

Student Penmanship as Predictors of Test scores Among Form One students in Dadaab Refugee Camp, Kenya.

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Abstract

The Kenya National Examinations are a great determinant of the success and failure in the future life of Kenyan students. Due to this, the pressure to perform has been overwhelming for most learners. Students can go to any length to see to it that they make it. The purpose of the study therefore was to determine the relationship between student penmanship and test scores among form ones students in Dadaab Refugee Camp, Kenya. The study was guided by the following theory: Social cognitive learning by Albert Bandura. The study adopted a correlational design in order to be able to investigate and analyze the relationship between student penmanship and form one test scores. It also used simple regression to find out whether the various variables would predict test scores. The study was conducted in four public schools of Dadaab refugee camps in the North-Eastern part of Kenya. The target population consisted of students and teachers. The sampling technique was that of convenient, purposive and systematic sampling in that order, where thirty five participants were selected from each school, to sum up to one hundred and thirty eight form one students and a total of thirty four teachers. Research instruments included questionnaires for teachers and students, while interview schedule was for teachers. The results revealed that student penmanship do not significantly predict test scores.

Key Words: Student penmanship, test scores, Dadaab Refugee Camps, form ones.

Introduction

Overview

To many pupils in Kenya, passing the examinations is a matter of life and death and has even led to suicide reports in the country. Students are under so much pressure not just to pass exams but to excel. After the release of the Kenya Certificate of Primary Education in the year 2012, it was reported that two female pupils from Kericho County and Kathiani Constituency who scored 145 and 303 marks respectively committed suicide (Daily Nation, 2012). It is important to establish whether these low scores would have satisfactorily determined their performance in the Kenya Certificate of Secondary Education. Low achievers have been labeled as failures in life. At most instances, low academic achievement has been irrationally attributed to low intellectual development. However, research has shown that, other than the intellectual development, they are many other factors that are related to low test scores among students. To conclude, therefore, given the importance of the decisions made based on the test scores, and the clear cut differences between primary and secondary school, many educational researches have not been done on the factors that may explain the individual difference in performance at the learning levels and especially form one.

It is not exactly known what factors may be held responsible in explaining the differences, consistencies and inconsistencies in performance at primary and secondary school levels amongst form one students. It was therefore imperative that, these factors one of them being student penmanship be investigated. Learning to write is integrally related to language and literacy development, and can promote or impede later academic achievement. With the increased availability and the rapid rise in the use of technology, handwriting instruction has begun to fall by the wayside. If handwriting isn't learned and practiced especially in the earlier grades, students are not given the opportunity to experience the related benefits of this skill that has been shown to; increase brain activation, impact performance across all academic subjects, provide a foundation for higher-order skills (Graham & Santanlego, 2012).

Higher level written expression involves students expressing their knowledge through the production of handwritten text on paper. Agba & Lopokoiyot (1992) pinpointed that, in Kenya, this usually happens beginning from form one all through to college. Teachers use students' written products to assess what they have learned. Students need to have proficient handwriting skills to complete written tasks such as: answering end-of-chapter questions, adding titles and labels to art work, constructing poetry or narrative stories, making journal entries, copying passages from the text, completing spelling tests, completing worksheets, and providing answers to teacher-made tests in short answer or paragraph form. Students' ability to demonstrate their knowledge through completion of the aforementioned tasks is strongly affected by level of handwriting proficiency.

Eccles et al (1993) cites evidence to suggest that, the decline in achievement in high school could be related to the strictness in standards for judging students and grading rather than actual competence. He suggested that one such standard is the quality of handwriting. Proficient handwriting is one of the scholastic skills that children need to acquire to meet the common demands in classroom work at primary school (Weintraub & Graham, 1998). Thirty to sixty percent of the child's time is spent in fine motor activities, with writing as the predominant task.

Graham (1999) suggested that, handwriting is closely linked to academic achievement, especially composition and literacy skills. In one cross-sectional study of 300 primary grades, 300 intermediate grade, and 288 junior high students, it was found out that transcription skills contributed statistically significant variance to written composition ability at all developmental levels (Berninger et al., 1996). Another study found that orthographic motor accounted for 67% of the variance in performance on written expression tasks (Jones & Christensen, 1999). Due to this large influence handwriting skill has on successful completion of written expression tasks; it follows that students who experience difficulty with handwriting will demonstrate poor performance with tasks requiring them to express their thoughts in writing.

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In addition to impacting on written expression quality, it has also been suggested that students, due to illegible handwriting, can also negatively influence a teacher's perception about students' writing skill and students' mastery of the content area. For example, when teachers and other adults were asked to rate two different versions of a paper which only differed in handwriting quality, the neatly written papers were assigned higher scores (Briggs, 1980; Hughes, Keeling & Tuck, 1983). The number of every day school tasks which involve writing, unsuccessful mastery of handwriting skill can negatively influence later success in school. One reason for this feeling of failure is that difficulty with the handwriting process can impact a student's ability to keep up with peers and the pace of the class.

