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Classroom streaming and academic achievement among students in secondary schools in Uganda: evidence from Apac and Jinja districts

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ABSTRACT

Several studies have been conducted to ascertain the impact of ability grouping on academic attainment over the past 20 years, but little effort has been made. The purpose of the study was to investigate the effect of classroom streaming on academic achievement and self-esteem of secondary school students and the relationship between streaming and academic achievement among students in secondary schools in Apac and Jinja districts. The researcher involved four secondary schools from the Apac and Jinja districts. The 240 subjects, both boys and girls, with 30 subjects drawn from each of the selected streams, were drawn from the four schools. The sample chosen was large enough to be representative of the whole student population in the two districts. The analysis of the relationship between streaming and academic achievement revealed that the p-calculated value was found to be 0.0001 with df = 238. Since 0.0001 is far less than 0.05, which is the P-critical value at which the researcher tested the hypothesis, the conclusion is that streaming has an effect on academic achievement. The study confirmed that ability grouping has a strong bearing on the academic achievement of secondary school students.

Keywords: Classroom streaming, Academic achievement, Secondary schools, Uganda

Introduction

Due to apparent gaps in the education systems, this study looked at how classroom streaming is affecting academic performance in the selected secondary schools in Uganda. Several research have been conducted to ascertain the impact of ability grouping on academic attainment over the past 20 years (Chen & Yang, 2019; Wei & Chou, 2020; Iglesias-Pradas *et al.*, 2021), but little effort has been mad . Although there are many different ways to define the terms "*ability*" and "*grouping*," both are extensively used in Europe and are known as streaming and homogenous ability grouping, respectively (Boliver & Capsada-Munsech, 2021; Graham *et al.*, 2021; Taylor *et al.*, 2022). The overall approach involves instructing a group of pupils who learn and perform similarly (Anthony *et al.*, 2019; Silalahi & Hutauruk, 2020; Prasetyo *et al.*, 2021). Thus, for the purpose of conducive teacher-pupil interaction, students are usually formed into learning groups. The modality for grouping depends largely on the teachers' consideration and/or convenience (Westberg & Jason, 2004).

According to Slavin (1990), classroom streaming occurs when students are grouped according to their respective academic ability, with higher performers being placed in the top classes and weaker achievers in the bottom classes. The end-of-term quizzes and exams, which prioritize gauging students' academic progress over other areas of study, typically determine this arrangement (Bonetto *et al.*, 2020).

According to Farrant (1980), some schools stream their students for each subject so that they can switch classes anytime they are learning the material because kids' development may not be consistent throughout all of their disciplines. Sets are the name for these groups. In large schools with multiple classes of children in each age group, Farrant continued, one solution to this issue is to create a wider range of skills in the top and bottom groups. It is known as banding. Here, horizontal grouping can be used to create heterogeneous learning groups by randomly assigning students to classes without considering their skill level. Despite this, the study's focus was only on academic ability-based streaming and its impact on academic success (Liu *et al.*, 2022).

In a streamed school, each yearly intake is divided into classes according to ability attainment, with the most able students being placed in the top or A-streams and the least able in the other streams (Rogers, 2022). On the other hand, a non-streamed school is one in which students within each year group are placed in courses alongside students of all academic levels (Mausethagen *et al.*, 2022).

Harrison-Palmer (2022) notes that it is generally believed that when students are separated based on aptitude, they learn more effectively or more readily. However, there is a risk that this isolation and segregation may occur during academic sequences. Such grading is unfavorable because it may result in a stratified prestige or "*class*" system that teaches pupils to view themselves as inferior or superior based on their general abilities rather than on accurately assessed particular capabilities. The researcher agrees with Patterson *et al.* (2021) because if grouping is for the purpose of urging the students to learn more, then the factor by which they are grouped ought to be more which determine the success of the child's participation. The view taken by most teachers in Africa is that students are best formed into learning groups in which the children are of uniform age and ability. This results in classes formed which are homogenous in composition, that is, all of one kind. However, some schools object to this means of grouping, arguing that the very act of label ling a student as dull when he is still at a formative stage of development may have psychological effects; also, the segregation of people into uniform group is unnatural for normal society associations tend to be heterogenous or mixed in composition (Johnson *et al.*, 2021).

