A study on relationship between parental education and student achievement

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Abstract

Achievement testing plays a significant role in the teaching learning program in school. A class teacher constructs tests to work out the student’s performance in a subject but majority of people in India are not in favor of present system of examination. Parents should understand the child’s problem “It is much more important for parents to learn how to promote normal development than to master techniques for correcting distortions in the growth process. The research is restricted the secondary level, XI standard pupils, because it is crucial stage: After completion of this class, they will ready to write the public examination, there by paving the way to their future career. At this stage, the gender differences in Mathematics achievement and Influence of parents’ education are to be analyzed. Hence the apt title “Influence of Parents’ Education on Achievement in Mathematics” is chosen for investigation. A recent study exploring the relationships between level of parent’s education, parent self-efficiency, children’s academic abilities, and participation in a Head Start program found that level of parent education and program participation was significantly related to parental self-efficiency.

Key words: classification-environment-resources-performance.

INTRODUCTION

Because parent involvement parent education have been shown to be very important postured force in a child’s life, one would expect that during such a critical and demanding phase the two more important in child development. Home and school would increase the collaboration. Parent education often deals with values classification and the resolution of values and conflicts (McCartney, Kathleen, 1983). For example, a parent who is resistant to offering a child certain freedoms may be acting from out dated belief system. Some group discussion and experimental activities might help parents to become aware of the source of the belief and to rich and understanding that certain belief needs to be updated. Too simply of parent's better communication skills, to teach they how to say limits would ignore deny their own serious problems.

Parent education and achievement

The term "parent education" was defined as “instruction on how to parent”. Parent education, as we will be using the term, refers to a systematic and conceptually based program, intended to impart information, awareness, or skill to the participants on aspects of parenting (Aruna NS, 1981). Achievement testing plays a significant role in the teaching learning program in school. A class teacher constructs tests to work out the student’s performance in a subject but majority of people in India are not in favor of present system of examination. Reason begin, these tests lack objectivity reliability and validity.

Need of the Study

As the investigator is a mathematics teacher she got interested to find out the possible reasons among the XI standard pupils, if there exists any gender differences in influences of parents’ education level achievement in mathematics. The research is restricted the secondary level, XI standard pupils, because it is crazier stage: After completion of this class, they will be ready to write the
public examination, there by paving the way to their future career. At this stage, the gender differences in Mathematics achievement and Influence of parents' education are to be analyzed. Hence the apt title “Influence of Parents’ Education on Achievement in Mathematics” is chosen for investigation.

### Relationship between Parental Educational Attainment and Student Achievement

Parents' play an important role in their children’s learning. Aside from being actively involved in their children's education, parents also provide a home environment that can affect learning. Parents serve as a model for learning, determine the educational resources available in the home and hold particular attitudes and values towards education. Although it is difficult to examine the home environment of each student, the educational attainment and occupation of parents serve as an indicator of the values and resources with which parents create this environment. Given the wide range of student performance within each group, it is clear that the success of many students appears to be dependent on factors other than their parents' level of education (Bayley N, Oden MH, 1955).

### Parent Involvement

“Parent involvement” and "Parent participation" are nebulous terms because there is an array of parent behaviors that these could include. To define parent involvement more operationally (Clark, 1927), theorized a two-way breakdown into home-based activities (e.g., parent home tutoring) and school based parent involvement activities (e.g., parent volunteering, attendance at parent-teacher conferences).

### Types of Parent Involvement

- The traditional type of parent involvement type (the parent as audience or bystander-observer);
- Parents as decision makers (as in School Advisory Committees or Parent Teacher Associations [PTAs] in which parents participate in school decision making activities);
- Parents begin as classroom volunteers;
- Parent as a paid paraprofessional or teacher's aide;
- Parents as learners (e.g., participate in child development or parenting classes)
- Parents as teachers of their own children at home.

### Ways to Reach Parents

It is important for teachers to keep the lines of communication open. This involves not only sending regular newsletters and notes, but also obtaining information from parents. Teachers need to consider families’ lifestyles and cultural backgrounds when planning home activities. Teachers can suggest appropriate programs and send home questions for families to discuss. This discussion can be carried over into class. Busy parents can include children in such everyday activities as preparing a meal or grocery shopping. Teachers can also suggest that parents set aside a time each day to talk with their children about school (Schunk Dale H, Zimmerman Barry J, 1997).

