formulated and the 't' test was attempted to test the same.

Mean, Standard Deviations and 't' values of Online Pedagogical Practices Scores of the sample, sub-grouped on the basis of Demographic Variables.

Variable	Sub-Variable	N	Mean	SD	't' Value
Gender	Male	71	68.2	18.61	2.058*
	Female	74	74.11	15.92	
Age	Below 40 Years	51	70.14	17.42	0.545*
	Above 40 Years	94	71.58	17.58	
Research Qualification	With Ph.D.	129	72.71	17.29	3.013*
	Without Ph.D.	16	59.13	14.34	
Category of Institution	Government	53	69.75	17.35	0.762*
	Government Aided	92	72.05	17.6	
Nature of Institution	Autonomous	80	69.66	15.24	1.187*
	Non-Autonomous	65	73.12	19.85	
Locality of Institution	Rural	69	71.26	18.09	0.031*
	Urban	76	71.17	17.02	

* Not significant at 0.5 level of Significance

The above table reveals that the higher education teachers of Tamil Nadu, sub-grouped on the basis of certain demographic variables like Gender, Age, Research Qualifications, Category of Institution, Nature of Institution and Locality of Institution do not differ significantly in their Online Pedagogical Practices. Hence the Null hypothesis "There is no significant difference in the Online Pedagogical Practices levels of the Higher Education Teachers of Tamil Nadu sub-grouped on the basis of demographic variables" is not rejected and it is concluded that different sub-groups of higher education teachers have almost the same level of Online Pedagogical Practices.

Findings and Recommendations of the Study

The major findings related to the Online Pedagogical Practices of the Higher Education Teachers of Tamil Nadu are as follows:

1. The higher education teachers of Tamil Nadu have an above-average level of Online Pedagogical Practices.
2. The sample, sub-grouped on the basis of their Gender, Age, Research Qualifications, Category of Institution, Nature of Institution, Locality of Institution do not differ significantly in their Online Pedagogical Practices Scores.
3. The female teachers and teachers with Ph.D. were considerably better than their male counterparts and teachers without Ph.D. respectively.
4. Only negligible difference could be seen between teachers of above 40 years of age and teachers of below 40 years of age, teachers of Government Colleges and teachers of Government-Aided Colleges, teachers of Autonomous and Non-Autonomous Colleges and teachers of Rural and Urban Colleges.

On the basis of the findings and conclusions, the following recommendations are made:

- The Higher Education Institutions must organize online capacity building programmes to their teachers to ensure smooth transition from offline pedagogy to online pedagogy.
- Higher education teachers must participate in online workshops and training programmes in order to enhance their digital literacy and techno-pedagogical practices.
- Educational theorists and teacher educators must attempt to design certain models and designs of online pedagogy that would be appropriate to Indian higher education system.

Conclusion

The present study has been done with a clear focus on the Online Pedagogical Practices of Higher Education Teachers of Tamil Nadu, though not the entire country. As such, it can be taken as a kind of a status report of the phenomenon under study. The suggestions and recommendations of the present study deserve a closer look by the government authorities and other agencies, working for the enhancement of the higher education system in the state and the country.

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