NON-INTELECTIVE PREDICTORS OF MATHEMATICS PERFORMANCE OF THE FRESHMEN STUDENTS OF IICT IN ISABELA STATE UNIVERSITY-CAUAYAN CITY

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ABSTRACT: This study was conducted to determine the non-intellective predictors of mathematics performance of the freshmen students of the Institute of Information and Communication Technology of Isabela State University, Cauayan City , Isabela for the School Year 2008-2009 in terms age, sex,type of high school attended, type of place of residence,parents' educational attainment, parents occupation and monthly income and attitudes towards mathematics. The researcher made use of descriptive method through documentary analysis and inferential method   to determine the relationship of non-intellective factors to the mathematics performance of the students. There were 194   freshmen students ofchosen through random sampling   from the four programs of IICT in BSCS, BSIT Ladderized ,BSIT and .The researcher used reliable tools and valid instruments to produce reliable output namely: Students Registration Form, Entrance Test Form, and Mathematics Attitude Scale . Data gatheredwere analyzed using frequency and percentage distribution, mean, Pearson's Product Moment Correlation, and t test. Findings showed that majority of the respondents were 17 years old 67.43% were female 88.76% were graduated in public secondary school, 70.10% were living in rural areas, parents were undergraduate, self-employed and their monthly income ranged from 3,000-6,000. final grade ranged from 2.75-3. Of the non-intellective factors examined in this study, only the respondents' type of residence showed correlation to the Mathematics performance of the learners, hence, students whether they spent most of their lifes in urban or rural areas effectively predicted their mathematics performance. The results imply that age, sex, type of high school attended, parents' educational attainment, parents' occupation, parents' monthly income and attitude towards Mathematics do not play a significant role in the performance of learners in Mathematics.

KEYWORDS: Non-Intellective, Predictors, Performance, IICT, Mathematics, ISU Cauayan

I.   INTRODUCTION

It is a universal notion that Mathematics is a difficult course of study hence it has earned a stigma among many students, making them dislike it. This was widely proven by Johnston, Watters, Brown & Loughlin [1].Motivation-related variables affected the attitude of students towards Mathematic . This stigma however can disappear if they learn the functionality of Mathematics in their lives outside the classroom. Science and technology can only move as far as Mathematics permits them to [2]. The importance of Mathematics can already be perceived from that idea alone. Furthermore, the subject also fosters the development of learners' concentration and determination. Nonetheless, the fact remains that learners perform differently in terms of certain school work such as tests. The researcher, who is a Mathematics teacher, has seen this time and again. Evaluation and results from the National Career Assessment Examination that is regularly conducted by the National Education Testing and Research Center also show the same thing.   In line with this, many researchers have inquired into this area and have found meaningful information regarding predictors that affect Mathematics performance. One of the factors that may have direct relationship with the mathematics performance of the learners is the non-intellective factors which include age, sex, type of school graduated from, type of residence, parents' highest educational. attainment, parents' occupation , monthly income and attitudes of the learners   towards mathematics Some   teachers claim that students' poor performance in Mathematics can be attributed to socio-economic status, their parents' income and occupation and even the environment they spend the most time in. Other studies also found out that learners' intelligence quotient, the school they graduate from and their general average are directly, albeit minimally, related to the Mathematics performance of learners.

These ideas are rooted in Bandura's social cognitive theory which posits that learning occurs within a social context. A substantial 34 percent variance on the achievement of respondents is attributed to non-intellective factors [3]. This suggests that said factors are substantial in supporting, augmenting and achieving learning.

Educators persistently strive for quality education that is why most of the administrators of different schools continuously conduct faculty development program to update the competencies of their teacher. It can be said thatquality education is achieved if an educator, an administrator or a teacher has already ascertained a level of improvement in the child's growth and development in terms of school performance. Towards this end goal, a teacher has to look into some factors or predictors which have direct relation on a child's performance. Both the family and the school play a significant role in fostering students' Mathematics performance [4]. In particular,parent's and family factors such as economic condition parents educational background, monthly income , parents' occupation and type of community where they spent most of their life were seen as predictors and parents' educational background were seen as predictors . As for school factors, outdated teaching concepts, school management system and lack of regular assessment were found out to have effect as well.