According to Lang *et al.* (2005), streaming, or ability-based segregation, is decried as artificial. She believed that labeling a youngster A, B, or C was unlawful and did not reflect real life. Streaming, she added, exacerbates the gap between pupils, creates an "A" class aristocracy that is uniformly neat and intelligent, and concentrates problem students in the lower streams (Stevens & Vermeersch, 2010).
Borg (1964) said that each school has its own method of accomplishing streaming through the use of school tests or examinations, school records, teachers' assessment or a summated total of some or all of these (Grewenig *et al.*, 2021).

Students have questioned selection criteria based on disparities in aptitude or achievement (Theobald *et al.*, 2020; O'Dea *et al.*, 2018; Canning *et al.*, 2019). They have demonstrated that even the best allocation strategies contain prediction errors for at least 10% of the youngsters.

To date, there hasn't been a lot of research on how streaming affects pupils in secondary schools in Uganda's academic performance. The majority of studies on streaming and its impact on academic achievement have been conducted in Europe and the United States. The researcher felt the need to conduct a similar study in Apac and Jinja District, Uganda.

Materials and Methods

Study Area

The study was conducted in Apac and Jinja District, Uganda. Apac District is bounded to the north-east by Oyam District, the north-northeast by Kole District, the north-northeast by Lira District, the east by Dokolo District, the south-southeast by Amolatar District, the south-west by Nakasongola District, and the west by Kiryandongo District. The largest metropolis in the Lango sub-region, Lira, is situated about 62 kilometers (39 mi) to the south-west of Apac, the district's largest town. The distance between this location and Kampala, Uganda's capital and largest metropolis, is approximately 230 kilometers (140 miles) by road.

Jinja District is bounded to the north by Kamuli District, the east by Luuka District, the southeast by Mayuge District, the south by Buvuma District, the west by Buikwe District, and the north by Kayunga District. The district's administrative center is in Buwenge, which is 96 kilometers (60 mi) by road east of Kampala, Uganda, Uganda's biggest city and capital.

Selecting Population

The researcher involved four Secondary Schools. These Schools were selected from Apac and Jinja Districts. More could have been involved but for limited finance and time factor. The 240 subjects, both boys and girls; with 30 subjects drawn from each of the selected streams were drawn from the four Schools. The sample chosen was large enough to be representative of the whole student population in the two districts. With this in mind, these Schools can be used to generalize for the whole of Uganda; since government grant aided boarding schools have more or less the same characteristics.

Description of the Subject

The subjects were randomly sampled from senior two and senior three in each of the four schools that participated in the study. The researcher did not choose classes outside the two mentioned because; senior one student had not yet sat for end of year examinations for streaming, the senior four students were busy preparing for U.C.E. Examinations and generally advanced: level students are streamed according to their respective subject combinations. Participation in the research is indicated in Table 1., the same characteristics. The study was conducted with them in the third week of the third term 1995. In order to control for variables in the conditions under which the students learn, only government grant aided boarding secondary schools and fairly well established were selected as stated above. Therefore, they are generally similar in the conditions under which the student's study. The choice of sample area was dictated upon by the fact that these were the schools which streamed according to academic abilities.

Description of the Object

The subjects were randomly sampled from senior two and senior three in each of the four schools that participated in the study. The researcher did not choose classes outside the two mentioned because;

'senior one student had not yet sat for end of year examinations for streaming, the senior four students were busy preparing for U.C.E. Examinations and generally advanced: level students are streamed according to their respective subject combination. Participation in the research is indicated in Table 1.

Table 1. Selected schools for the study.