Weintraub and Graham (1998) found that students with poor handwriting needed twice as much time to copy a written passage as those with good handwriting. Furthermore, difficulty with handwriting in young students can lead to a dislike of writing, frustration with writing, and development of a negative mind-set about writing ability, such a mind-set of frustration and failure can be a powerful barrier to continued academic success

Handwriting difficulties are commonly observed in children at primary schools, particularly in boys. Prevalence has been estimated to range between 5% and 27% depending on grade, selection criteria, and instruments used (Hamstra-Bletz & Blöte, 1993; Karlsdottir & Stefansson, 2002; Maeland, 1992; Mojet, 1991; Smits-Engelsman & Van Galen, 1997). Those who do not learn to use handwriting legibly and functionally at an early age may face a myriad of academic difficulties. For example, difficulty with handwriting can negatively affect both students' ability to express their thoughts in written form (Berninger, 1999) and teachers' perceptions of the adequacy of the finished product (Briggs, 1980; Chase, 1986; Hughes, Keeling & Tuck, 1983).

Dr. Laura Dinehart of Florida International University School of Education found out that a four-year-old's fine motor writing skills are more predictive of later academic achievement than early number skills or early language skills. Dinehart's team was able to discover this by examining the scores of 1,000 second graders and comparing it to their pre-kindergarten writing skills. Not only were students with better penmanship in pre-school found to have higher scores in both reading and math later on, but they also had higher grades in general and higher scores on standardized tests. Students with strong handwriting marks in pre-school were found to have an overall "B" average in second grade compared to an overall "C" average for the students that did poorly on writing tasks in pre-school.

The above studies were conducted on written composition ability, four-year old fine motor skills writing ability and were done in European countries. The study in here cut across the

different subject groups: Languages, humanities and sciences and will deal with form one students specifically in Kenya to find out if there will be a difference in the results.

The study was guided by the following theory: Social cognitive learning that posits, factors inside and outside the individual influence their behavior and, which suggests that, the unpleasantness of a threat causes anxiety which actually leads to repression as a way of getting the person out of danger. In the Social cognitive learning theory, Bandura (1977) defined learning as an internal mental process that may or may not be reflected in immediate behavioral change and postulated that human behavior is as a result of interplay of factors both inside and outside the individual. He suggested that personal factors like cognition, biological variables and other internal events like a person's beliefs and expectations relevant to ability are related to behaviour which affects the external environment. In the same way, the environment can influence the person's feeling and cognition. According to Bandura (1986), one of the basic principles of learning is that learning is as a result of reciprocal causation or determination. This implies that learning involves the interaction of several factors, such as behavior, environment, storing information in memory and personal factors. This theory was of great significance to the study, because it concurs that personal and socio-contextual factors affect learning. In addition to that, success on a first attempt on a task may change internal events such as feelings about the circumstance involved with the success.

Methodology

The study adopted a correlational design because it is appropriate in discovering the existence of relationships between variables and the degree to which the variables relate and simple regression to examine whether each independent variable would predict the dependent variable (Mugenda and Mugenda, 1999). Here, the relationship determined was the degree to which student penmanship affected the test scores of form one students. The study was conducted in four public schools of Dadaab refugee camps in the North-Eastern part of Kenya. The location of the study was chosen owing to the researcher's familiarity with the area, and because of available existence of the characteristics that the researcher was interested in.

The population of study consisted of four hundred form one students, both boys and girls in equal numbers, and of mean age fifteen and also thirty-four form one teachers of four secondary schools. The rest of the classes, from form two to four were not chosen, as the study was interested only in form ones because they are the first class immediately from primary school and these factors are directly unique to them. From the seven secondary schools, one hundred and thirty eight form one students and thirty four form one teachers were sampled. A total of thirty-five form one students and nine teachers from each of the four schools formed the sample. In addition, out of the eleven subjects studied by form ones only three subjects were examined. The researcher administered questionnaires and the respondents filled them in immediately. The responses of the questionnaires were recorded on a four-point Likert scale.

One hundred and thirty eight form one students and thirty four form one teachers were selected in the study. In addition out of the eleven subjects studied, they were grouped into three categories, in terms of languages, humanities and Maths & sciences. Convenient sampling was used to select four schools out of the eight secondary schools based on the accessibility of the schools due to security impediments as movement from one camp to another is enabled only by means of police escort. Stratified random sampling was used to ensure that form one students both female and male students were selected and at equal numbers to ensure representativeness. Systematic random sampling was used to select students from each class based on the class register to come up with fifty students. Purposive sampling was used to select the subject areas on whose test scores were examined so as to ensure that each group of subjects is adequately represented. They were grouped into languages, sciences and humanities. To select the teachers, purposive sampling was used to select teachers based on their subject areas, so that the three categories of subjects are represented. Convenient sampling was used to select four schools to be used in the study.

The study employed a close-ended questionnaire and interview schedules as the most convenient instruments for collecting data on the students and teachers as it can reach a large number of students who are able to read and write independently (Orodho, 2008). The questionnaire was subdivided into two sections, where Section A contained an introduction to the questionnaire and biographical data of the respondent, while section B contained the statements. Each of the statements were scored on a four-point Likert-type scale, ranging from 4 (Strongly agree) to 1 (Strongly disagree). The positively and negatively worded questions were randomly arranged in the questionnaire. The data was processed, coded and analyzed using the computer based Statistic Package for Social Sciences (SPSS 17.0) and this facilitated the testing of the null hypotheses.

