

The Impact of Parental Involvement on Students' Attitude and Performance in Science in Batticaloa Educational Zone, Sri Lanka.

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Abstract

This study was carried out to find the impact of parental involvement on student's attitude and their performance in science subject. A sample survey design was adopted for this study. The study was directed at the population of senior secondary students in the Batticaloa educational zone, in the Batticaloa district of Eastern Province in Sri Lanka. The sample was 400 students who studied in grade 12 and 13 science and mathematics streams and offering the physics and chemistry subjects. Ten IAB schools from this research area were selected for the study. The IAB schools in Kalmunai zone were stratified into urban and semi-urban schools. 40 male and female students from the grade 12 and 13 were randomly selected with (late adolescent. To make the total of 400 respondents, 40 were selected from all 10 schools to constitute the sample for this study. The schools consist of 4 semi-urban and 6 urban schools was selected for this study.

The students' questionnaire, consists of section A which is made up of 24 questions, measuring the attitude of the students while the section B contain 18 questions for measuring the parental involvement (home influences) items. They were Likert scale item type questions, in which respondents choose from 5 point scores such as strongly, agree to strongly disagree. Thirdly, information concerning the individual performance (in percentages) of students was obtained from their continuous assessment records of the school subjects concerning(physics and chemistry.

Three null hypotheses were postulated and tested at 0.05 level of significance to the impact of parental involvement on student's attitude and their performance in the science subject. Data collected on the study were analysed using inferential statistics which include; student analysis of variance (ANOVA) and Pearson product Moment correlation coefficient. The result of the study showed that there is a significant relationship between students' attitude towards performance of physics and chemistry and their parental involvement ($p=0.012$ and 0.026 respectively). And there is a significant relationship between performance of physics

and chemistry and their parental involvement ($p=0.019$ and 0.031 respectively). The correlation of coefficient between attitude and performance (physics and chemistry) are positively and significant ($r=0.66$, $p=0.013$ and $r=0.53$ and $p=0.019$ respectively). The phenomena observed were discussed in the light of prevailing conditions in most of the developing countries. Conclusively, home influence can be a tool to enhance school learning.

Keywords :Attitude, performance, parental involvement, Secondary 1 AB school, and late adolescent.

Introduction

Home influence can be identified as very important variable that have potential for promoting directly or indirectly student academic achievements(Fehrmann et.al, 1987). The term parental involvement has been given different meanings. It has been used to mean parental expectation of school performances,(Seginer, 1983); deliberate effort by the home to reinforce improved academic performance (Fehrmann et.al, 1987 ; Fontana, 1981) ; general academic guidance and support (Seginer, 1983) ; students perceptions of the degree to which their parents influence their plan for high school and monitor their daily activities and school progress(Ogunniyi,1996), parental influence as determinant of attitude towards learning, (Oguntelure, 1987), contribution to children's activities (home work, encouraging children to read), and promoting school and school based activities(attending parent teachers' association meetings, parent teachers conference and participating in fundraising activities (Olatoye and Ogunkola, 2008).Ogunniyi(1996) identified four major factors responsible for poor performance in science subject. These factors are;

1. Teacher related(e.g. bad teaching, unpleasantness) Fehrmann et.al,(1987) emphasizes that better learning achievement of students is ultimately determined in the classroom by motivated teachers who have the skills and resources to respond effectively to students' learning needs.
2. Pupil related (e.g. socio cultural background that is indifferent to the learning of science. (Ogunniyi, 1996), attitudes, interest, and learner related influences etc.). According to Olatoye and Ogunkola (2008) the cooperation of students, their parents and teachers can be very valuable.
3. Authority related (e.g. poor management, wrong priority, vision, standards, incentives, curriculum etc.)
4. Subject content related (e.g. difficult concepts)

The major concern of this research is to look into parental influence on the attitude and academic performance among secondary school (senior secondary students – grade 12 and 13 science streams) students. In spite of the fact that observable attitude of the student have been produced by combination of variables, as earlier mentioned, it is possible to identify the effect of “home influence” on attitude, enrolment and performance in science. If this psychological construct called attitude, having been mentioned as one of the three main factors affecting performance in science (Aghanta, 1982) ; it is important to find out if there is any relationship between it and parental influence. Can positive influence from parents and interested members of the public help to produce enough science-oriented students to read science based course and provide manpower in the new science areas of science based occupations?