Some studies reveal that performance in some standardized testscan predict future performance of the students in their academic subjects. It is in these concepts that this study is based on. In order to address the problem of poor performance in Mathematics and failures of the student in the subjects and its accordance with the national vision which is to provide quality education to every Filipino, the researcher attempted to determine the relationship and predictors of some intellective factors such as age, sex, type of high school attended, type of place of residence, parents' educational attainment, parents' occupation, monthly income and attitudes towards mathematics in relations to the Mathematics performance of the freshmen students of the Institute of Information Technology of Isabela State University, Cauayan City Campus   for the School Year 2008-2009.

II. MATERIALS AND METHODS

A. Research Design

In order to determine the relationship of the intellective factors such as age, sex, type of high school attended (private and public) , type of place of residence (rural or urban), parent's monthly income, parent's educational attainment, parent's occupation and attitude towards Mathematics to the Mathematics performance of the first year students of the Institute of Information and Communication Technology of ISU- Cauayan Campus, and to secure adequate and reliable information for evaluation of the objective of the study, the researcher made use of descriptive method through documentary analysis and inferential method of research.

B.Respondents of the Study

The respondents of this study were the freshmen students of IICT who are taking Mathematics 12 (Plane Trigonometry) for the second semester 2008-2009. From the 349 enrolled students , 194 were chosen through random sampling in the four courses under the Institute of Information Technology to which 47 from the Bachelor of Science in Computer Science (BSCS), 53 from Bachelor of Science in Information Technology (BSIT), 22 from Bachelor of Science in Information Technology – Ladderized Program (BSIT-Ladderized) and 72 from   the Associate in Computer Technology (ACT).

C. Research Instruments

The researcher used reliable tools and valid instruments to produce reliable output namely: Students Registration Form where the profile of the students such as age, sex, parents' highest educational attainment, parents' occupation , parents' monthly income were obtained in this form. m Grading sheet and Mathematics Attitude Scale Test.   Grading sheet was used in getting the grades of the respondents in Mathematics which served as basis of their mathematics performance. The Mathematics Attitude Scale test was used to determine the attitudes of the students towards mathematics .The construction and validation of the mathematical attitude scale inventory was adopted from the research tool done by Dr. Milagros D. Ibe of the University of the Philippines,

Diliman, Quezon City. The attitude inventory is composed of 30 items in which 16 items are positive (1,2,3,6,10,11,13,15,17,18,20,21,23,24,25 and 27) and 14 items are negative (4,5,7,8,9,12,16,19,22,26,28,29, and 30)

D.Statistical Tools

The data gathered were treated statistically using frequency and simple percentage distribution   for the profile of the respondents, mean for tabulating the mathematics attitude scale of the respondents, Person's Product Moment Correlation to determine the correlation between the in non-intellective predictors and Mathematics performance .T-test was employed to determine this significant correlation   between   non-intellective predictors and Mathematics performance.

III.RESULTS, DISCUSSION AND CONCLUSION

Table 1:   Profile Variables
n=194

Profile Variables	Frequency	%
A, Age		
16	53	27.32
17	94	48.45
18	34	17.53
19	10	5.15
20	3	1.55
B.Sex		
Male	69	35.57
Female	125	64.43
C.Type of School		
Public	172	88.66
Private	22	11.34
D.Type of Residence		
Urban	136	70.10
Rural	58	29.90

Table 1 indicates the frequency and percentage distribution of the respondents' profile variables particularly their age, sex, type of school attended in high school and type of residence.

In terms of age, data shows that 53 or 27.32 percent of the respondents were 16 years of age while 94 or 48.45 percent were 17 years of age. 34 or 17.53 percent were 18 years old and 10 or 5.15 percent were 19 years old. There were also 3 or 1.55 percent who were 20 years old. The data further signifies that a majority of the respondents are 17 years old.

In terms of sex, it can be gleaned from the table that 69 or 35.57 percent of the respondents are male whereas 125 or 64.43 percent are female. This indicates that there are more female respondents than males.

As for the type of school attended in the secondary level, 172 or 88.66 of the respondents graduated from public schools while 22 or 11.34 percent came from private schools. The overwhelming majority of respondents who came from public schools signify that state universities like Isabela State University are a primary choice for a majority of students who are on a budget.