Results

The demographic characteristics of respondents were analyzed along age, sex and academic performances for the students and gender, subject taught and professional qualifications for the teacher respondents. This section has been subdivided into two; background information for the students and that of the teachers. In the study, 50.72% of the form one respondents who participated in this study were between 18 and 20 years of age, compared to 29% of the respondents who were below the age of eighteen years. Further, 20.28% of form one respondents were over 20 years of age. Age was considered an extraneous variable that is likely to affect the academic performance of students. Cognitive development and maturity (which are associated with age) are necessary for worthwhile performance of students. As the age of an individual increases, it usually affects the various developmental changes. It also affects every area of human performance (Ukueze, 2007).

Student gender was considered in this study. Gender relates to the difference in sex (that is, either male or female) and how this quality affects their dispositions and perception toward life and academic activities (Okoh, 2007).

- a) Distribution of student respondents by age

Table 1 shows the distribution of respondents by age group. Majority of form one respondents were between eighteen to twenty years of age

Table 1. Distribution of student respondents by age

Age	F	%
Below 18 years	40	29
18-20 years	70	50.72
Over 20 years	28	20.28
Total	n=138	100

The results in table 1 report that, 50.72% of the form one respondents who participated in this study were between 18 and 20 years of age, compared to 29% of the respondents who were below the age of eighteen years. Further, 20.28% of form one respondents were over 20 years of age. Age is considered an extraneous variable that is likely to affect the academic performance of students. Cognitive development and maturity (which are associated with age) are necessary for worthwhile performance of students. As the age of an individual increases, it usually affects the various developmental changes. It also affects every area of human performance (Ukueze, 2007).

b) Distributions of student respondents by gender

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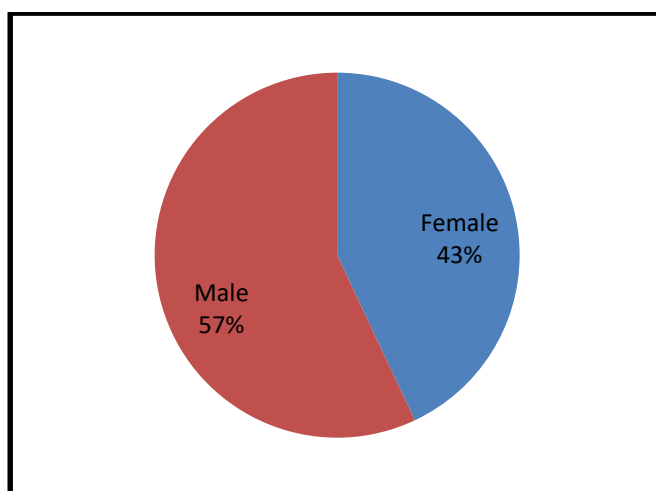


Figure 1. Distributions of student respondents by sex

Majority of the student respondents were male who formed 57% of the form one students who responded to the study. Female student respondents consisted 43% of the total form one students who responded to the study. Buadi (2000) underscores that, difference in gender as it affects students' and academic performance is inconclusive. This has necessitated the need to explore any significant difference between male and female form one students as reflected in their academic performance and in test scores in particular.

c) Distribution of student respondents by academic performances

Student respondent's academic performance was considered for the study. The distribution of respondents by academic performance is shown in figure 2.

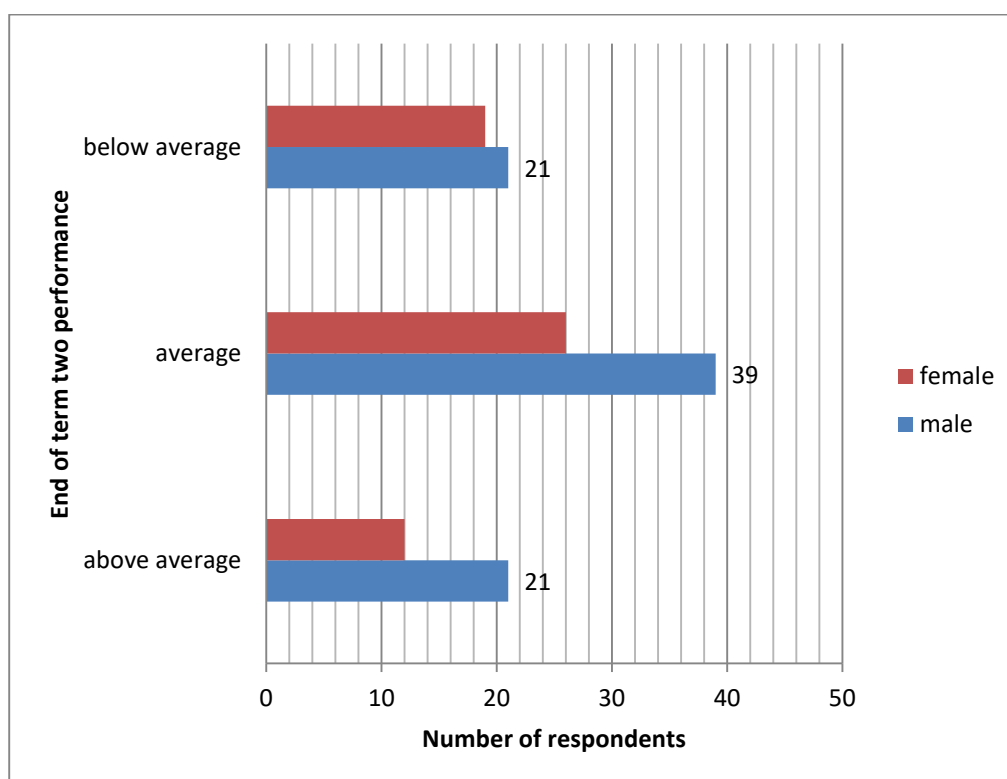


Figure 2 Distribution of student respondents by academic performance

Figure 2 reports that, majority of boys performed better than their female counterparts. More girls than boys fall below the average category given that the number of girls who participated in the study was less than that of the number of boys. Buadi notes that difference in gender as it affects students' and academic performance is inconclusive. This has necessitated the need to explore any significant difference between male and female form one students as reflected in their academic performance and in test scores in particular.