Review of the Literature

Attitude – Attitude is a concept, which arises from the attempt to account for the observed regularities in the behaviour of individual persons, the quality of which is judged from the observed evaluate responses one tends to make. An individual can show positive or negative attitude towards a particular object, subject or idea. Kind et. Al.,(2007) viewed attitude as having different components which include cognitive (knowledge, belief and ideas) ; affective (feeling, like, dislike) and behavioural (tendency towards an action). The attitude that one has towards an object makes one to make judgment as to whether the object is good or bad harmful or beneficial, pleasant or unpleasant important or unimportant, Crano and Prislin (2006), Epstein et.al., (1997) identified six areas of parental involvement in their children’s academic activities. These are parenting, communicating, volunteering, learning at home, decision making and collaborating with the school. According to him, if they are actively involved in all these area, no doubt it will stimulate in school and influence academic achievement. Due to the great influence of attitude on educational pursuits, it is worthwhile to identify the determinants of attitude towards a particular object, subject or idea, the chief of which are hereditary factors, body, state, direct experience and communication. Hereditary factors (that is, inheritance from parents) form the basis of all human activities including developing of attitude as well as learning. Sometimes unconsciously parents and guidance through non-verbal communications transfer their, likes and dislikes to children via bodily movements and facial expression.

Parental Involvement – Children who are academically successful hold positive attitude school and are well adjusted emotionally and socially (Jeynes, 2005). The academic success is due to the children’s innate abilities and reflect the advantage of being in the socio-economic level (Crano and Prislín, 2006). Children who are economically advantaged receive enough stimulation at home thereby enhancing their academic achievement (Olatoye and Ogunkola, 2008). Parents’ high aspiration does have additional benefit over and above the advantages children enjoy from being capable and receiving adequate stimulation and resources. One study found that higher level of parental aspiration lowered the likelihood of academic failure during secondary school by 48% compared with equally poor but low aspiring parents (Oguntelure, 1987; Aghanta, 1982; Epstein et.al., 1997).

Jeynes(2005) identified five dimension of parental involvement, there are;

- a. Non-participation – Parents are not involved in their children’s learning. These active non-participant parents are may have decided not to be involved. They may either be satisfied with what the school is offering, or are too busy at work, or wants time away from their children. Some of the parents passive simply because they lack confidence or may be unhappy with the form of partnership the school offers.
- b. Support – This dimension of parental involvement s only when parents are invited to attend events, e.g. parent/teachers’ meeting, contributing to developing school policies, or by providing money for learning resources. This is a form of direct involvement.
- c. Participation – Parents may wish to participate as helpers providing assistance on outing, running a toy library, supporting children’s learning in the setting and providing indirect support at home that is, keeping informed about what happens toothier children at school, monitoring their academic progress, reading to them and providing intellectual activities for them at home and within the community.
- d. Partnership – This dimension of parental involvement is a wide scope comes inform of partnership with practitioners. As a result of equal access to information and records some parents may share in the diagnosis and assessment of their children, or involve in the selection of practitioners, or become parishioners.
- e. Control – In this case, parents determine and implement decisions.

Direct experience by learners is one of the most important determinants of attitude. Parents/guardians need to influence their children by increasing familiarity in the science

subject, taking interest in their school work, enrol them for extra lessons, ensuring that home work is done, acquire film and other electronic material that can stimulate their interest in science based careers and enable the children to develop friendly attitude towards the science subject. These experiences are effective in removing hostility towards school work. The effectiveness with which parents are able to motivate their children to learn science by way of enhancing their home and school learning environments is a function of their socio-economic status. The fact that there is a positive relationship between parental influence, which is a indices of socio-economic status of parents and the academic progress of their children is established by Aghanta, 1982 ; Willms (1986) ; and Oluwatelure (2009).