Table 2 : Profile Variables (Cont)

Profile Variables	Frequency	%
E.Fathers' Educational Attainment		
College Undergraduate	15	7.73
Undergraduate	179	92.27
F.Mothers' Educational Attainment		
College Undergraduate	33	17.01

Undergraduate	161	82.99
G.Fathers' Occupation		
Employed	11	5.67
Self-employed	183	94.33
H.Mothers' Occupation		
Employed	11	5.67
Self-employed	183	94.33
H.Parents' Monthly Income		
P21,000-P24,000	1	.51
P18,001-P21,000	2	1.03
P15,001-P18,000	8	4.12
P12,001-P9,000	12	6.19
P9,001-P12,000	36	18.56
P6,001-P9,000	59	30.41
P3,000-P6,000	76	39.18

The table above indicates the profile variables of the respondents' parents particularly their parents' educational attainment, their occupation and monthly income.In terms of their fathers' educational attainment, 15 or 7.73 percent of the respondents have fathers who graduated from college while 179 or 92.27 percent have fathers who are college undergraduates. As for the respondents' mothers, their educational attainment is as follows: 33 or 17.01 percent are college graduates while 161 or 94.33 percent of them are college undergraduates. The data signifies that a majority of the respondents' parents are college undergraduates. As for occupation, 11 or 5.67 percent of the respondents' fathers are employed while 183 or 94.33 percent are self-employed. The respondents' mothers also have the same results with 11 or 5.67 percent of them employed and 183 or 94.33 percent of them self-employed. The data indicates that most of the respondents' parents are self-employed. In terms of monthly income, data shows that 1 or .51 percent of the respondents' parents earn P21, 001 to P24, 000; 2 or 1.03 percent earn P18,001 to P21,000; 8 or 4.12 percent earn P15,001 to P18,000; 12 or 6.19 percent earn P12,001 to P9,000; 36 or 18.56 percent earn P9,001 to P12,000; 59 or 30.41 percent earn P6,001 to P9,000; and 76 or 39.18 percent earn P3,000 to P6,000. This implies that majority of the respondents belong to low-income families.

Table 3.Respondents' Attitudes towards Mathematics

Attitude in Mathematics	Weighted Mean	Interpretation
1.In school, I thoroughly enjoy Math class	2.93	Neutral
2.When I work with Math problems, I find that my thinking and reasoning are sharpened.	3.16	Neutral
3.I am interested to acquire further knowledge in math.	3.59	Generally true to me
4.I feel uncomfortable with number and symbol.	2.60	Neutral
5.I think I have more changes of becoming successful if I am good in Mathematics	3.79	Generally true to me
6.I am too nervous to think in my Math class.	2.86	Neutral
7.I am unable to think clearly when I am working in Mathematics.	2.66	Neutral
8.Mathematics makes me feel as though I am lost in a jungle of numbers and Icannot find my way out.	2.67	Neutral

9.Math problems often scare me.	2.76	Neutral
10.I enjoy beyond be assigned work in Math and I try solving more than I expected of me.	3.22	Neutral
11.Math makes me more inquisitive about things which are not clear to me.	3.15	Neutral
12.I would willingly exchange my Math subject for an easier subject in school.	2.35	Slightly true to me
13.My favorite subject is Math.	2.56	Slightly true to me
14.Of all my teachers, it is the Math teachers that I likethe least.	2.75	Neutral
15.My parents love and enjoy mathematics.	2.91	Neutral
16.If I had my way, I could avoid taking math subject in college.	2.36	Slightly true to me
17.I feel happier in my Math class than in any other class	2.70	Slightly true to me
18.I think my mind works well when doing math problems	3.09	Neutral
19.I would be happy if Math were to be taken out of the curriculum.	2.47	Slightly true to me
20.I feel I have a good foundation in Mathematics.	2.89	Neutral
21. The people I enjoy going with are those who are good in Math.	2.89	Neutral
22.I easily give up when I cannot solve mathematics problems.	2.76	Neutral
23.Mathematics is a subject which I have always enjoyed studying.	2.70	Neutral
24.I find Mathematics useful for problems in everyday life.	3.60	Generally true to me
25.Mathematics gives me much satisfaction.	3.21	Neutral
26.I consider mathematics my most difficult subject.	3.27	Neutral
27.In mathematics I am not satisfied with just a passing mark grade, I want something really higher.	3.55	Generally true to me
28.I think I will stand a better chance to succeed in my college course if it does not require Mathematics.	2.48	Slightly true to me
29.I always need someone to help me with mathematics because it confuses me.	3.08	Neutral
30.My poorest mark is usually in Math.	2.82	Neutral
Overall Weighted Mean	2.89	Neutral

The overall weighted mean of the respondents' attitude towards Mathematics is 2.89. This falls on neutral. This implies that although Mathematics is not their major subject, the respondents' still treat it as an important subject .Some other researches revealed that the student respondents also showed a positive attitude towards Mathematics. It was also revealed in the study that about 59.85 percent of the respondents said they enjoy the subject and are interested in it. However, there are some students who indicated that they disliked Mathematics because they perceived that it is difficult subject [5].