d) Distributions of teacher respondents by gender

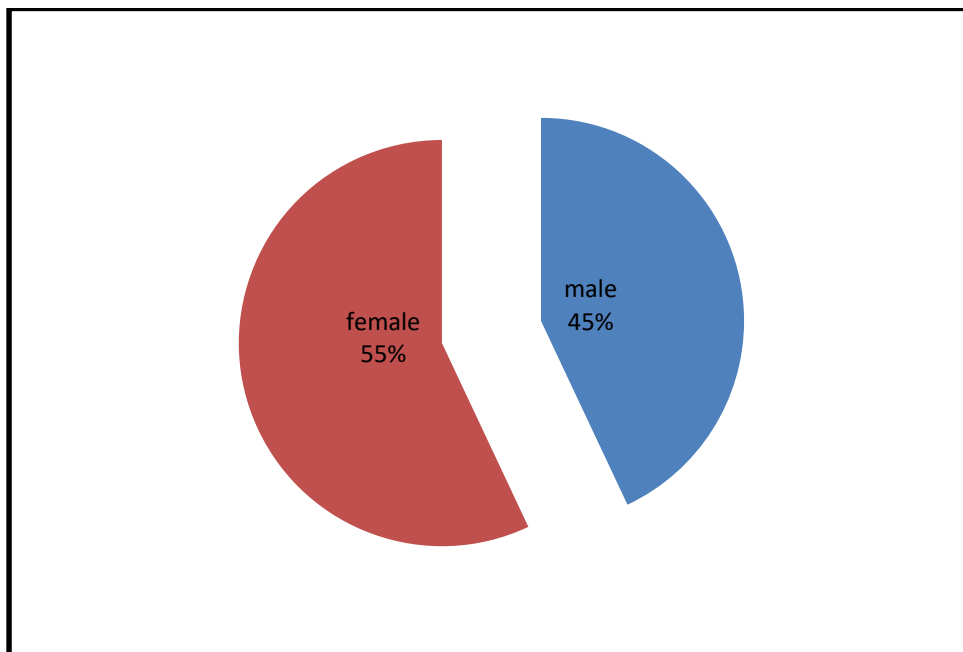


Figure 2 .Distributions of teacher’s respondents by sex

Teacher’s gender was considered in this study. Figure 2 points out that, majority of the teachers who responded to the study were female, forming 55% of the teacher respondents compared to 45% of male teachers. Teacher gender is related to class environment. A number of studies suggest that, male teachers provide a more positive atmosphere for boys (Etaugh & Hughes, 1975; McCandless, Bush & Carden, 1976); however, relative to male teachers, Stake and Katz (1982) argue that, female teachers tend to provide a more positive classroom atmosphere overall. After observing 40 class sessions, Einarsson and Granström (2002) observed that, male teachers increase the attention paid to girls as pupil’s age, while female teachers consistently give more attention to boys.

e) Professional and academic qualifications of respondents

Figure 3 shows professional and academic qualifications for teacher respondents. 80% of the teachers who responded to the study had undergraduate level of education. 5% of the teachers had college education while 15% of the teachers had O-level education. The majority of the teachers who responded to the study were female, forming 55% of the teacher respondents compared to 45% of male teachers.