Our modern society is faster paced, globally networked, technologically oriented and requires workers who can solve problems and think critically. The Americans believed that poor ability in science, mathematics and technology will certainly hamper their leading role in the global village Knuth et.al., (1991). Hence the initiative that lead to the creation of a community based collaborative approach, involving the family-school-community partnership, to establish “after school programme”, which was meant to improve the whole the child. The negative attitude of students which is confirmed by poor performance in science ; (Olatoye, 2004 ; Ogunniyi, 1996) ; needs to be reinforced through collaborative efforts of parent/guardians, communities and the school. Parent, irrespective of their economic status, are important stakeholders in the education sector and can actually challenge the incompetent nature of science teacher, lack of commitment as well as the slow national approach to science education reform. Stelios et.al., 2007 were found that literate parents will actively support the education of their children. There is an emphasis on the culture of quality as the only avenue through which schools in Africa can develop and survive. There is the belief that centralization should give way to parental and civil society participation. It was reported that in the exploration of nine countries in Africa, little parental or civic involvement was found. Parents and community participation in the African schools, is seen as a key element of success (Ogunniyi, 1996).

Statement of the Problems

Vast majority of parents are finding it more and more difficult to make a living, especially in developing and undeveloped countries ; scarcity of food especially due to its diversion to the production chemicals, drugs and ornaments present enough reason to be distracted from the expected monitoring in various aspects of children’s life. The challenges of single

parenthood, family crises and the ever increasing involvement of women in various areas of community and national development makes one to ask questions as to whether parents are still able to be committed to their wards ; or whether they are putting enough efforts towards effective learning of science among children. This research work therefore seeks to find out the extent to which parents have been able to objectively use their position to enhance academic progress in their children.

Purpose of the Study

If parental influence becomes exerted on pupil through inheritance and communication and by providing right and stimulating environment, the main focus of this research is therefore to find out if there is home/social class advantage. In other words, this study was geared towards finding out if positive attitude as well as academic progress of students from parents with high involvement will be better than their counterparts from parents with low involvement. The researcher also seeks information as to whether there will be any relationship between attitude to and performance in science.

Research hypotheses

The following hypotheses were raised to guide the study.

H₁ - There is no significant relationship between students' attitude (towards their physics and chemistry) and their parental involvement.

H₂- There is no significant relationship between students' performance in science (physics and chemistry) and their parental involvement.

H₃ - There is no significant relationship between students' attitude and academic performance in science.

Methodology

1. Population and Sample

A sample survey design was adopted for this study. The study was directed at the population of senior secondary students in the Kalmunai educational zone, in Amparai district of Eastern Province in Sri Lanka. The sample was 400 students who were studied in grade 12 and 13 science and mathematics stream and offering the physics and chemistry subjects. The selected ten 1AB schools from this research area. This zone is one of the 5zone in

Amparaidistrict. It has cultural and educational similarities with the other zone in the Eastern Province. These schools were situated in the urban and semi-urban area, and there is no 1AB schools in the rural area. The 1 AB schools in Kalmunai zone were stratified into urban and semi-urban schools. The selected ten 1AB secondary school consist of four educational division in Kalmunai zone. The 40 students were randomly selected with male and female among the grade 12 and 13 (late adolescent) and to make a total of 400 respondents from 10 schools that constituted the sample for this study. The schools consist of 4 semi-urban and 6 urban schools was selected for this study.

2. Instrumentation

The following research instruments were selected and used in the study. The main instrument for collecting data, was a questionnaire. The questionnaire was selected as the chief method because of its many advantages. It gives maximum coverage of the field of study, in comparison with other tools of student's motivational aspects. The students' questionnaire was divided into two parts. It consists of section A which is made up of 24 questions, measuring the attitude of the students while the section B contain 18 questions for measuring the parental involvement (home influences) items. It was scale of likert type question format (five point scale) with response ranged from strongly agree(SA)-4, agree(A)-3, undecided(U)-0, disagree(D)-2 and strongly disagree(SD)-1 to strongly disagree 1. To ascertain the reliability of the instrument after modification, it was administered on 25 respondents who were science and mathematics stream students selected from another two secondary 1 AB schools which were not part of the study sample. The attitude questionnaire designed and standardized by the researcher (split half reliability coefficient 0.62 and 0.69 for physics and chemistry respectively) was administered to determine the attitude of senior secondary school student towards two of the science subjects namely; Physics and Chemistry.