Table 4:Mathematics Performance of the Freshmen Students

Score Range	Interpretation	Frequency	Percentage

1.25-1.5	Outstanding	1	0.52%
1.75-2.0	Very Satisfactory	39	20.20%
2.25-2.5	Satisfactory	50	25.77%
2.75-3.0	Fair	99	51.30%
4.0-below	Poor	5	2.58%
Total		194	100%
Weighted Mean = 2.58			

Table 4 shows that only 0. 52% of the respondents got an outstanding performance. There are 39 or 20.20% of the respondentswho performed very satisfactorily. 50 or 25.77% has satisfactory performance, 99 or 51.03% has fair performanceand 5 or 2.58% has poor performance. Further analysis shows that the level of performance obtained by the students in their Mathematics 11 is 83.90which fair performance.

Table 5:Correlation between Students' Age and Mathematics Performance

Variables	Coefficient Correlation	Computed t-Value	Critical Value	Level of Significance	Interpretation
age(x)	0.11	Accepted Value 1.96	1.96	0.05	Not Significant
Math Performance(y)		Computed Value 1.56			

The table reveals a coefficient correlation 0.11 which means low correlation. The computed t- value of 1.56 which less than critical value of 1.96. which means that there is no significant relationship between the age of the respondents and their Mathematics performance. Therefore, age is not predictor of Mathematics performance. The performance in Mathematics is not affected whether students are young or old. The finding emphasizes and establishes that age does not impede academic achievement and had no effect and relationship in the academic performance of the students [6] [7] .

Table 6:Relationship between Sex and Mathematics Performance

Variables	Level ofSignificant	Degree Of Freedom	Tabular Value	T value
Male Female	0.05	192	*1.96*	1.27[ns]

Table 6 presents the relationship between sex and mathematics performance .The computed t-value of 1.27 is less than the tabular value of 1.27 which is less than the tabular value of 1.92 at .05 level of significance which shows that that there is no significant correlation between sex and mathematics performance. This signifies that sex is not a predictor of mathematics performance which means that gender is not issue in Mathematics performance of the students. Similarly I, it was stated that gender had no bearing in Mathematics performance [8].

Table 7:Relationship between Type of High School   and Mathematics Performance

Variables	Level of Significance	Degree Of Freedom	Tabular Value	T value
Private	0.05	192	1.96	.66[ns]

Public				

Table 7 reveals the relationship between type of high school attended and mathematics performance.t-test was used to determine if there is a significant difference between the type of school graduated from and Mathematics performance of the freshmen students at 5 percent level of significance. It appears that the computed t-value was .66 which is less than the tabular value of 1.96 which implies that there no significant relationship between type of high school attended of the students and their mathematics performance. The type of school where students graduated from, whether private school or public or government school, is not a basis in the mathematics performance of the students. Thus validating the idea that the type of school does not have a significant correlation to performance in Mathematics[9] [10].

Table 8:Relationship between the Type of Residence and Mathematics Performance

Variables	Level of Significance	Degree Of Freedom	Tabular Value	T value
Rural				
Urban	**0.05**	**192**	**1.96**	**2.12^s**

Table 8 reveals the relationship between the type of place residence and mathematics performance. As shown in the table, the computed t-value of 2.12 is greater than the tabular value of 1.96 at .05 level of significance which mean that there is a significant difference and relationship between the type of community where the respondents spent most of their lives in and their Mathematics performance. This implies that the type of place of residence is a predictor of mathematics performance .Home as a factor affects the learning of Mathematics. If students stay in an environment where learning is not fostered or encouraged, they will also lack the motivation to study and learn [11].

Table 9:Relationship between Fathers' Educational Attainment and Mathematics Performance

Variables	Level of Significance	Degree Of Freedom	Tabular Value	T value
College				
Under-G raduate	0.05	192	*1.96*	.16^{ns}

In Table 9, it is shown that the fathers' Educational attainment is not a predictor of mathematics performance. The computed t-value is .16 which is less than the tabular value of 1.96 at a .05 level of significance. It implies that there is no relationship between the educational attainment of father and Mathematics performance of respondents.

Nonetheless, students learn better if they are from the above average or average income family, with well-educated parents who will participate in the school education process and encourage their children to learn [11] . It is recommended then that parents should be supportive of their children's academics [12].