Schools	S. 2	S. 3	Grade totals
Aduku S.S	30	30	60
Nhai S.S	30	30	60
Jinja S.S	30	30	60
Wanyange	30	30	60
Total			**240**

Source: Primary data 2022

Research Design and Procedure

The study was designed to identify the effect of streaming on academic achievement and self-esteem. In order to accomplish the study, the procedures taken included:

- the researcher was given a letter of introduction from the Department of Psychology. The researcher used this letter to seek for and obtain permission from the respective District Education officers and the School authorities to administer questionnaires to the subjects and the Permission was readily granted;
- it was necessary for the researcher to create rapport with the subjects and their class teachers. This was meant to reduce possible suspicions which would make subjects respond with reluctance. So, the purpose of the rapport was for inducing them into the study and to encourage their utmost cooperation. The eventual results of their exercise indicated their willingness to participate;
- apart from brief introduction made by the teachers concerned, the researcher administered the questionnaires to the subjects. This was for the purpose of uniformity and clarity;
- raw marks for end of terms one and two, 1995 were collected from each of the selected Schools. It was quite a tedious and costly exercise; in some Schools the researcher had to frequent many times because only one personality deals with academic matters. With great persistence and determination, the researcher successfully obtained the low marks for all the subjects in question.

Selection of Subject

The researcher through raffle method, randomly selected subjects from the Schools which participated in the study. These were senior two and three students from the four schools. Names were written on small pieces of paper, put in a container and shaken. Then the researcher would pick a piece of paper at random, those picked were the ones who participated in the study.

Two scales, one for self-esteem and for the subjects' attitude towards streaming were then administered by the researcher to the subjects one after the other. Academic performance scores were averages of termly marks obtained from the schools attended by the subjects.

Administration of the Instruments

After the selection of the subjects, the self-esteem inventory was administered first in all cases. A brief explanation was made tb the subjects about the instructions. The researcher read through together with them before filling in anything. They were given time to fill in while in their respective classrooms; under the supervision of the researcher. When they all completed, the researcher assisted by the teachers collected the papers immediately. The Rosenberg self-esteem inventory took about 30 minutes.

The questionnaire on students 'attitude towards streaming was administered immediately after the self-esteem scale. The same procedure as above was observed. The exercise took about 35 minutes. Similar instructions were followed in each of the four selected schools.

Scoring

(a) The Rosenberg Self-esteem inventory:

The questionnaire consisted of 10 items, each with four possible responses. Some statements were positive while others were negative. The scoring was done as shown in Tables 2., and 3 below ranging from (SA: strongly agree, A: Agree, Da; disagree and SD: strongly disagree:)

Table 2. Postive Statement.

SA	4	Points
A	3	‘’
D	2	‘’
SD	1	Point

Source: Primary data 2022

Table 3. Negative Statement.

SA	1	Points
A	2	points
D	3	‘’
SD	4	‘’

Source: Primary data 2022

A scale was used in assessing each individual and a score was arrived at for each subject, thus 240 scores. The median was calculated of all the scores for all the subjects (median score = 24). Those with a score of median and above were the high self-esteem group. Those with scores below the median were the low self-esteem group. Thus, all those subjects who scored 24 and above represented high self-esteem. Those with scores from 23 downwards formed the low self-esteem group.

The standard deviation was calculated and indicated that scores were distributed evenly around the mean. The mean for those with high self-esteem 32.28 and for those with low self-esteem 16.51. The standard deviation for the high self-esteemed 3.62 and 2.90 for the low self-esteemed.

(b) Students' Attitude Towards Streaming

This also consisted of questions each of which had two possible responses. Some of the statements were positive were while others were negative. The responses dichotomous.

The scoring was done as fo1lows:

Positive Statements

Yes	2	points
No	1	point

Negative Statements

Yes	1	point
No	2	points

The scores were awarded for each question and the total for each subject was obtained and recorded. The median was calculated as in the self-esteem scores. Those above the mediam (mediam score = 23) were taken to be those subjects who had positive attitude towards streaming. While those who fell below the median, from 22 downwards had negative attitude towards streaming.