### Statement of the Problem

The statement of the problem is “Relationship between Parental Educational and Student Achievement”.

### Objectives

The following are the objectives of the present study:

- To find out the level of influence of parental education of higher secondary students.
- To find out the significance difference between Influence of parents’ education and achievement in Mathematics of higher secondary students.

### Hypotheses

There is no significant difference between male and female higher secondary students with respect to Influence of parents’ education.

There is no significant difference between rural and urban higher secondary students with respect to Influence of parents’ education.

There is no significant difference among government, aided, private higher secondary students with respect to Influence of parents’ education.

There is no significant difference between literate and illiterate fathers of higher secondary students with respect to Influence of parents’ education.

There is no significant difference between literate and illiterate mothers of higher secondary students with respect to Influence of parents’ education.

### Limitation of the Study

Broadly speaking any study is impossible without limitation. Research studies in general will have limitation
due to many factors. This study too has some limitations. It is the responsibility of the researcher to see that the study is conducted with minimum care in order to be reliable. However, the following limitations were unavoidable in the present study.

This study adopted survey method using questionnaires to collect data from respondents.

In this study, sample was confined to higher secondary students of various schools.

The sample respondents belong to age group between 15+ and 16+.

The generalizations of the study are to be viewed in the light of the above limitations that are inherent in academic research.

Analogy

Most of the studies followed random sampling technique in the collection of data and the size of the selected samples ranges from 40 to 2400 samples. In majority of the studies data was collected from the school students and in few of the studies data was collected from the teachers and parents. In majority of the students the questionnaire, Opiomerie Rating Scale developed by the investigator was utilized as a tool. Since all the reviewed studies were selected to influence of parent education, parent involvement, achievement in Mathematics among higher secondary students. In majority of the studies data was collected only from the school students. Mean, Standard deviation, t-test were the statistical technique followed in the majority of the students.

METHODOLOGY

Design of the Study

A research design however, is not a highly specific plan to be followed without direction. Rather, it is a series of guideposts to keep right direction. Thus, research design is the process of planning a research, choosing methods and procedures that can be expected to yield meaningful and most interpretable results.

The present study belongs to survey stay Research. The Demographic variables used are Gender, Locality and Type of the school, Father’s educational qualification and Mother’s educational qualification. The tool “IPEAM” used in the study is 11th standard students for sample selection. Stratified Random sampling technique was followed in this study. Data were collected from 150 students and the statistical techniques mean, SD, ‘t’ test and Average were used.

Blueprint

Pilot Study

Before administering the questionnaire to the actual sample, pilot study was conducted. The aim of pilot study is not only to test and refine the tools of research but also to force the nature of analysis and processing that may be needed at a later stage after a questionnaire was prepared. It was given a trial on small sample. This is necessary to know XI standard students whether they are meaningful and whether there is any ambiguity in thought or in the wording of questions.

Research Methods

The investigator followed Survey method as this study aims of eliciting the opinions of the XI standard students on achievement in Mathematics.

Tools

Achievement test with multiple choice questions
A questionnaire was prepared to get the information about matrix and vector Analysis in XI std students
Test method – Achievement test of 50 marks was conducted

Sample

A sample is a small proposition of a population selected for observation and analysis. By considering here the research which proposes to ascertain what is the normal or typical condition or practice at the present time”. It is the only means through which opinions, attitudes and suggestions for improvement and such other data can be obtained. Survey studies help in contributing to other types of investigations and cover a large number of traits and characteristics of the group. A sample of 150 students of Higher Secondary level was selected from the following. Five difference higher secondary schools in Taluk of Namakkal district.

Personal Data Sheet

The personal data sheet serves to collect personal information. Students were asked to write their name, gender, locality, age, name the school, type of the school, father’s and mother’s educational qualification.

Procedure

The questionnaire was prepared which included questions in XI standard Mathematics given to the students during extra periods. The students wrote the truthful answers. Further the classification and analysis of the results was carried out.
Questionnaire

A Questionnaire usually contains a series of well-planned and well-framed questions on the chosen topic. Which the subjects were asked to answer. “In general the word questionnaire refers to a device for securing answer questions by using a form which the responded fills himself”. Barn, David and Johnson define questionnaire “A systematic computation of question that are submitted to a sampling of population from which information is desired”

Scoring Key

The three types of optionnarrie consist of questions. The total maximum scores 1 and minimum scores 0.