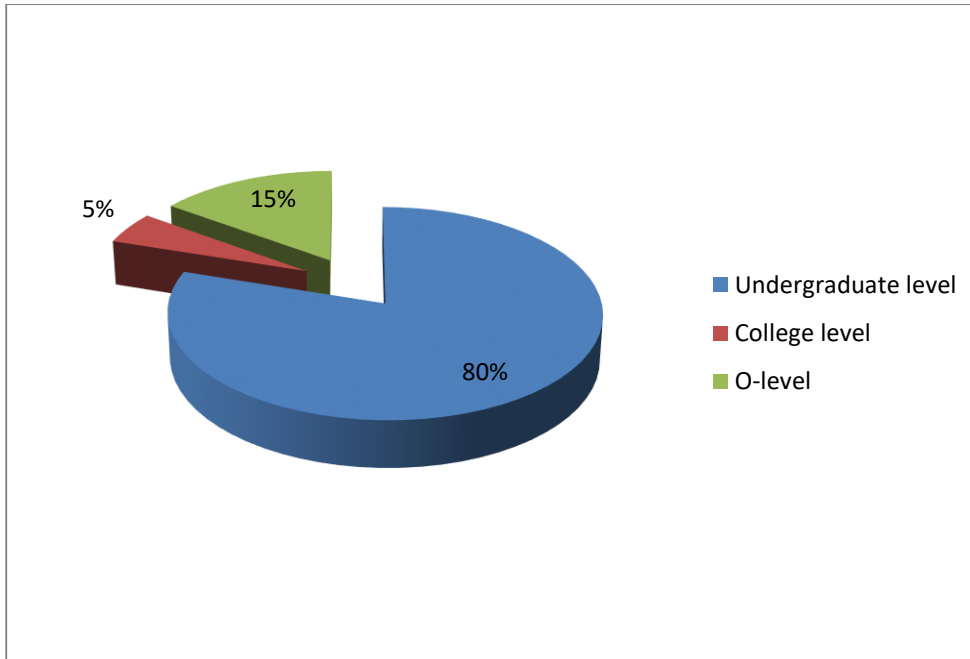


Figure 3. Professional and academic qualifications of teachers

The data was processed, coded and analyzed using the computer based Statistic Package for Social Sciences (SPSS 17.0) and this facilitated the testing of the null hypotheses: There is no relationship between student penmanship and test scores. Majority of the student respondents were male who formed 57% of the form one students who responded to the study. Female student respondents consisted 43% of the total form one students who responded to the study. Buadi (2000) underscores that, difference in gender as it affects students' and academic performance is inconclusive. This necessitated the need to explore any significant difference between male and female form one students as reflected in their academic performance and in test scores in particular. The results of the study of the relationship between Student penmanship and test scores revealed that 22.6% of the form one students were in strong agreement with this measure and 24.07% in agreement, 23.77% strongly disagreed while 23.2% disagreed ,6.37% were unsure.

a) Penmanship effects indicators

Teachers use students' written products to assess the effectiveness of learning. The learner is expected to produce what they have learnt in writing. The role of handwriting in academic achievement of a learner therefore cannot be underestimated.

Table 4.8 Tally of various penmanship effects indicators

Statements	SA		A		D		SD		Total	
	F	%	F	%	F	%	F	%	F	%
When test response are difficult to read, the teacher takes time to read the responses	15	46.9	14	43.8	3	9.4	0	0	32	100
When test responses are difficult to read, the teacher tends to award low marks	4	12.5	13	40.6	9	28.1	6	18.8	32	100
The teacher form a first impression of a student's academic ability through their handwriting	7	21.9	14	43.8	5	15.6	6	18.8	32	100

The study reported that, most teachers take time to read responses with poor handwriting with a greater percentage strongly agreeing at 46.9% while 43.8% agreed. In addition, as to whether teachers tend to award low marks to students with poor handwriting, a majority agreed at 40.6% while 12.5% agreed.

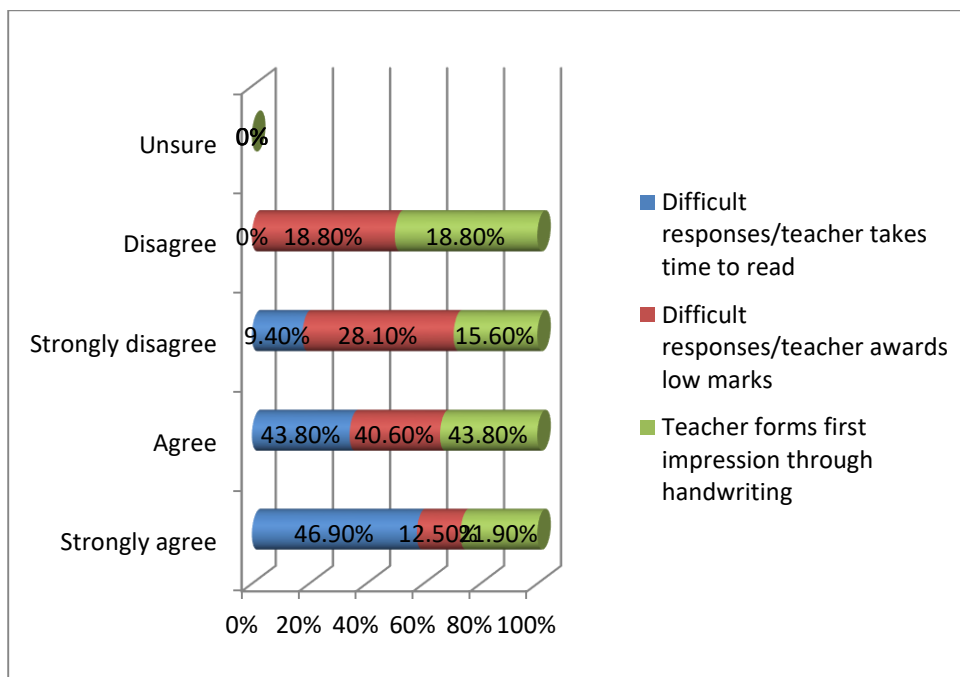


Figure 4. Teacher responses on penmanship indicators

Further, the study established that, a majority of teachers form a first impression of the student’s academic ability through their handwriting; 21.9% strongly agreed while 43.8%

agreed. It was necessary to find out if these results differed with teachers of different subjects as discussed later.

b) Penmanship effects based on subjects

i) When test scores are difficult to read, the teacher tends to award low marks

The study established that handwriting mattered most in the languages, with a greater percentage agreeing, 32% strongly agreed, 35.02% agreed, 21.64% disagreed while 10.84% strongly disagreed.