Table 9:Relationship between the Mothers' Educational Attainment and Mathematics Performance

Variables	Level of Significance	Degree Of Freedom	Tabular Value	T value
College		192		.33^{ns}
Undergr	0.05		1.96	

aduate				

The table above shows that the computed t-value is .33 which is less than tabular value of 1.96 at a 0.05 level of significance. It means that there is no significant difference and relationship between Mother's educational attainment and mathematics performance. Therefore, mothers' educational attainment is not a predictor of mathematics performance. Although there are some findings that parents' highest educational attainment is the most important factor that affects academic performance [13] and and a child that comes from an educated home would like to follow the steps of his/her family and by this, work actively in his/her studies, it reveals in the result of this study that parents' educational attainment does not affect and predict the mathematics performance of the students[14].level of Turkish students in this research has an impact on Turkish students' mathematics achievements. The most significant difference is found parents' education level of Turkish students in this research has an impact on Turkish students' mathematics achievements. The most significant difference is found

Table 10:Relationship between Fathers' Occupation and Mathematics Performance of theStudents

Variables	Level of Significance	Degree Of Freedom	Tabular Value	T value
Employed				
Self-Employed	0.05	192	1.96	3 .3

Table 10 presents the relationship between the Father's Occupation and mathematics performance. The compute t-value of .33 is less than the tabular value of 1.96 at .05 level of significant leading to the conclusion that students Fathers' occupation is not a predictor of mathematics performance. The nature and status of occupation of parents do not affect the mathematics performance of the students. While it was proven that parental occupation had an impact on their children's performance in Mathematics, said impact was more affected by parental attitude and student motivation [15].

Table 11:Relationship between Mothers' Occupation and Mathematics Performance of theStudents

Variables	Level of Significance	Degree Of Freedom	Tabular Value	T value
Employed				
Self-Employed	0.05	192	1.96	3^{ns} .6

Table 11 shows that the computed t-value   was .63 which is less than the tabular value of 1.96 at a 0.05 level of significance. This means that there is no correlation between the students' mothers' occupation and Mathematics performance of the students in IICT.

However, some research studies suggest a relationship between parents' occupation and students' self reported images of mathematics exist. The positive image of mathematics found to exist among students whose parents are employed in mathematics-related careers, may offer an insight into the role of parents in the formation of a student's image of mathematics, particularly in terms of the socialization and modelling aspects of influence [16].

Table 12:The Correlation between Parents' Monthly Income and Mathematics Performance of the Freshmen Students of IICT

Variables	Coefficient Correlation	T value	Critical Value	Level of Significance	Interpretation

Parents' Monthly Income (x)	0.10	1.33	1.96	.05	Not Significant
Math Performance (y)					

The table reveals a coefficient correlation of 0.10 which signifies low correlation. The compute t-value is 1.33 which is less than the critical value of .05 level of significance. It means that there is no significant relationship between the parents' monthly income and mathematics performance. Furhermore, parents' monthly income does not predict the mathematics performance of the students. There is no relationship is not predictor of Mathematics performance. This shows that the development or status of socio -economic status was not an essential factor in mathematics performance [17]

Table 13:Relationship between Attitudes towards Math and Mathematics Performance

Variables	Coefficient Correlation (r)	t-value	Tabular Value	Level of Significance	Interpretation
Attitudes Towards Math (x)	0.14	1.12	1.96	.05	Not Significant
Math Performance (y)					

Table 13 presents the relationship between attitude towards mathematics and mathematics performance of the IICT students. The results show a coefficient correlation of 0.14. The compute t-value of 1.12 is less than the tabular value of 1.96 at .05 level of significance. It means that there is no significant relationship between the respondents' attitude towards Mathematics and their performance in said subject [18].

III. Conclusion

Of the non-intellective factors examined in this study, only the respondents' type of residence showed correlation to the Mathematics performance of the learners, hence, students whether they spent most of their lifes in urban or rural areas effectively predicted their mathematics performance. The results imply that age, sex, type of high school attended, parents' educational attainment, parents' occupation, parents' monthly income and attitude towards Mathematics do not play a significant role in the performance of learners in Mathematics. This implies that there are other factors that come into play when students' Mathematics performance is considered.In consideration of the results and conclusion, it is recommended that other studies focus on intellective factors and their probable effect on the Mathematics performance of the same learners. These findings will assist teachers, parents, administrators and other stake holders to engage in interventions in school and at home, that can improve the quality of learning and hence boost the student's academic performance [19].

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