Statistical Techniques

For the analysis of data following statistical technique were adopted.

They were,

Arithmetic Mean
Standard Deviation
‘t’- test
‘f’- test
Arithmetic Mean
\[
M = \frac{\sum fx}{N}
\]
Standard Deviation
\[
S = \sqrt{\frac{\sum fx^2 - (\sum fx)^2}{N} X \frac{N}{N - 1}}
\]
‘t’ – test
\[
t = \frac{m1 - m2}{\sqrt{\frac{SD_1^2}{N_1} + \frac{SD_2^2}{N_2}}}
\]
‘f’ – test
\[
f = \frac{\text{Variance difference}}{\text{Variance within}}
\]

Delimitations of the Study

However, the following delimitations were unavoidable in the present study. The present investigation is confined to the students studying in Taluk, Namakkal District in Tamil Nadu. The study is confined only to a sample of 150 students from higher secondary schools located in rural and urban area. In this present study the investigator analyzed about the variables such as gender, locality, types of the school, father’s educational qualification and mother’s educational qualification.

Data Analysis

The purpose of present investigation is to study the influence of parental education on achievement in mathematics. The data for the study were collected from the students by means of a questionnaire. The analysis of data was attempted as per the objectives of the study. In the present study the data was anglicized using mainly the following techniques.

Hypothesis: 1

There is no significant difference between male and female higher secondary students with respect to influence of parents’ education.

Table 4 examines the mean, standard deviation, ‘t’ value and level of significance of male and female student’s towards parents’ education. The mean scores of male and female shows that there is significant difference in their influence of parents’ education. The scores indicate that the two groups have difference. The ‘t’ value of the group is 4.51 at 0.05 level. The calculated ‘t’ value exceeds the tabulated value (1.98) at 0.05 level. Hence the null hypothesis is accepted.

Hypothesis: 2

There is no significant difference between rural and urban higher secondary students with respect to influence of parents’ education.

Table 5 examines the mean, standard deviation, ‘t’ value and level of significance of rural and urban student’s towards parents’ education. The mean scores of male and female shows that there is significant difference in their influence of parents’ education. The scores indicate that the two groups have difference. The ‘t’ value of the group is 5.86 at 0.05 level. The calculated ‘t’ value exceeds the tabulated value (1.98) at 0.05 level. Hence the null hypothesis is accepted.

Hypothesis: 3

There is no significant difference among government,
Table 1. Schematic Representation of the Research Design

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Type</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nature of the Research</td>
<td>Survey research</td>
</tr>
<tr>
<td>2</td>
<td>Tool Developed</td>
<td>Influence on Parental Education on Achievement in Mathematics</td>
</tr>
</tbody>
</table>
| 3     | Demographic variables | Students  
                                Boys, Girls (Gender)  
                                Rural, Urban (Locality) |
| 4     | Variables           | Government, Aided, Private (Type of the School)  
                                Literate, Illiterate (Father’s educational qualification)  
                                Literate, Illiterate (Mother’s educational qualification) |
| 5     | Sampling Technique  | Stratified Random sampling Technique                                   |
| 6     | Size of the sample  | Students – 150 (Boys-75, Girls-75)                                     |
| 7     | Statistical Techniques used | Mean, Standard Deviation and ‘t’ test                                 |

Table 2. Blueprint for Achievement Test

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Knowledge</th>
<th>Understanding</th>
<th>Application</th>
<th>Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forms of questions /Content Unit</td>
<td>E</td>
<td>S,A</td>
<td>O</td>
<td>E</td>
</tr>
<tr>
<td>Matrices</td>
<td>-</td>
<td>-</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Vector Algebra</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Sub total</td>
<td>16</td>
<td>11</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>Total (in %)</td>
<td>32</td>
<td>22</td>
<td>30</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 3. Distribution of Samples