Table 4.9 Tally of teacher's responses on ease of reading and awarding marks

Subject										
Group	SA		A		D		SD		Totals	
	Count	%	Count	%	Count	%	Count	%	Count	%
Languages										
i) English	1	25	4	30.8	2	22.2	1	16.7	8	25
ii) Kiswahili	1	25	3	23.1	1	11.1	0	0	5	15.6
Maths and Sciences										
i) Maths	1	25	1	7.7	0	0	2	33.3	4	12.5
ii) Physics	0	0	2	15.4	0	0	0	0	2	6.3
iii) Biology	0	0	0	0	1	11.1	2	33.3	3	9
iv) Chemistry	1	25	1	7.7	0	0	0	0	2	6.3
v) ICT	0	0	0	0	1	11.1	0	0	1	3.1
Humanities										
i) Geography	0	0	0	0	1	11.1	0	0	1	3.1
ii) IRE	0	0	1	7.7	0	0	1	16.7	2	6.3
iii) History	0	0	1	7.7	2	22.2	0	0	3	9.4
iv) B/ studies	0	0	0	0	1	11.1	0	0	1	3.1

In mathematics and sciences, 29% strongly agreed, 18.16% agreed, 13.09% disagreed while 39.27% strongly disagreed. In humanities, 0% strongly agreed, 20.13% agreed, 58.04% disagreed while 21.83% strongly disagreed.

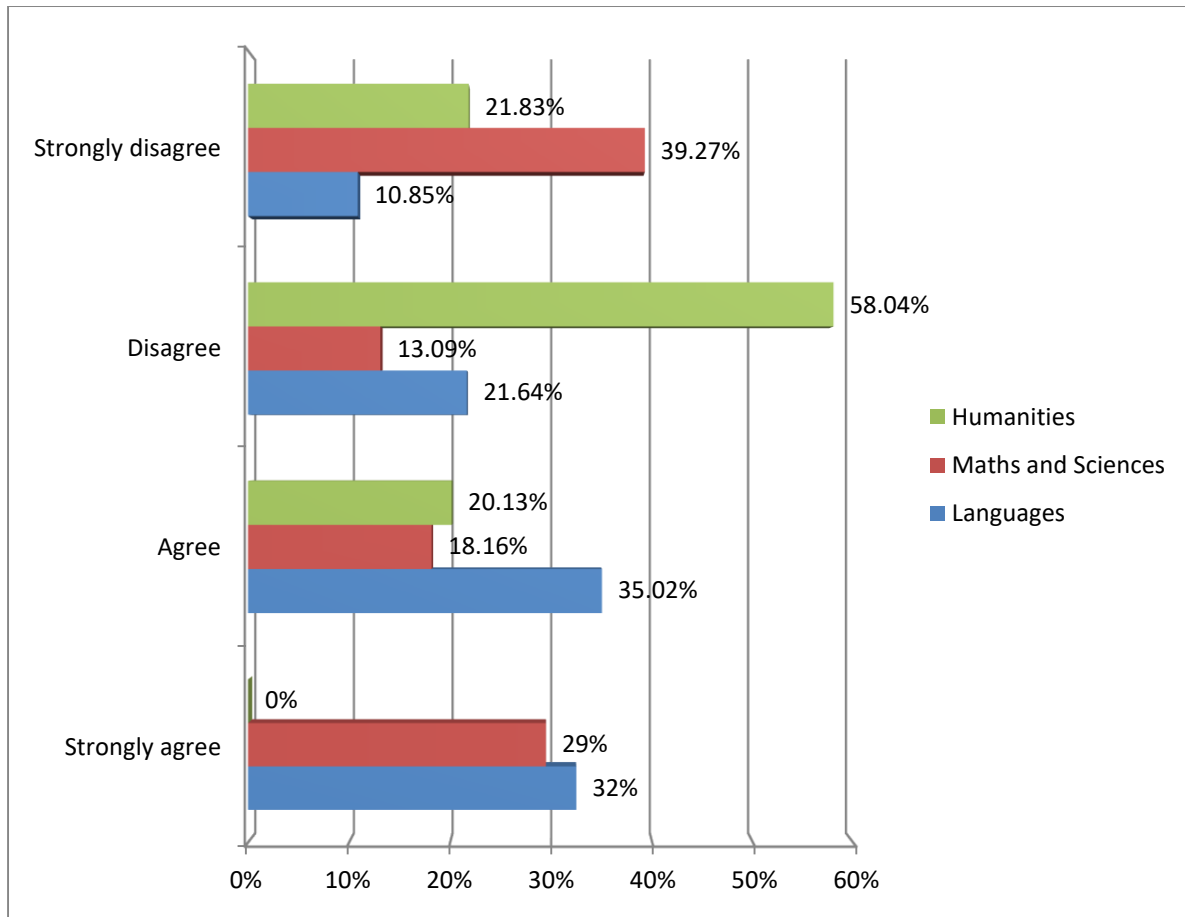


Figure 4.8 Summary of teacher's responses on ease of reading and awarding marks based on subject groups.

ii) First impression of a student's academic ability through handwriting

The study established that, most maths and science teachers formed a first impression of a student's academic ability as compared to other subject groups; 38.26% strongly agreed, 23.81% agreed, 27% disagreed while 11.17% strongly disagreed.