(c) The raw marks for terms one and two 1995 Examinations

The raw marks were analyzed. The mean for the high achievers (group one) was 60.76 while the one for low- achievers (group two) was 39.66. The standard deviation for' those in group one was 7.01 and for those in group two was 6.31. The significance in the differences among the above. Groups was calculated using the t-test for independent groups which is the recommended test for it. The t-test was therefore used because the researcher compared the group means of two different groups. Group one was sampled from stream one and group two were those sampled from stream two. In addition, the raw marks were analyzed. The mean for the high achievers (group one) was 60.76 while the one for low- achievers (group two) was 39.66.

The standard deviation for' those in group one was 7.01 and for those in group two was 6.31. The significance in the differences among the above. Groups was calculated using the t-test for independent groups which is the recommended test for it. The t-test was therefore used because the researcher compared the group means of two different groups. Group one was sampled from stream one and group two were those sampled from stream two.

Results

The study was guided by the first hypothesis which stated that "there is no significant relationship between streaming and academic achievement". The hypothesis was tested at PS 0.05 level of significance. This hypothesis considered total scores of terms examinations as a means of measuring the academic achievement of students in the two types of streams. Although this hypothesis considered the total scores as a means of measuring academic achievement between the students in the two groups of streams, analysis of each of the two streams was first considered. The results bearing on this hypothesis are presented in the Table 4 below:

Table 4. Academic achievement of the two groups.

	N	M/score	SD
GP1	120	60.78	7.01
GP2	120	39.99	6.31
Total	240		

GP: group; N: number of cases; M/Scores: mean scores; SD: standard deviation.

The inspection of table two reveals that the mean scores 60.76 of group one 1S higher than the mean score 39.66 of those in groups two. The standard deviation 7.01 of scores in group one shows a wider distribution than the standard deviation 6.31 of the scores in group two. The standard deviation showed how variation was spread among the different valves.

Table 5. The t-test for relationship between streaming and academic achievement.

Number of cases	P-critical	P-calculated	Result
240	0.05	0.0001	Significant

The researcher used pooled variance estimate because the number of cases is equal, that is, 120 in each group.

The analysis of the relationship between streaming and academic achievement revealed that the p-Calculated value was found to be 0.0001 with df = 238. Since 0.0001 is far much less than 0.05 which is the P-critical value at which the researcher tested the hypothesis; the conclusion is that streaming has effect on academic achievement.

As shown in Table 5, generally those in group one performed better than those in group two. The term examinations revealed this. So, the null hypothesis which stated that there was no significant relationship between streaming and academic achievement was rejected (Turyasingura *et al.*, 2022)

Discussion

When the relationship between streaming and academic achievement was studied, the results showed that students from top most streams (Group one) performed significantly much better than those from bottom most streams (Group two)(Turyasingura *et al.*, 2022).

These results support the findings of Sternberg (2021) when he found out that the brighter children did better than slower children in their test scores. Similarly, MacCann *et al.* (2020) found that the academic achievement in the topmost streams is much higher than the bottom most streams. The researcher's findings regarding those who favored streaming is outlined below: This ensures that brighter children make maximum progress. According to them, time is not lost on the du11 ones. It removes the dull child. The researcher agrees with Messiou and Ainscow (2020) when she stated that most teachers do not really 1ike teaching backward classes. They prefer to teach bright ones where they can see rapid progress and results for all their efforts. When the researcher attended some lessons in all these streams as in line with Cano and Krawczyk (2020), the social climate with regards to participation was not quite

encouraging in the bottom streams (Zyblewski et al., 2021). In some cases, Currie *et al.* (2020) notes that teachers tended to come for their lessons with reservation in these streams. In top streams, the teachers and the students were active and lively.

The claim that streaming ensures backward children receive special education.
The researcher disagrees with this because it is so theoretical. He agrees with Iruka (2022) who stated that dull children are difficult to teach. This statement does not give the teachers the morale to teach actively. In the schools this study was conducted, special and/or remedial teaching was not quite experienced; therefore, the motive for the provision of special education gets defeated. In any case, most teachers do not want to identify themselves with the streams of the lower-achievers.