Section A exploring this attitudinal construct, items were drawn relating to concept which are important components of the attitudinal measures considered in this research. They were Likert scale item type questions, in which respondents choose from 5 point scores such as strongly agree to strongly disagree. The following items were contained the 24 questions;

- i. Interest or enjoyment of the subject.
- ii. Perception of the subject.
- iii. Perception of value of subject (that is, usefulness)
- iv. Assessment and performance (that is, ability)

- v. Attitude towards teachers teaching the subject.
- vi. Attitude towards content of the subject.
- vii. Outside pressure (that is, home influence)
- viii. Attitude towards self (that is, positive or negative relation to subject)
- ix. Fear and anxiety.

Section B exploring the 18 questions which were responded to under home influence (parental involvement) were related items. These questions were focus on following items;

- i. Extra lesson/home work.
- ii. Occupational/status of parents.
- iii. Educational attainment level of the parents.
- iv. Materials possession in the home.
- v. Cultural level of the home.
- vi. Parents attitude to the education
- vii. Leisure.
- viii. Time spent on domestic and commercial affairs.

The total number of items in the questionnaire 42 and they all measured the same construct. Thirdly, information concerning the individual performance (in percentages) of students was obtained from their continuous assessment records of the school subjects concerned (physics and chemistry). Copies of the questionnaire were administered to the students by the researcher and collected from them immediately after completion of the questionnaire.

3. Scoring procedure

The questionnaire were scored using the Likert system. For positive statements, responses were assigned 4,3,0,2, and 1 as the scores for choosing SA, A, U, D or SD respectively, while negative statements were scored in the reversed order, and the summed scores obtained for each respondent. The items under home influence were scored separately and converted into percentage.

Data Analysis and Results

Data collected on the study were analysed using inferential statistics which includes; student analysis of variance (ANOVA) and Pearson product Moment correlation coefficient. The data obtained were analysed using ANOVA for hypothesis 1 and 2 and Pearson product Moment

correlation coefficient for hypothesis 3. Specially, the study provided answers to three research hypotheses. The sequence of the presentation of the results is in accordance with that of the hypotheses. In this study, three null hypotheses were tested for significance level at 0.05 margin of error. The results of the study were presented in tables below.

Table 1 : ANOVA in which the attitude of respondents towards Physics against the involvement of their parents.

Variable Entered	SS	df	MS	F	Significant <0.05
Between Group	24784.975	2	13768.756	268.876	*0.012
Within Group	22679.545	377	39.745		
Total	50464.520	399			

***Significant**

In order to ascertain contributing factors of each of the independent variable to dependent variable, analysis of variance was computed. The results that are presented in the table 1 shows that there is a significant relationship between student's attitude towards performance of physics and their parental involvement ($p=0.012$). So, the student's attitude towards performance of physics have impact on their parental involvement. Therefore, the null hypothesis is rejected while alternate hypothesis is accepted.

Table 2: ANOVA in which the attitude of respondents towards Chemistry against the involvement of their parents.

Variable Entered	SS	df	MS	F	Significant <0.05
Between Group	39456.378	2	18647.673	236.942	*0.026
Within Group	41397.951	377	81.785		
Total	80854.329	399			

***Significant**

In order to ascertain the contributing factors of each of the independent variables to the dependent variables, coefficient of correlation was computed. Evidence from the table 2 above shows that, there is a significant relationship between student's attitude towards performance of chemistry and their parental involvement ($p=0.026$). So, the student's attitude towards performance of chemistry have impact on their parental involvement. Therefore, the null hypothesis is rejected while alternate hypothesis is accepted.

Table 3 : ANOVA in which the performance of Physics against the involvement of their parents.

Variable Entered	SS	df	MS	F	Significant <0.05
Between Group	10376.412	2	6526.752	39.758	*0.019
Within Group	19847.219	377	152.856		
Total	30223.631	399			

*** Significant.**

In order to ascertain the contributing factors of each of the independent variable to the dependent variables, analysis of variance was computed. Evidence from the table 3 shows that there is a significant relationship between performance of physics and their parental involvement ($p=0.019$). So, the student's performances of physics have impact on their parental involvement. Therefore, the null hypothesis is rejected while alternate hypothesis is accepted.

Table 4 : ANOVA in which the performance of Chemistry against the involvement of their parents.