Table 2 Tally of teacher's responses on student's academic ability through handwriting response

Subject											
Group	SA		A		D		SD		Total		
	Count	%	Count	%	Count	%	Count	%	Count	%	
Languages											
i) English	1	14.3	6	14.9	2	22.2	1	16.7	8	25	
ii) Kiswahili	1	14.3	0	0	2	40	2	33.3	5	15.6	
Maths and Sciences											
i) Maths	2	28.6	1	7.1	1	20	0	0	4	12.5	
ii) Physics	0	0	2	14.3	0	0	0	0	2	6.3	
iii) Biology	0	0	1	7.1	1	20	1	16.7	3	9.4	
iv) Chemistry	2	28.6	0	0	0	0	0	0	2	6.3	
v) ICT	0	0	1	7.1	0	0	0	0	2	3.1	
Humanities											
i) Geography	0	0	1	7.1	0	0	0	0	1	3.1	
ii) IRE	0	0	1	7.1	0	0	1	16.7	2	6.3	
iii) History	0	0	2	14.3	0	0	1	16.7	3	9.4	
iv) B/studies	1	14.3	0	0	0	0	0	0	1	3.1	

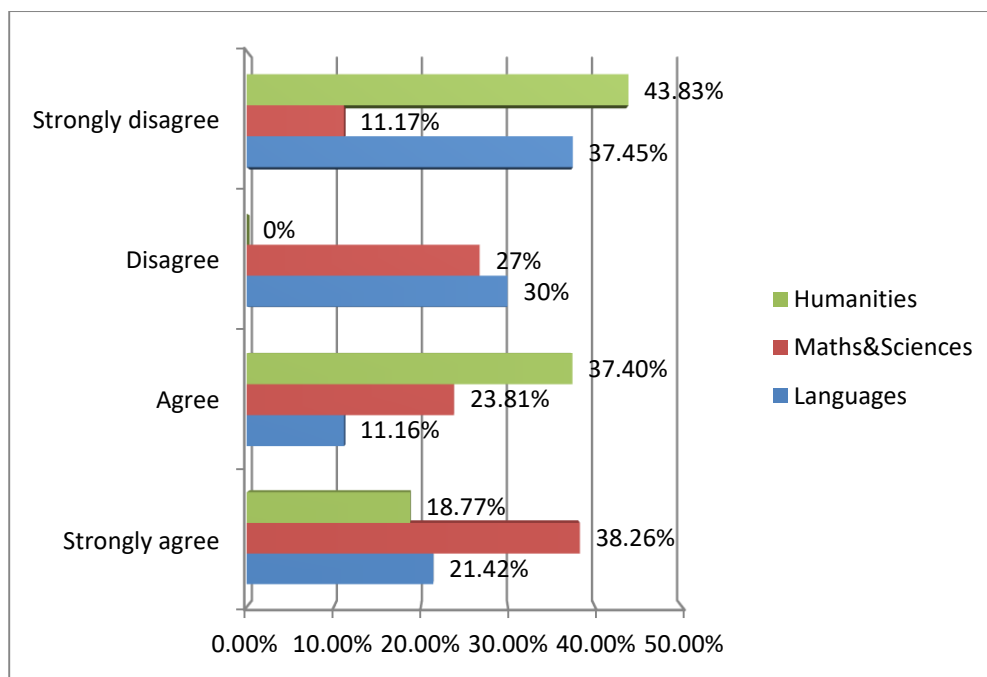


Figure 5. Summary of first impression of academic ability through handwriting in languages, humanities and maths & sciences

In the languages, 21.42% strongly agreed, 11.16% agreed, 30% disagreed while 37.45% strongly disagreed. In humanities, 18.77% strongly agreed, 37.4% agreed, while 43.83% strongly disagreed while 0% agreed.

Table 3. Relationship between students' test scores and scores on penmanship scale

Aspect	N	Rx	Significance
Total scale scores and test scores	138	0.441	0.01
Ease of reading and awarding marks scores and test scores	138	0.456	0.01
Handwriting scale scores and test scores	138	0.463	0.01

Results in table 3 indicate that there is positive but insignificant relationship between students' test scores and total scale scores as well as on subscales scores. It is also found that test score is not significantly related to both ease of reading and awarding marks and handwriting scales as well. The range of relationship of each scale is less than 50% which is weak in magnitude. This indicates that test penmanship is not a predictor of students' test score.

Results

The findings of this study report that, there is a positive but insignificant relationship between student penmanship and test scores. The results of the study are in conflict with studies by Eccles et.al (1993), Graham (1999), Jones & Christensen (1999) and Berninger et al., (1996) which found out that there is a significant relationship between penmanship and academic achievement. The difference in results may be attributed to difference in the location of the studies and the characteristics of the respondents, as they were done in European countries

and the respondents were mainly white children while this study focused on African children in Kenya.

The studies in the review also involved larger samples. In the study by Graham (1999), 300 primary grades, 300 intermediate grade, and 288 junior high students were involved. The study by Dr .Laura Dinehart involved 1000 second graders. These samples were too large compared to the sample of this study. In addition, they involved other grades like primary school and intermediate grade; while the study in here focused on form ones only. Further, the studies mainly dealt with written composition ability while the study in here focused on the three subject groups; languages, humanities, maths and sciences. Therefore, the respondent characteristics, the school subjects involved, the size of the sample may be responsible for explaining the difference in the results.