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Variables</th>
<th>Category</th>
<th>No. of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gender</td>
<td>Male</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>Locality</td>
<td>Rural</td>
<td>79</td>
</tr>
<tr>
<td>3</td>
<td>Type of the School</td>
<td>Aided</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>Fathers’ Educational Qualification</td>
<td>Literate</td>
<td>91</td>
</tr>
<tr>
<td>5</td>
<td>Mothers’ Educational Qualification</td>
<td>Literate</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Illiterate</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Illiterate</td>
<td>86</td>
</tr>
</tbody>
</table>

Table 4. Significant Difference between Male and Female Higher Secondary Students with Respect to Influence of Parents’ Education

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>‘t’ value</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>75</td>
<td>44.83</td>
<td>17.62</td>
<td>4.51</td>
<td>No Significant</td>
</tr>
<tr>
<td>Female</td>
<td>75</td>
<td>57.5</td>
<td>16.73</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5. Significant Difference between Rural and Urban Higher Secondary Students with Respect to Influence of Parents’ Education

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>‘t’ value</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>79</td>
<td>43.72</td>
<td>14.64</td>
<td>5.86</td>
<td>No Significant</td>
</tr>
<tr>
<td>Urban</td>
<td>71</td>
<td>59.44</td>
<td>17.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6. Significance Difference among Government, Aided, Private Higher Secondary Students with Respect to Influence of Parents’ Education

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>‘f’ value</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>51</td>
<td>51.97</td>
<td>23.16</td>
<td>1.56</td>
<td>Significant</td>
</tr>
<tr>
<td>Aided</td>
<td>50</td>
<td>39.7</td>
<td>10.6</td>
<td>1.56</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>49</td>
<td>66.31</td>
<td>15.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7. Significant Difference between Literate and Illiterate Fathers’ of Higher Secondary Students with Respect to Influence of Parents’ Education

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
<th>‘t’ value</th>
<th>Significance at 0.05 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literate</td>
<td>91</td>
<td>56.15</td>
<td>18.86</td>
<td>4.56</td>
<td>No Significant</td>
</tr>
<tr>
<td>Illiterate</td>
<td>59</td>
<td>43.63</td>
<td>14.55</td>
<td>4.56</td>
<td></td>
</tr>
</tbody>
</table>

aided, private higher secondary students with respect to influence of parents’ education.

Table 6 examines the mean, standard deviation, ‘f’ value and level of significance of male and female student’s towards parents’ education. The mean scores of government, aided and private shows that there is significant difference in their influence of parents’ education. The scores indicate that the two groups have difference. The ‘f’ value of the group is 1.56 at 0.05 level. The calculated ‘f’ value not exceeds the tabulated value (3.06) at 0.05 level. Hence the null hypothesis is rejected.

Hypothesis: 4

There is no significant difference between literate and illiterate fathers of higher secondary students with respect to influence of parents’ education.

Table 7 examines the mean, standard deviation, ‘t’ value and level of significance of male and female student’s towards parents’ education. The mean scores of literate and illiterate fathers’ shows that there is significant difference in their influence of parents’ education. The scores indicate that the two groups have difference. The ‘t’ value of the group is 4.56 at 0.05 level. The calculated ‘t’ value exceeds the tabulated value (1.98) at 0.05 levels. Hence the null hypothesis is accepted.

Major Findings

From the present study the investigator came to the following findings;

- There is no significant difference between male and female higher secondary students with respect to Influence of parents’ education.
- There is no significant difference between rural and urban higher secondary students with respect to Influence of parents’ education.
- There is a significant difference among government, aided, private higher secondary students with respect to Influence of parents’ education.
- There is no significant difference between literate and illiterate fathers of higher secondary students with respect to Influence of parents’ education.
- There is no significant difference between literate and illiterate mothers of higher secondary students with respect to Influence of parents’ education.

Suggestions

- Parents should monitor their children to use mass media/internet for necessary information.
Parents should educate their children in all their stages to overcome the teen age problems and help them out by providing their needs.

Parents should bear in mind that it is a temporary phase with most children. Some of the most destructive children have later on grown up to be among the most creatively constructive. Many of them outgrow this in time.

We should be very friendly with the child. Parents can instill the best of everything into their child. Try to improve yourselves to be his/her best companions. The child must have complete trust in you. Children usually love to try their hands at new things. Appreciate them and try a test their intelligence quotients (IQ).