On the contrary, those who favor non-streaming advanced the following:
It gives each student a fair chance. This question labeling of a child is discouraging. It may become permanent. This agrees with Connell *et al.* (2020) when she stated that labelling may create a class structure from students who wi11 learn to think of themselves as inferior or superior in general, and the belief that this cannot be altered. When chi1dren are mixed, irrespective of academicabi1ity, this leads to social adjustment. This will discourage feeling of inferiority complex.

In addition, it results to a happier staff. It is advanced that if there is no streaming, each teacher has the advantage of having bright children since every teacher Likes to see progress. Frey *et al.* (2019) support this claim. She further stated that there is a chance for the above average to encourage the slow ones to pull up; and teachers are happy to see this co-operative learning.

In this study, the results revealed that students who are in top streams performed much better than their counterpart in bottom streams. In conclusion, it can be stated that students from the upper streams perform better academically than those in the lower streams because of the reasons outlined below: The teachers' pay more attention to the upper streams at the expense of the lower streams. Frey et al. (2019) agrees with this reason when she stated that children in bottom class are much more difficult to Like. She' continued to say that they are not treated the same way by their teachers as their counterpart in top class.

Secondly, those in the lower streams do not have competitive attitude, they shy away very quickly. this was confirmed when the researcher attended some lessons in the respective streams. It was noted that those in the upper streams were more active and challenging than those in lower streams. Rosen and Rosen (2020) supports this observation when she stated that the dull students prefer to keep their distance from the teachers because' of 'the dislike for the teachers; because they are shy, distressed or self-doubting to wish risking on personal encounter. On the other hand, those in top streams have very favorable feeling about their teachers and they are very pleased to work with the teachers.

Conclusion

The study was based on four secondary schools in Apac and Jinja districts using a sample of 240 subjects in senior two and three. These were grant-aided boarding schools. The standard deviation, the mean and median all showed it was a good homogenous group. As such, they can be used to generalize for Uganda as a whole.

Before attempting to draw any conclusion, it may be important to recapitulate briefly what the study sought to do. Firstly, the study wanted to find out whether there was significant relationship between streaming and academic achievement. The conclusions to be presented are derived from the general background and the results obtained.

Results of the study have confirmed that ability grouping very much affects the academic achievement of students.

The study also confirmed that ability grouping has a strong bearing on the academic achievement of secondary school students.

Findings in the study have informed the society that apparently streaming has significant relationship with academic achievement.

Recommendations

Results of this study were mainly derived from small parts of Apac and Jonathon, this generalization may not be a true and reliable reflection of the situation in the whole country.

More so, there are termly examinations done by all schools in the country, but this study was confined to terms one and two of 1995 and to senior two and three students only. It is, therefore, most likely that the 1995 performance may not be a typical reflection of the difference between the performance and self-esteem, as related to streaming.

The limitation was brought in by issues like financial constraints. Notwithstanding, the researcher is of the opinion that the study can still be extended to cover many samples of subjects from many parts (districts) of Uganda. This could also be undertaken to cover many years in secondary schools so as to facilitate a more authentic, more reliable and truer generalization.

The researcher hopes that the study will enhance some insight where the education implementors and teachers should jointly try to find out better and conducive method of learning.

The study does not claim to have exhausted the effect of streaming on academic achievement of secondary school students. For that matter, more research is called for to find out more about streaming and other related variables such as socio-economic status, study habits, tribes, etc., not included in the study. In this way, it might be more reliable and justifiable to generalize findings (Ocan *et al.*, 2022).

The study also recommends that teachers should motivate students by employing interesting methods of imparting knowledge to the students.

Declarations of Interests

This research did not receive any grant from funding agencies in the public, commercial or non-profit sectors.

Conflicts of Interests

The author declare that they have no competing interests.

Data Availability Statement

The data used in this study will be available on a request.

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