Conclusion

In examining the relationship between student penmanship and academic performance of form ones, the study found out that penmanship effects differed with teachers of different subject groups. The study established that, most teachers take time to read student's responses however illegible they may be. Despite forming a first impression of a student's academic ability through

their handwriting, this does not interfere with their awarding of marks. Math and science teachers form a first impression of a student's academic ability through handwriting.

Further, teachers of different subjects' award marks based on a student's handwriting. Students with poor penmanship are likely to score low in languages as compared to other subjects. This finding is in agreement with studies by Graham (1999) and (Jones & Christensen, 1999) who found out that students with poor penmanship are likely to score low on written compositions. The results established that, there is a positive but insignificant relationship between students' test scores and total scale scores as well as on subscales scores. It was also reported that, test score is not significantly related to both ease of reading and awarding marks and handwriting scales as well. The range of relationship of each scale is less than 50% which is weak in magnitude. This indicates that student penmanship is not a predictor of students' test score.

References

- Asher, A. (2006). Handwriting instruction in elementary schools. *American Journal of Occupational Therapy*, 60, 461-471.
- Baker, S., Gersten, R., & Graham, S. (2003). Teaching expressive writing to children with learning disabilities: Research based applications and examples. *Journal of Learning Disabilities*, 36, 109-123.
- Bandura, A. (1977). *A social-learning Theory*. Englewood cliffs, NS: Prentice Hall.
- Agba, C. and Lokopoiyot, M., (1992). *Implementation and curriculum reforms: The teaching of Agriculture under the 8-4-4 programme in secondary schools in Kenya*. Egerton University. Unpublished document.
- Bandura, A. (1986). *Social foundations of the Thought and Action: A social cognitive Theory*: Englewood cliffs, NS: Prentice Hall.
- Blumenfeld, P. (2006, March). *Comments from the annual meeting of the Society for Research on Adolescence*, San Francisco, CA.
- Cotterell, J. L. (1986). Adjustment to secondary school. In M. B. Youngman (Ed.), *Midschooling transfer: Problems and proposals* (pp. 66-86). London: Nelson-NFER.
- Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., et al. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and families. *American Psychologist*, 48, 90 – 101.
- Etaugh, C., & Hughes, V. (1975). Teacher's Evaluation of Sex-Typed Behavior in Children: The Role of Teacher Sex and School Setting. *Developmental Psychology*, 11, pp. 394-395.
- Freud, A. (1926). *The Problem of Anxiety*. New York: Norton
- Graham, S., & Weintraub, N. (1996). A review of handwriting research: Progress and prospects from 1980-1994. *Educational Psychology Review*, 8, 7-87.
- Graham, S., and Santangelo, T. "A Meta-Analysis of the Effectiveness of Teaching Handwriting." *Presented at Handwriting in the 21st Century? An Educational Summit*, Washington, D.C., January 23, 2012.
- Hodapp, V. (1996). The TAI-G: A multidimensional Approach to the Assessment of Test Anxiety. In C. S. M. Zeidner (Ed.), *Stress, Anxiety and Coping in Academic settings* (pp. 95-130). Francke.
- Huha, S. (2003). *A comparative study of factors that influence performance at KCPE in public and private schools*, U.O.N (Unpublished research report).
- McCandless, B., Bush, C., & Carden, A. (1976). Reinforcing Contingencies for Sex-Role Behaviors in Preschool Children. *Contemporary Educational Psychology*, 1, pp. 241-246.

- Mugenda, M.O. & Mugenda, G.A. (1999). *Research Methods. Qualitative Methods and Quantitative approaches*. Nairobi. Acts Press. Ndicho.
- Murphy, R.K., & Davis Shofer, O.C. (2005). *Psychological Testing, Principles and Applications*. (6th ed). New Jersey: Pearson Education.
- Ndanuko, W.M. (2001). *Relationship between school organizational climate and pupils academic performance*, Published Thesis, Kenyatta University, Nairobi.
- Ndirangu, W.G., Muola, M.J., Kithuka, R.M., & Nassiuma, K.D. (2009). *Global journal of Educational Research*, 8, 1-7.
- Orodho, A.J. (2008). *Elements of Education and Social Science Research methods*. (eds). Nairobi: Harlifax Printers and General suppliers.
- Pearls (2003). Guided learning at work. *Journal of Industrial psychology*, 2(17), 22-28.
- Russell, V. J., Ainley, M., & Frydenberg, E. (2005). *Schooling issues digest: Student motivation and engagement*. Retrieved November 9, 2005, from http://www.dest.gov.au/sectors/school_education/publications_resources/schooling_issues_digest/schooling_issues_digest_motivation_engagement.htm.
- Stake, J. & Katz, J. (1982). Teacher-Pupil Relationships in the Elementary School Classroom: Teacher-Gender and Pupil Gender Differences. *American Educational Research Journal*, 19, pp. 465-471.
- Tirop, B., & Moraa, J. (2012, January 3). Two girls commit suicide over KCPE results. *Daily Nation*, p4.
- Voelkl, K. E. (1995). School warmth, student participation, and achievement. *Journal of Experimental Education*, 63, 127 –138.