Variable Entered	SS	df	MS	F	Significant <0.05
Between Group	18312.874	2	9756.825	121.747	*0.031
Within Group	37421.371	377	71.743		
Total	55734.245	399			

*** Not Significant.**

In order to ascertain the contributing factors of each of the independent variable to the dependent variables, analysis of variance was computed. Evidence from the table 4 shows that there is a significant relationship between performance of chemistry and their parental involvement ($p=0.031$). So, the student's performance of chemistry has impact on their parental involvement. Therefore, the null hypothesis is rejected while alternate hypothesis is accepted.

Table 5 : Inter-correlation test between students' attitude and their academic performance in Physics and Chemistry, $p < 0.05$, r = Co-efficient of Correlation, R^2 = Coefficient of Determination.

Variable	Correlation of Co-efficient Matrix (r)					
	Performance of Physics			Performance of Chemistry		
	r	R^2	Significant < 0.05	r	R^2	Significant < 0.05
Student's Attitude	0.664	0.440	0.013	0.537	0.288	0.019

Table 5 shows that, test done to see the relationship between attitude and performance of the two subjects. The correlation of coefficient between attitude and performance (physics and chemistry) are 0.66 and 0.53 respectively. By this, though there is a strong positively correlation between attitude of the students and two science subject. But also the significant relationship with these two variables ($p=0.013$ and 0.019 respectively). So the hypotheses H_3 was rejected while alternate hypothesis is accepted. The deciding factor levels for the correlation between attitude and two subjects are 44.0% ($R^2=0.440$), and 28.8% ($R^2=0.288$) respectively. Accordingly, the external factors that do not decide the correlation are 66.0%, and 71.2% respectively.

Discussion and Conclusion

The phenomena as revealed the tables of results are discussed below. In table 1 and 2 there was a significant relationship between in the attitude of students towards physics and chemistry with respect to their parental involvement. This is in line with findings of Aghanta, 1982 ; Willms, (1986) ; Oluwatelure, (2009) who believe that an effective collaboration between parent teachers and the community will effectively remove hostility towards schoolwork, motivate children to learn science by way of enhancing their home and school learning environments. Olatoye and Ogunkola, (2008) was also in support of the fact influence of parental involvement enhances achievement in science.

In table 3 and 4, it was also observed that, there was a significant relationship between in the performance of students in the two subjects with respect to their parental involvement. In other wards, the null hypothesis was rejected, at 0.05 level of significance. The fact that there is a significant relationship between in the attitude and performance of students due to parental involvement is supported by Sukon and Jawahir who (2005) who observed that home related factors affects numeracy performance. They also confirmed that level of education of parents, availability of reading materials at home, home possession, parental support in education, familiarity with English at home are major factors causing variation in students achievement.

In addition, there was a high level of dependence between attitude and performance among the learners. This was supported by Stelios et.al., 2007 who found out in their study that there was a meaningful relationship between students' attitudes towards science and their science

achievement. Parents, irrespective of their economic status would want their children to succeed in school learning and want their children to take up career that will enhance their placement in the future. The outcome of this research work revealed that this expectation might not materialize.

The impact of parental involvement on attitude and performance was observed that students with high parental involvement had the highest means in both attitude and performance scores for both physics and chemistry. The next highest set out mean scores belong to those students with average parental involvement except chemistry performance in which the mean score for the average group was slightly than the mean for the high parental involvement group. The lowest set of means score belong to the students from parents with low involvement. This pattern of results implies that the higher the involvement of parents the better the attitude of students towards science and the higher the academic success of such students in science. This research outcome is corroborated by Olatoye and Ogunkola, (2008).

In conclusion, a greater academic progress can be achieved by students if their parents becomes conscious of the fact that there is a lot they can do to bring to reality their goals and aspiration for their children. Indeed the type attitude and performance in science subjects is a function of the level of parental involvement.

Recommendation

In view of the importance of parental involvement to academic progress, it is important that school authorities should seek for means of ensuring that the attitude of parent and guidance are influenced positively towards assisting the students, so that they in turn can put in their best into their school work. Also, parents and teachers should be made to realize the importance of science learning to the individual (that is, scientific literacy) and to the society (technological advancement). School authorities need to organize programs that will bring about parents, teachers and student interaction. This will create a forum for discussion. In this manner, parent will know what they are expected to do to complement teachers' efforts. Schools also need to make such programmes attractive to parents.

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