**Sum up**

Parent involvement has a sound research base attesting to the many potential benefits it can offer in education. However, student motivation as an academic outcome of parental involvement has only recently been investigated. The purpose of this article is to show how parent involvement is related to students' motivation. Studies of students from the elementary school to high school show a beneficial relationship between parental involvement and the following motivational constructs: school engagement, intrinsic/extrinsic motivation, perceived competence, perceived control, self-regulation, mastery goal orientation, and motivation to read. From the synthesis of the parent involvement and motivation literature, we offer potential explanations for their relationship. Directions for areas of continued research are also presented.

Traditionally, family status variables such as parents' level of education have been regarded as predictors of children's academic achievement. Increasingly, research has suggested that, rather than having a direct association with children's academic achievement, parents' level of education is part of a larger constellation of psychological and sociological variables influencing children's school outcomes (Chandra, Sunanda Chandra, 1985). Attendant on higher levels of education may be access to resources, such as income, time, energy, and community contacts, that allow for greater parental involvement in a child's education. Thus, the influence of parents' level of education on student outcomes might best be represented as a relationship mediated by interactions among status and process variables.

The literature also suggests that level of education influences parents' knowledge, beliefs, values, and goals about childrearing, so that a variety of parental behaviors are indirectly related to children's school performance. For example, higher levels of education may enhance parents' facility at becoming involved in their children's education, and also enable parents to acquire and model social skills and problem-solving strategies conducive to children's school success. Thus, students whose parents have higher levels of education may have an enhanced regard for learning, more positive ability beliefs, a stronger work orientation, and they may use more effective learning strategies than children of parents with lower levels of education (McGillicuddy-Delisi Ann V., 1992).

While many theorists and researchers argue that student attributes conducive to achievement are deeply rooted in processes of socialization, such as learning through observation of parental modeling, others contend that through their personal qualities, children actively shape the parenting they receive: Parents socialize their children, but children also influence their parents. Supporting both theoretical perspectives is research indicating that the combination of learning behavior and intelligence exceeds the contributions of any single source in predicting children's scholastic achievement.

Parents with higher levels of education are also more likely to believe strongly in their abilities to help their children learn. A recent study exploring the relationships between level of parent education, parent self-efficacy, children's academic abilities, and participation in a Head Start program found that level of parent education and program participation was significantly related to parental self-efficacy. In turn, parental self-efficacy beliefs significantly predicted children's academic abilities.

However, examinations across varied cultural and ethnic groups within the United States suggest that level of education does not appear to determine the value parents place on education, their interest in their children's schooling or their aspirations for their children's academic success. For example, in a 1997 study comparing the relative value of varied predictors of parental involvement, Thomas Watkins found that parents' efficacy for involvement and educational goals for their children were stronger predictors of school success than parental level of education and ethnicity. Additionally, this study found that teacher communications to parents predicted parental involvement, suggesting that, regardless of education level, parents need encouragement from educators to become involved in their children's education (Hoover-Dempsey, Kathleen V., Sandler Howard M., 1997).

In sum, it appears that process variables, or factors susceptible to the influence of parents, their children, and school personnel (e.g., educational expectations, level of involvement, child attributes conducive to achievement, and teacher invitations for parental involvement) are more predictive of children's school success than status variables such as parental level of education. This is an important conclusion, for while educators and researchers cannot influence the status of students' families, they may improve students' educational
outcomes by influencing selected mediating process variables.

**Educational Implications**

In summary, all parental influences derived from this study have implications for Mathematics. These influences, which include parents serving as role models of altruism, parental support for career goal achievement, high grade expectations, introductions to the positive aspects of teaching, parents involving children in hands-on learning experiences, and the creation of environments that nurture the discovery of vocational content are all important in creating interest in Mathematics.

**CONCLUSION**

The findings of the present study and earlier researches supported the notion that parents' education is one of the most important factors influencing child's achievement motivation. Highly educated parents have greater success in providing their children with the cognitive and language skills that contribute to early success in school. The relationship of parents' education to their children's achievement motivation in academic area is mediated by parents' beliefs and behaviors are likely to be influenced by their educational experiences and how these parental beliefs and behaviors actually influence children's achievement motivation in academic area.

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Clark (1927) "Family Background and College Success", School and Society, XXV, 237-238.


